



Environment & Society Portal

Suggested citation: Butler, Tom, ed., *Wild Earth* 8, no. 1 (Spring 1998).
Republished by the Environment & Society Portal, Multimedia Library.
<http://www.environmentandsociety.org/node/6086>.

All rights reserved. The user may download, preserve and print this material only for private, research or nonprofit educational purposes. The user may not alter, transform, or build upon this material.

The Rachel Carson Center's Environment & Society Portal makes archival materials openly accessible for purposes of research and education. Views expressed in these materials do not necessarily reflect the views or positions of the Rachel Carson Center or its partners.

WILDEARTH



Spring 1998

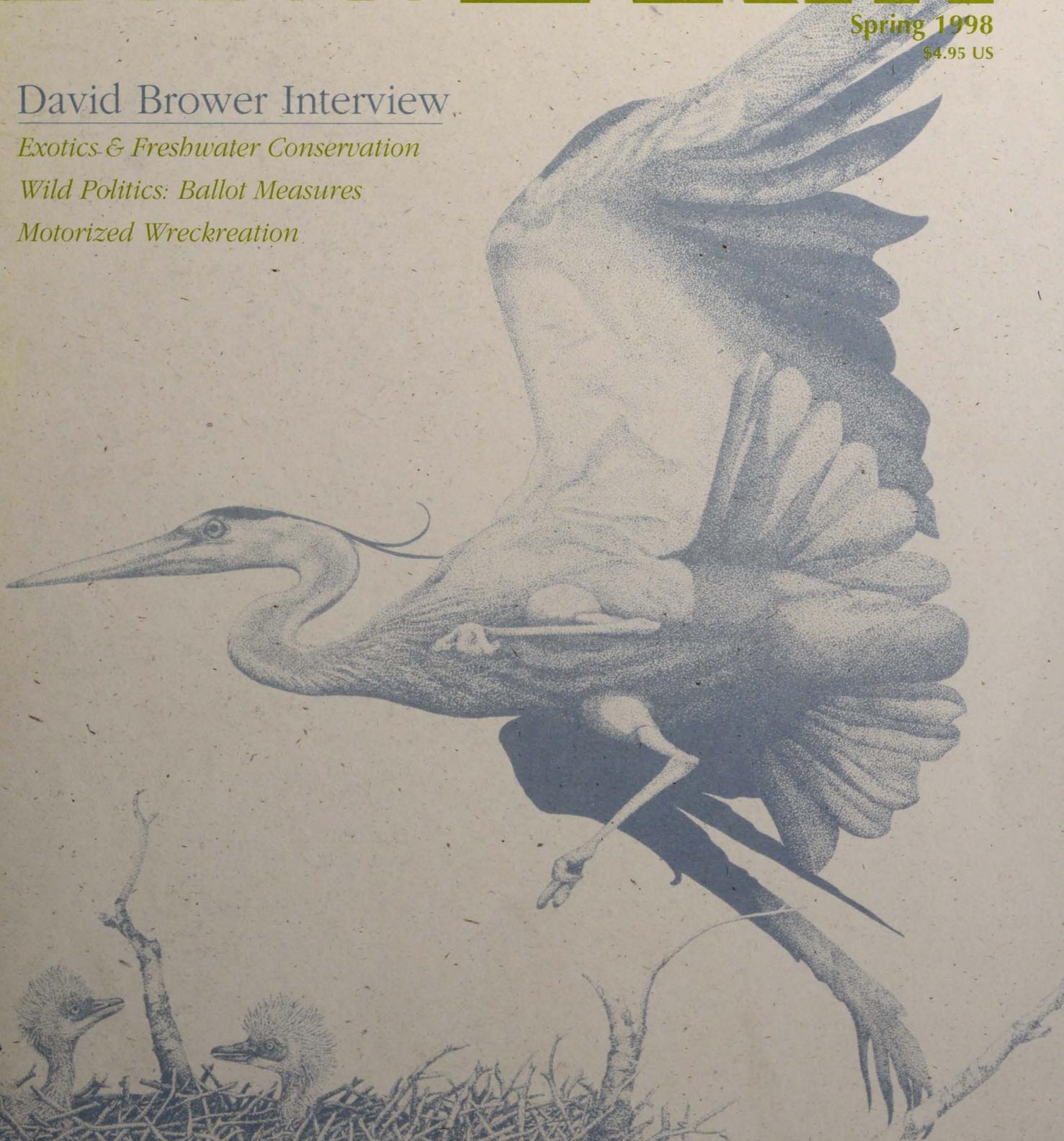
\$4.95 US

David Brower Interview

Exotics & Freshwater Conservation

Wild Politics: Ballot Measures

Motorized Wreckreation



Around The Campfire

by Dave Foreman

Etymology and "Environmental" Problems



Readers of *Wild Earth* know that I reject the notion of a single environmental movement that encompasses both wilderness protection and fighting pollution. I believe that conservation (protecting wildlife and wildlands) and environmentalism (cleaning up pollution for human health concerns) are separate movements with different origins, goals, and players. Both are important, but they are different. In my book-in-progress, *The War On Nature*, I will devote a long chapter ("The Myth of the Environmental Movement") to further explain this difference between the conservation and environmental movements.

One of the reasons I don't like The Myth of the Environmental Movement is the damn word itself.

Environment
Environmental
Environmentalist
Enviro

The word and its variants make my poor ol' stomach feel like a butter chum.

Environment is one of those godawful abstract words popularized by bureaucrats or assistant professors of psychology. How do you love an *environment*? Can you even see an *environment*? Can you get lost in an *environment*?

I can see, feel, and love a mountain, a river, a swamp, an ocean, a forest, a desert, a grassland. But not an environment.

Environment to Nature is like *relationship to love*.

About Wild Earth and The Wildlands Project

Wild Earth (POB 455, Richmond, VT 05477; 802-434-4077; fax 802-434-5980) is a quarterly journal melding conservation biology and wildlands activism. Our efforts to strengthen the conservation movement involve the following:

- We serve as the publishing wing of The Wildlands Project.
- We provide a forum for the many effective but little-known regional wilderness groups and coalitions in North America, and serve as a networking tool for wilderness activists.
- We make the teachings of conservation biology accessible to non-scientists, that activists may employ them in defense of biodiversity.
- We expose threats to habitat and wildlife.
- We facilitate discussion on ways to end and reverse the human population explosion.
- We defend wilderness both as concept and as place.

Wild Earth and The Wildlands Project are closely allied but independent non-profit organizations dedicated to the restoration and protection of wilderness and biodiversity. We share a vision of an ecologically healthy North America—with adequate habitat for all native species, containing vibrant human and natural communities.

The Wildlands Project (1955 W. Grant Rd., Suite 148A, Tucson, AZ 85745; 520-884-0875) is the organization guiding the design of a continental wilderness recovery strategy. Through advocacy, education, scientific consultation, and cooperation with many regional groups, The Wildlands Project is drafting a blueprint for an interconnected, continental-scale system of protected wildlands linked by habitat corridors.

WILD EARTH



VOLUME 8, NUMBER 1
SPRING 1998

Viewpoints

- 6 The Myths We Live By
by George Wuertner
- 8 The Archipelago Idea
by Bill Willers
- 10 Electric Restructuring
by John Clark and Alexis Lathem

Eastern Old Growth

- 22 Clearinghouse Report
by Mary Byrd Davis
- 24 The Splendor of the Eastern Forest
by Robert Leverett

WE Interview

- 34 David Brower

Landscape Stories

- 39 Tracks
by Peter Friederici

Biodiversity Reports

- 44 The Exotic Species Problem and Freshwater Conservation
by Anthony Ricciardi
- 50 Area de Conservación de Tortuguero, Costa Rica
by Pat Opay
- 54 Boundary Waters Wilderness Attacked in Congress
by Kevin Proescholdt

- 56 Wreckreation
by Scott Silver

Conservation Strategy

- 58 Silence and Quiet Use
by Jean Smith
- 60 Earth in the Balance Sheet
by Mitch Friedman
- 66 Pittman Robertson
by Anne Woioda

WE Forum: Ballot Initiatives

- 72 Successfully Using Ballot Measures
by Sally Cross and Andy Kerr
- 76 Direct Democracy in Defense of Nature
by Bill Marlett
- 79 Ballot Measures as a "Political Spike"
by Jonathan Carter

Land Ethics

- 81 Geophilia
by Paul Faulstich

Population Problems

- 90 The Abstainers
by Connie Barlow

Poetry

- 27 The Kill by George Keithley
- 53 Atlantic Ridley Sea Turtle by Barbara Helfgott Hyett
- 71 Isle Royale by Gary Lawless

Species Spotlight

- 105 Pacific Water Shrew illustration by Robert M. Smith

<p>Around The Campfire inside front cover</p> <p>A Wilderness View.....4</p> <p>Wild Earth Update.....5</p> <p>Letters.....13</p> <p>Updates.....20</p> <p>The Wildlands Project.....28</p> <p>Book Reviews.....94</p> <p>Announcements.....97</p>	
--	--

©Diana Dee Tyler

WILD EARTH (ISSN 1055-1166) is published quarterly by the Cenozoic Society, Inc., POB 455, Richmond, VT 05477. The Cenozoic Society is a non-profit educational, scientific, and charitable corporation.

Cenozoic Society Board: Katie Alvord (MI), John Davis (CA), Dave Foreman (NM), David Johns (OR), Reed Noss (OR).

Membership in the Cenozoic Society is open to the public and includes a subscription to Wild Earth. Non-membership and institutional subscriptions are also available. The basic rate for individual membership subscriptions is \$25; low income membership is \$15. Subscriptions to Canada and Mexico are \$30 per year, overseas subscriptions are \$45 (air mail).

Periodicals postage paid at Richmond, VT.

POSTMASTER: Send address changes to Wild Earth, POB 455, Richmond, VT 05477.

All editorial and membership correspondence should be sent to Wild Earth, POB 455, Richmond, VT 05477. We strongly discourage submissions of unsolicited manuscripts. We welcome submissions of artwork. Artists who want their work returned should include a stamped, self-addressed envelope. Wild Earth assumes no responsibility for unsolicited materials.

Wild Earth accepts a limited amount of advertising that is compatible with its policies and goals. For rates/information contact Monique Miller at (802) 434-4077.

Copyright ©1998 by Cenozoic Society, Inc. All rights reserved. No part of this periodical may be reproduced without permission. All artwork is the property of the individual artist and is used by permission. Unauthorized reproduction of artwork is unethical and illegal.

Permission to photocopy items for personal use, or the internal or personal use of specific clients, is granted by the Cenozoic Society, Inc., provided that the base fee of \$1 per copy of the article is paid directly to the Copyright Clearance Center, 27 Congress St., Salem, MA 01970; this fee may be waived in some circumstances by the publisher. For those organizations that have been granted a photocopy license by CCC, a separate system of payment has been arranged. The fee code for users of the Transactional Reporting Service is:1055-1166/92 \$1.00.

Wild Earth is available on microfilm from University Microfilms, Inc., 300 North Zeeb Rd., Ann Arbor, Michigan 48106-1346. Statistical abstracting by Pierien Press, POB 1808, Ann Arbor, MI 48106.

Articles appearing in Wild Earth are indexed in ENVIRONMENTAL PERIODICALS BIBLIOGRAPHY and THE ALTERNATIVE PRESS INDEX. Wild Earth is printed on 100% unbleached recycled paper (50-100% post-consumer).

cover art: Great Blue Heron and chicks by D.D. Tyler

Dave Foreman, *Publisher*
Monique Miller, *Executive Director*
Tom Butler, *Editor*
Reed Noss, *Science Editor*
Jennifer Esser, *Assistant Editor*
Lina Miller, *Administrative Assistant*
Andrea Beenhouwer, *Business Manager*
Mary Byrd Davis, *Associate Editor*
Blue House Graphics, *Designer*

Volunteers & Interns

Virginia Arvold, Laurie Ferrante, Amy Olson, J. Silverman

Contributing Artists

Bill Amadon, Gary Bentrup, Gerry Biron, Peter Bralver, Darren Burkey, Evan Cantor, William Crook Jr., Suzanne DeJohn, Patrick Dengate, Gary Eldred, Bob Ellis, Amy Grogan, Anna Guillemot, Sky Jacobs, Mary Elder Jacobsen, L.J. Kopf, Sarah Lauterbach, Heather Lenz, Audra Loyal, Peggy Sue McRae, Rob Messick, Douglas Moore, Jim Nollman, Chuck Ouray, Nina Paley, Martin Ring, Nancy Roy, Claus Sievert, Robert Smith, Todd Telander, Davis Te Selle, Eva Thompson, D.D. Tyler, Lezle Williams

Poetry Editors

Art Goodtimes, Gary Lawless, Sheila McGrory-Klyza

Editorial Advisors

David Abram, David Brower, Michael P. Cohen, John Davis, Bill Devall, Michael Frome, Dolores LaChapelle, Christopher Manes, Bill McKibben, Stephanie Mills, Gary Nabhan, Arne Naess, Roderick Nash, George Sessions, Gary Snyder, Michael Soulé, Paul Watson, Terry Tempest Williams

Correspondents

Connie Barlow, Rick Bonney, Jasper Carlton, Barb Dugelby, Jim Eaton, Roger Featherstone, Kathleen Fitzgerald, Mitch Friedman, Trudy Frisk, Steve Gatewood, Stephanie Kaza, Robert Leverett, David Johns, Mollie Matteson, Roz McClellan, Rod Mondt, Ned Mudd, R.F. Mueller, Wendy O'Neil, Doug Peacock, Gary Randorf, Jamie Sayen, Ray Vaughan, Howie Wolke, Ken Wu, George Wuerthner

It was bad enough that Norman French polluted good Anglo-Saxon after Harold got an arrow in his eye on the field of Hastings. It was bad enough that the English intellectual class felt they had to know Latin and use it for church, medicine, science, and the law. But the worst of Latin-English are the abstract, Latin-based words of social science like...*environment*.

Environment begins in Old English in the 1400s as the verb *envi-rounen* meaning "to surround" from the Old French *environner*. It became *environs* in the 1700s as a noun for neighborhood. *Environment* was first used in the 1700s, but was rare before 1900.¹ According to *Webster's Ninth New Collegiate Dictionary*, *environment* means "the circumstances, objects, or conditions by which one is surrounded." It is a technical term in social science; indeed, the original (1922) meaning of *environmentalism* is "a theory that views environment rather than heredity as the important factor in the development and esp. the cultural and intellectual development of an individual or group" and the original meaning of *environmentalist* is a social scientist who is an advocate of the above development theory. Though even Aldo Leopold referred to "the normal environment of every citizen" in 1949,² widespread use of *environment* for *Nature* did not begin until the 1960s with the growth of human health groups fighting pollution.

My problem with the word *environment* is not merely a matter of taste or devotion to Strunk & White. Words have power, and when we label *Nature* with an abstract and meaningless word like *environment*, it is easier to hold *Nature* at a distance, it is easier to make it a mere commodity. It is easier to destroy it. Using a word like *environment* helps create a dualism between humans and *Nature*. Both Dolores LaChapelle and David Abram have wisely written about the "Greek Language Problem": with the abstract alphabet of the Greeks (as opposed to pictorial alphabets like hieroglyphics that were grounded in the real, that is, *natural* world), language and thought became cut off from *Nature*.

There is a wealth of perfectly good words, both Anglo-Saxon and Norman, that can replace this dreadful word. Here are a few of them:

Land	Ecosystem
Land, water, and air	Place
Landscape	Country
Habitat	Countryside
Surroundings	Great Outdoors
Home	Natural home
Nature	Outside
Creation	Big Outside

¹ Hoad, T.F. 1986. *The Concise Oxford Dictionary of English Etymology*. Oxford, UK: Oxford University Press. p. 151.

² Leopold, Aldo. 1987. *A Sand County Almanac*. New York: Oxford University Press. p. 48.

³ *Ibid.*, p. 204.

⁴ *Ibid.*, p. 224-225.

I would argue stoutly that conservationists should generally replace *environment* with *land*. By doing so, we link our movement firmly to Aldo Leopold's 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. It implies respect for his fellow-members, and also respect for the community as such.*³

*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.*⁴

"A Land Ethic" has a hell of a lot more punch in it than does "An Environmental Ethic."

Instead of *Environmental Movement* for conservation, we should use:

- Conservation Movement
- Nature Protection Movement
- Land Protection Movement

Instead of *Environmental Movement* for pollution fighting, use:

- Human Health Movement
- Public Health Movement
- Quality of Life Movement
- Pollution Prevention Movement
- Toxic Cleanup Movement
- Healthy Home Movement

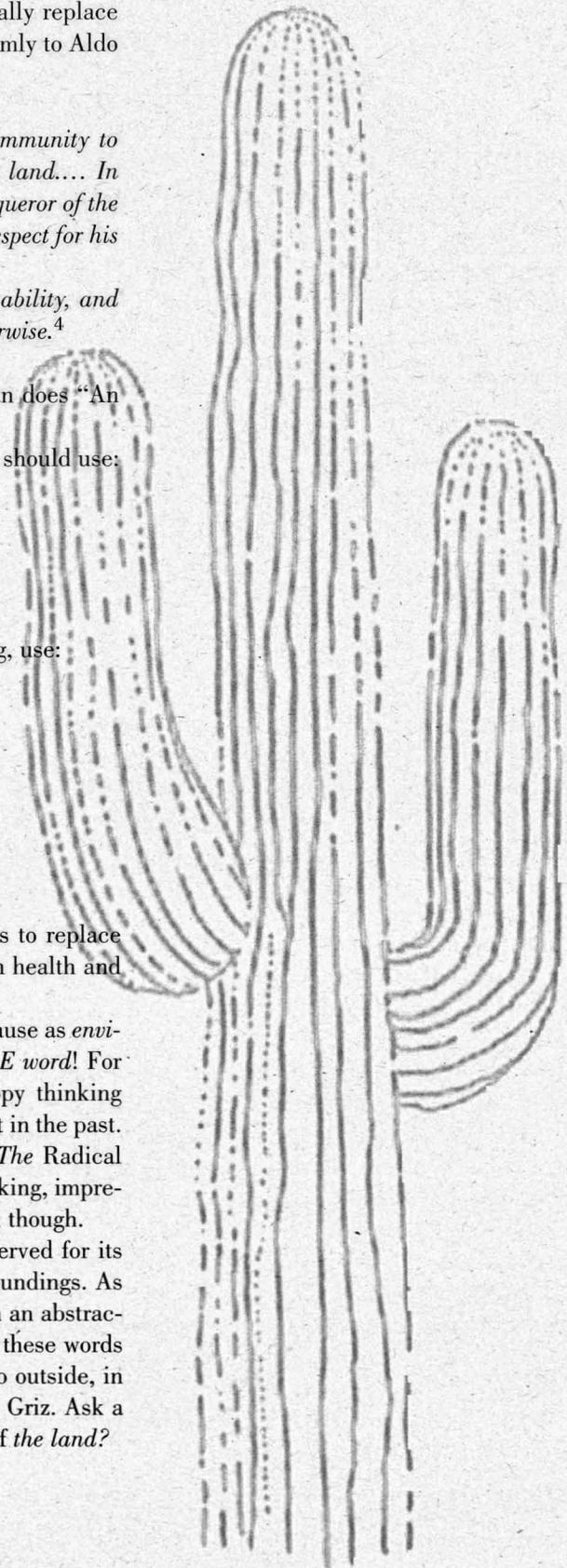
I'm sure others can come up with additional good terms to replace *environment* when describing the campaign to protect human health and the urban quality of life.

Conservationists should never refer to ourselves or our cause as *environmentalists* or *environmental*. Never, never, never use the *E* word! For conservationists to call ourselves environmentalists is sloppy thinking and sloppy use of the language. I know, I know, I'm guilty of it in the past. I was the nitwit who subtitled *The Earth First! Journal* as *The Radical Environmental Journal* in the early eighties. It was an unthinking, imprecise, illiterate thing to do. Even graying hillbillies can learn, though.

Let us resolve that the word *environment* should be reserved for its technical social science sense of outside influences or surroundings. As long as conservationists or human health advocates use such an abstraction, the harder it will be to grab people at their hearts. Let these words roll around on your tongue, let them dance in your heart. Go outside, in the wind, in the storm, far from the maddening city. Ask the Griz. Ask a saguaro. Are they part of an *environment*? Or are they part of *the land*?

—Dave Foreman

Jawbone Mountain, New Mexico



A Wilderness View



Beautiful Piece of World

You like wilderness, let's suppose, and you want to see some of it saved. Not just a thin strip of roadside with a sign saying "Don't pick the flowers." Not just a wild garden behind the hotel or a pleasant woods within shouting distance of the highway. But real wilderness, big wilderness—country big enough to have a beyond to it and an inside. With space enough to separate you from the buzz, bang, screech, ring, yammer, and roar of the 24-hour commercial you wish hard your life wouldn't be. Wilderness that is a beautiful piece of world....

—David Brower¹

Several decades ago, when David Brower wrote these opening lines in his essay "Wilderness—Conflict and Conscience," it probably seemed to him that the war on Nature was at its apex. If so, it may have been one of the rare occasions when he was wrong.

Indeed, with two billion additional humans on Earth, all the trains, planes, and automobiles of a global human population nearing six billion, and uncountable noisome artifacts of consumer culture not yet invented when Brower wrote—personal computers, fax machines, cell phones, VCRs, 4-wheelers, jet-skis, to name but a few—the cacophony of industrial humanity is louder than ever. Fortunately for wilderness and wildlife, David Brower [WE Interview] is still fighting to turn down the volume.

Alas, the "screech, ring,...and roar" of snowmobiles in Yellowstone, ORVs in the Daniel Boone National Forest, or jet-skis in Hells Canyon are problematic not merely because they offend the aesthetic sensibilities of wilderness travelers seeking spiritual renewal in our remaining wild places. (Of course such violations are a real problem; recently, while paddling alone on an Adirondack wilderness lake, I was buzzed by a helicopter. For hours thereafter I could not shake the Bruce Cockburn lyric "If I had a rocket launcher..." from my head.) The burgeoning popularity of motorized recreation is a large and growing obstacle to biodiversity protection and recovery efforts. In this issue, a trio of wildlands defenders [Kevin Proescholdt, Jean Smith, Scott Silver] highlight industrial recreationist threats to Minnesota's

Boundary Waters, Colorado's Kreuzer-Princeton area, and public lands nationwide.

Also in this issue, biologist Anthony Ricciardi explains how invasions of exotic species imperil freshwater ecosystems; activists John Clark and Alexis Lathem speculate on how pending changes in the electric industry may affect wildlands; and Pat Opay warns that protections for Costa Rica's Tortuguero Conservation Area remain incomplete.

We'll temper these sobering reports with some good news [Jocassee Gorges and Big Tree Updates], good writing [Tracks], and good strategies—economic [Earth in the Balance Sheet], legal [Pittman Robertson], and personal [The Abstainers]—for combating threats to wildlands.



It's spring! And in spring, at least in election years, a young person's thoughts turn to—politics. With another political season upon us, biodiversity advocates around the country will be engaged in electoral campaigns. We've asked a few battle-tested balloteers [Sally Cross, Andy Kerr, Bill Marlett, Jonathan Carter] to share their thoughts on using referenda to further the cause of conservation [Forum on Ballot Initiatives].

Although this *WE* stresses conservation strategy, philosophical considerations are not altogether ignored. In "The Myths We Live By" and "Geophilia," George Wuerthner and Paul Faulstich, respectively, explore the mythic narratives and possibly innate affinities that undergird the movement to protect Nature.

¹Brower, David. 1964. Wilderness—Conflict and Conscience, in *Wildlands in Our Civilization*, David Brower, ed. San Francisco: Sierra Club Books.

Wild Earth Update



While *Homo sapiens* may indeed be biophilic or even geophilic, one may struggle to believe it when looking out a window in, say, Paramus, NJ. Still, the seeds of North American wilderness recovery lie in the fertile soil of many conservationists' imaginations. Bill Willers challenges us [The Archipelago Idea] to envision a future, happier, wilder time when humans need no bumper stickers (nay, nor even bumpers) proclaiming "Reverse the Matrix" and "Wilderness is What the World Should Look Like" for again they inhabit communities grounded in and surrounded by wildness.

I dare say that most conservationists affiliated with *Wild Earth* and The Wildlands Project are working toward such a time primarily for ecological, not cultural reasons; we place value on the diversity of life and see establishing a nature reserve network as the best practical, on-the-ground strategy to protect pronghorn, pearly mussels, and panthers. As our vision becomes reality, however, and a continental ecological reserve network is implemented [TWP Regional Reports] during the coming decades and centuries, the incidental societal and aesthetic gains could be substantial. Think of it: our own biophobic—*life-hating*—culture gradually overgrown and transformed by humility and wildness into a post-Leopoldian society wherein "the integrity, stability, and beauty of the biotic community" is fundamental. Which is to say, really, that the right to "life, liberty, and the pursuit of happiness" is extended to all our North American relations.

That truly is a beautiful thought. And so, while *WE* will continue to make the *ecological* case for big wilderness, we'd welcome activists primarily concerned with cultural and aesthetic transformation to the ranks of wildlands advocates. Political reformers, bioregionalists, ecological economists, simple livers, green religionists—even pro-beauty crusaders (beauticians?)—should join the cause. In hopes of stimulating this nascent movement, I hereby nominate David Brower, a man whose thoughts, writings, and actions are infused with the word, as our standard bearer for *beauty*. Let the party (Beautiful Piece of World) be organized, let the platform (Global CPR) be drafted, let the campaign begin—Brower for President in 2000.

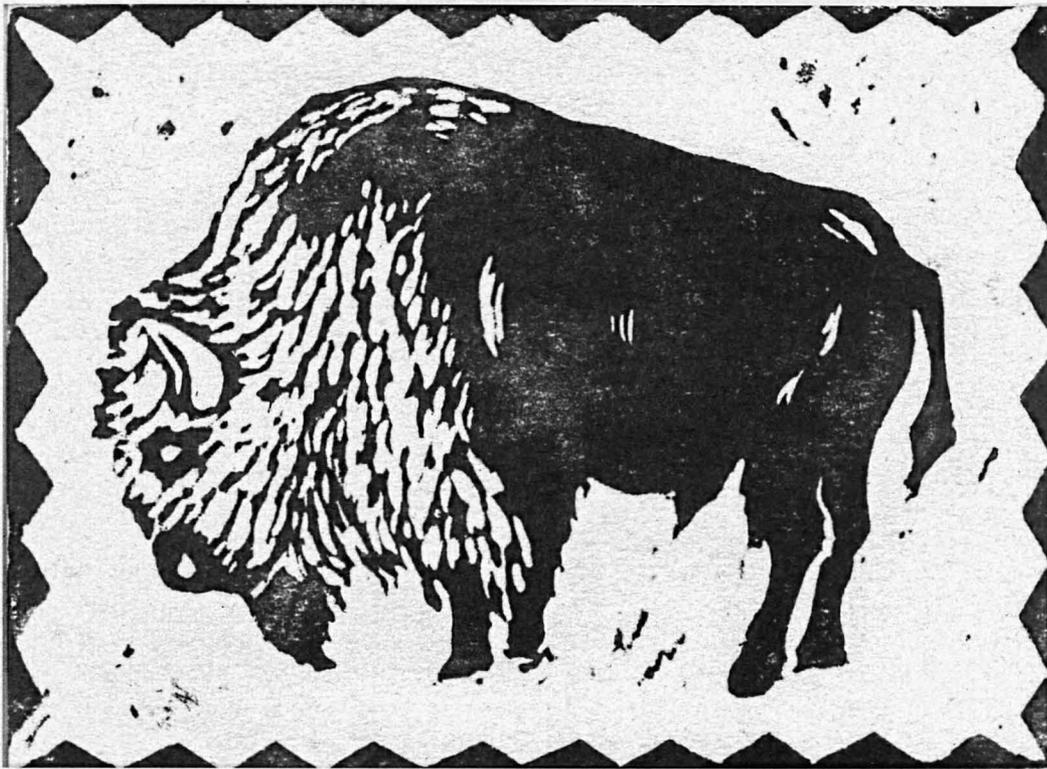
—Tom Butler

Thanks again to all of you who responded to *Wild Earth's* annual fundraising appeal. Each year we are inspired by our readers' generosity. We are also grateful to everyone who sent gift subscriptions of *Wild Earth* to friends and family for the holidays. Gift subscriptions not only help us spread the word about our vision of North American wilderness recovery, they also directly increase our number of supporters.

Thanks also to readers who contacted us after receiving the winter 1997/98 *Wild Earth* focused on human overpopulation. Although most of the comments were positive, population continues to be frustratingly controversial. For those of you interested in remaining up-to-date on the debate, the latest issue of *Wild Duck Review* is dedicated to further discussion of population concerns from an ecological perspective. A dinner and press conference were held in San Francisco at the end of February to announce the release of this special issue, with articles by or interviews of Dave Foreman, Gary Snyder, Arne Naess, Joanna Macy, George Sessions, Stephanie Mills, Charlene Spretnak, and others. A single issue costs \$4 and can be ordered from *Wild Duck Review*, 419 Spring St., Suite D, Nevada City, CA 95959; 916-478-0134.

One last note: if the amount of time we spend on the phone is any indicator of growing influence, this journal is becoming powerful indeed. As a thank you to all who have supported *Wild Earth* through the years despite annoying voice mail and busy fax signals, we have decided to splurge and get a second phone line. All faxes should now be sent to 802-434-5980. We look forward to hearing from you!

—Monique Miller



Science may be able to tell us that cows trampling a riparian zone results in fewer fish in our streams, or that logging old-growth forests causes spotted owls to go extinct, but whether that is perceived as a

problem or not depends upon one's values—and these values are shaped by the stories we use to guide our lives.

THE MYTHS WE LIVE BY

by George Wuerthner

A few years ago, I spent an entire day in Yellowstone National Park with one of the most outspoken critics of the park's wildlife policies. He believed park officials were guilty of malfeasance for permitting elk and other wildlife to self-regulate their populations. Such a policy, he felt, was destroying the park's vegetation and jeopardized the park's landscapes. Although I had been to Yellowstone many times, my own observations didn't jibe with his perspective. So, thinking that perhaps I was missing something, I asked him to spend a day with me in the park and make his best case, an invitation he eagerly accepted.

As we wandered the northern range looking at plants and talking about management policies, I began to learn his "story" of people and Nature in the West. It became evident to me that the park's natural regulation policy, the root of the elk "problem" he perceived, actually represented a deeper, more fundamental challenge to his belief system. What he really didn't like about Yellowstone is that Nature appeared to be out of control—specifically, beyond human control.

He didn't like it that elk died from starvation or were killed by bears and wolves, and thus "were wasted"—unavailable to be taken by hunters and consumed by people. And to let "timber" (rather than trees) burn up in fires seemed to him to be the equivalent of a Holocaust against forests. As he explained to me while we were driving back to Bozeman, "God put those trees on the hillside for people to use and to just let them rot or burn up is going against His teachings."

illustration by Lezle Williams

His views on Nature, particularly their obvious religious foundation, may represent the extreme end of a particular perspective, but are not, at their heart, all that uncommon. Indeed, to one degree or another his perspective represents the dominant worldview of most natural resource managers, loggers, ranchers, miners, and other commercial users of the land. Their livelihoods depend upon control and manipulation of the land and its wildlife to meet human ends. All require a "domestication" of the landscape.

This is distinctly different from the goals of wildlands preservationists who seek to protect or restore self-generating and self-regulating landscapes and wildlife populations. Wild landscapes are those where human control and manipulation are minimal; as such, they threaten the values of those who seek to domesticate our forests and grasslands. These divergent views on how the world is ordered, and how humans fit into that world, are at the core of most environmental conflicts.

The controversy over wolf restoration exemplifies the divergent parables. Anyone who sees this debate as solely about biology or economics misses a very important point: Ranchers and others who advocate human control of the landscape fear the wolf not only because it may occasionally consume one of their cows or sheep, but also because it represents a challenge to the dominant cultural myth of the Western Frontier—a bucolic agricultural landscape where livestock are tended by "hard-working" cowboys.

While conservationists may base their advocacy of wolf recovery primarily upon ecological arguments, for many, wolf restoration is also an attempt to "rewrite" the story of the West. It requires humans to give up willingly and freely a certain degree of control and manipulation of the land. Thus, wolf restoration is accurately viewed by wolf opponents as a direct attack upon the dominant parable that organizes their lives. The passions that lie behind the battle over wolf restoration are so fierce because they involve fundamental assumptions about the human-Nature compact.

Ironically, although this conflict (like most other natural resource conflicts) is primarily about *values*, wolf advocates and opponents both extensively rely upon scientific studies to bolster the legitimacy of their positions. Unfortunately, this debate cannot be resolved by science. Decisions about wolf restoration, whether to graze cattle in the arid West, whether to kill bison outside of parks, whether to log forests to "save" them, or "protect" landscapes as "wilderness," and other current controversies are, at their roots, debates over the stories we want to tell

ourselves. We may give science a holy place at the altar, but in reality, what guides our decisions and fuels our passions are the myths we live by. Science may be able to tell us that cows trampling a riparian zone results in fewer fish in our streams, or that logging old-growth forests causes spotted owls to go extinct, but whether that is perceived as a problem or not depends upon one's values—and these values are shaped by the stories we use to guide our lives.

Certainly, science is a powerful tool to help us see connections and relationships; but it is the vision and the way it is interpreted—not the science—that will capture people's hearts, and ultimately their minds. Because many environmental issues involve deeply held ideas about our perception of Nature and the human relationship to the natural world, the idea that science and rational debate can sway the outcome seems a bit optimistic, perhaps even naive.

Rather, it may be the poets, musicians, writers, and artists who will communicate a new vision of the American West as a place where people live among bison herds, streams full of trout flow without being dewatered, and wolves are more than token animals in a few National Parks. It is the *storytellers* who ultimately may change the Western parable, and thus, our relationship to the land and Nature. ■

George Wuerthner (POB 1526, Livingston, MT 59047) is a wilderness explorer and writer. His books include The Adirondacks: Forever Wild, Oregon Mountain Ranges, California's Sierra Nevada, and several others in the American Geographic Series (American and World Geographic Publishing, POB 5630, Helena, MT 59604). His new book, The Grand Canyon: A Visitor's Guide, will be published by Stackpole Books in June 1998.

The Archipelago Idea

by Bill Willers

*In what I have come to see as an ecologically "ideal world," human settlements form an archipelago of urban or agricultural islands, connected by transportation and communication routes, but set within a matrix of wild country...landscapes in which natural vegetation and animal life can continue to thrive without dependence on human assistance or interference.**

—Raymond Dasmann

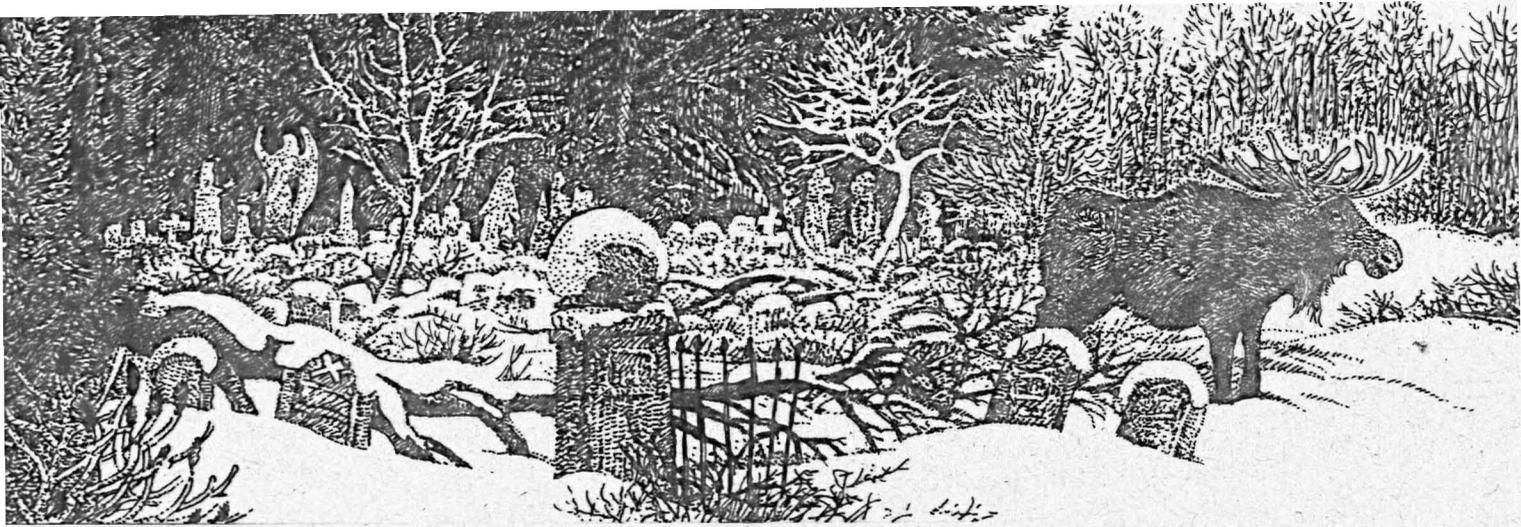
A matrix of wild country without human interference; what a fine thought. As it happens, though, the present pattern is the precise opposite of what it has been throughout the ages and of what, in the best of scenarios, it will be once again. Where once humanity existed within a matrix of natural process and the "wildness" that implies, our grossly modified and organically simplified environment has expanded to become the matrix. As a result, islands of Nature—parks, preserves, and the like—exist in a vast sea of agricultural lands, settlements, and road networks. So perverted have the concepts of wilderness and wildness become in the larger culture that a "wilderness" now can be (technically, officially) a tiny blip on a map, simply because a government has legislated it so.

For those intent upon a restoration of truly wild conditions, the fundamental question boils down to how best to get back to wildness-as-matrix, and for that to take place, re-establishing connectivity becomes the essential task. No matter how high the biological quality of a given area—park or preserve—might be, and no matter how stringent its protections, without connection to other biologically similar areas, it remains simply an island, genetically isolated and severely limited in evolutionary potential. For this reason, the core-buffer-connectivity model—principle elements in what conservation biologists often refer to as a "bioreserve strategy"—now serves as a conceptual framework guiding many who work for a return of wild conditions on grand scale.

It would be easy for anyone intent on attacking the bioreserve strategy to argue that it is merely another management scheme. Doesn't Dasmann refer to an "ideal world"? Isn't the core-buffer-connectivity concept itself often referred to as a "model," a word having a distinctly managerial ring to it? Nevertheless, rather than a management scheme with some intended anthropocentric result, establishment of an ecological reserve network represents our best path toward a condition in which landscapes can again exist as "self-willed." The vision of wilderness cores surrounded by protective buffers and connected by habitat corridors that function as two-way genetic rivers, taken to a logical and sufficient extent, could yield a pattern of human settlements as archipelagos in a wild matrix. This would restore a pattern in which humans might exist in a healthy relationship with the wild world.

Philosopher Jack Turner has aimed his pen-as-Uzi at The Wildlands Project (which advocates for a continental scale bioreserve strategy), calling it "a vision of hell (based on) scientific management ideology" that would yield "the largest artificial structure on the planet." How sad. Correct about much, here he misses completely. Much, perhaps most, of what Turner detests about our relationship with the natural world is *control*. In this respect, he mirrors the sentiments of a large proportion of the activist world, and of many biologists as well. For some reason, though, he associates the concept of core-

*Dasmann, Raymond F. 1994. Some Thoughts on Ecological Planning. In Aberley, Doug, *Futures by Design*. Philadelphia: New Society Publishers.



buffer-connectivity with platoons of control freaks monitoring every aspect of the lives of resident wildlife—something most emphatically *not* central to the concept. That bureaucratic managers might want to employ invasive management practices such as radio-collar monitoring of resident creatures may well be true. That, however, is an issue distinctly separate from the concept itself, and a problem requiring a separate set of solutions.

Core-buffer-connectivity is a simple model, and general enough that those who dwell on it at length may vary one from another regarding details. Many consider its most important trait to be its anti-managerial aspect, particularly those people whose attraction to the model derives from concerns about diminished evolutionary potential. A return to self-willed conditions is a principal aim of proponents, and that certainly does not mirror a managerial mindset. In fact, the concept of the core area, as much as anything, is analogous to the “sacred lands” of some indigenous groups.

In any event, the bioserve model is not necessarily intended as the climax scenario for all eternity. It does, however, seem a logical and necessary step *toward* any world in which the “merger, not separation” for which Turner claims to long can become reality. Such a strategy can conceivably get us through a god-awful situation until, at some happy future time, the human population has diminished to a sane level and lifestyle, whether by internal decision or external force. Turner, who sees The Wildlands Project plus 100 million more citizens as a nightmare, would do well to envision the situation *without* protections afforded by core-buffer-connectivity. Our species, in the midst of what is likely the greatest population overshoot in planetary history, is presently increasing at the rate of two million a week, even as what we once called “third world nations” are now deemed to be “emerging nations,” i.e., emerging toward our level of consumption. This is hardly a recipe for any “merger” with wild Nature outside of some idealized ivory tower argument.

Turner holds up the Juwa Bushmen, who live with and dance for lions, as a model to which we should aspire: “There’s no reason why we can’t have a dance with grizzlies, cougars, and wolves.” Well—sure there is, if North America is to be home to hundreds of millions of technopeople with their cities, farms, highways, and shopping malls—and that is indeed where we’re headed at breakneck speed. Shouldn’t it be obvious that the Juwa Bushmen evolved their dance in a low-population, low-tech environment not even remotely like our own? Right now, the best dance we could have with cougars and grizzlies and wolves would be one putting considerable and respectful distance between them and us on this grossly overcrowded global dance floor.

Conservationists should recognize the war against wildness as just that, with bulldozers rather than rockets assaulting wildlands, and a relentless onslaught of brilliantly crafted propaganda being aimed at advocates for wildness. At present, the forces that have been able to buy the greatest amount of political clout and media attention have clear advantage. When your door has been breached and the enemy is pouring into the living room, it’s not the best time to pen essays on some idealized peaceable kingdom. At that point, one is in a war whether one likes it or not, and a good strategy is in order. In the end, core-buffer-connectivity is the best model we’ve got to protect and restore wildness—and yes, the freedom from control that wildness implies—from the rapidly oncoming steamroller of human fecundity plus globalized western culture. Simply to trash the concept is to pillory the Dutch Boy for not having a more philosophically correct thumb. ■

Bill Willers (Biology Dept., UW-O, Oshkosh, WI 54901) is professor emeritus of biology at the University of Wisconsin-Oshkosh, former director of Superior Wilderness Action Network (SWAN), and editor of Learning to Listen to the Land (Island Press).

Electric Restructuring

Peril and Possibility for Wildlands Protection

by John Clark and Alexis Lathem

Earlier this decade, when the US Congress passed the omnibus Energy Policy Act of 1992, it set the stage for an extraordinary overhaul of the nation's system for generating, transporting, and marketing electricity. Competition is coming to the electric power business, one of the longest standing monopolized industries in US history.

Most discussion about utility deregulation and restructuring has centered on the supposed benefits to ratepayers. Will electric bills really go down, as the utilities suggest? Citizens have good reason to be skeptical about such claims from an industry so fraught with mismanagement, fiduciary scandals, and environmental problems. And

whether or not electricity costs will be lower on the *consumer* end, will restructuring cause higher ecological costs on the *production* end?

No one is asking the obvious question: Why do the most powerful players in the electric industry—at \$200 billion a year, it is the largest business in the US—want to deregulate? What do the power companies see in a deregulated future that makes them anxious to overturn a structure that has kept them profitable, unchallenged by competition, for decades? The answer: elimination of environmental regulations on electricity generation, and the pot of gold awaiting utilities that get to the end of the rainbow first.

As the brave new deregulated world approaches, utilities are preparing to operate in the cut-throat arena of supply-side competition. As with deregulation of the airline, telecommunications, and trucking industries, cutbacks, layoffs, mergers, and liquidation of assets are likely. With NAFTA and GATT accelerating the movement toward economic globalization, only the leanest and meanest power producers will survive.

The silver lining of electric utility deregulation may be the early retirement of some nuclear power plants (as has occurred

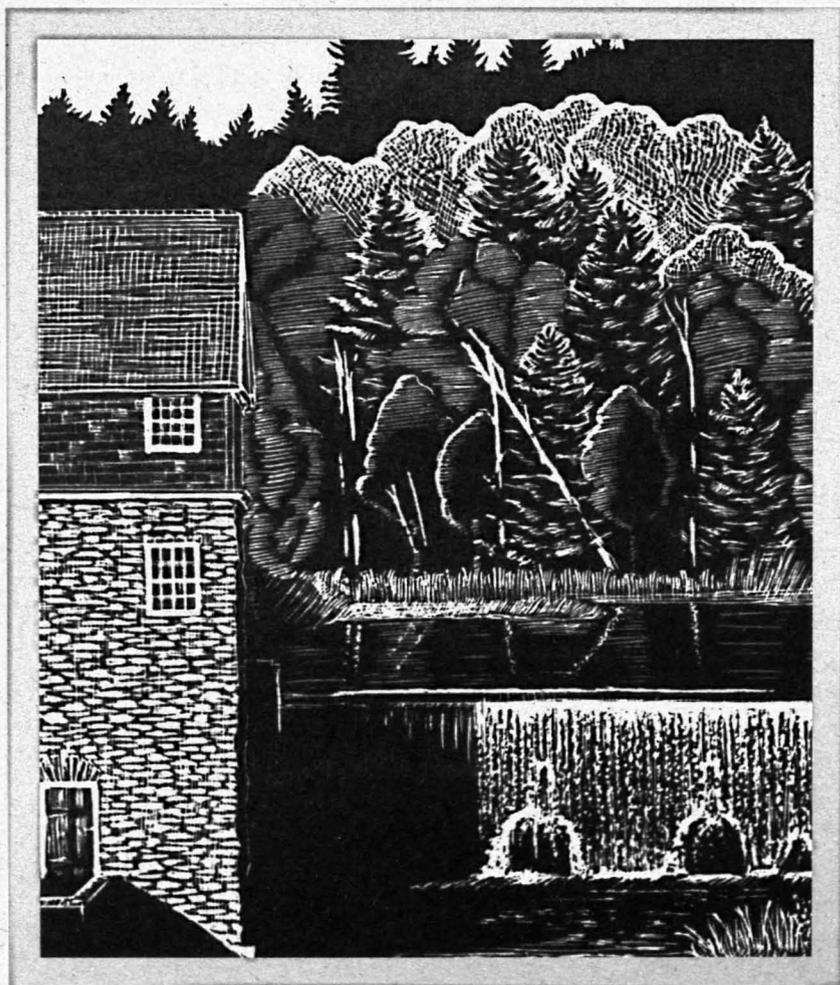


illustration by Sarah Lauterbach

in New England and Ontario); the closing of decrepit, aging coal-fired clunkers such as the country's oldest operating power plant (whose owner, Rochester Oil, Light, & Gas, recently announced its closing); or new possibilities for renewables and efficiency. Meanwhile, the dark clouds on the horizon are just coming into view:

First, the majority of the states that have passed restructuring legislation have ceded the burden of environmental protection to the federal government. That is, the states are transferring regulatory oversight of power production to a legislative body that has lately sought to gut environmental regulations, lower air quality and clean water requirements, and give tax breaks to polluters. Can we realistically hope that Congress will enforce existing standards and laws, let alone strengthen them?

Second, the assumption that many consumers will choose a Nature-friendly energy source over the cheapest rate, and thereby drive the industry toward more benign practices, is overly optimistic. The enormous popularity of Wal-Mart and McDonald's belies this view. To educate consumers, poorly funded environmental advocacy groups will have to compete with the deluge of fraudulent advertising paid for by industry—in which nuclear, oil, and Hydro-Quebec power (produced at tremendous ecological cost to the wild rivers and lands of northern Quebec) are all marketed as “green” sources of energy. And of course, the consumer can only make the environmentally sound choice if it is offered.

Third, deregulation will soon lead to a massive sell-off of utility-owned river corridors and other forest lands that are then likely to be heavily logged or subdivided unless conservationists seize the opportunity to purchase and protect them.

WATER AND FORESTS

Water seeps. Water ponds. Water streams and flows. Until it hits a dam. Utilities that own hydroelectric dams do not simply operate the concrete blockages in rivers; they may also control flow levels and own large parcels of surrounding forest lands that help maintain consistent water levels. That is, they manage the larger resource—the watershed.

Electric utilities probably own millions of forested acres nationwide, much of which was taken by eminent domain. As it has been in their interest to protect the forests and shorelines of the waterways where their hydro-facilities are located (management practices promoting increased siltation and run-off would not lead to long-term profitability), these forests may have been largely untouched for generations, or only slightly impacted by logging or recreational use. Some may contain mature or old-growth stands.

Preparing for the pricing wars to come, the utilities will see these “intangible assets” as costly burdens on the bottom line. Realizing that the purchase of a utility's assets includes taxed but financially unrecognized land holdings, new owners will be sure to rid themselves of these burdens.

Pacific Gas & Electric (PG&E) offers an example: the huge California utility recently sold 10,000 acres of prime forest land to the notorious timber company California Pacific Resources, which subsequently commenced heavy cutting. While the sale was sure to boost PG&E's bottom line and competitiveness, local communities, the forest—and the critters who called the forest home—were the losers.

New England provides another example, with a somewhat happier outcome. Last year Vermont, New Hampshire, federal regulators, and 16 environmental organizations signed a conservation agreement with New England Power Company (NEP) of Massachusetts that placed restrictions on 11,000 acres of utility land; the deal also established mitigation funds, minimum flow requirements, and operational conditions to protect aquatic habitat. In exchange, these signatories agreed not to oppose the re-

Deregulation will soon lead to a massive sell-off of utility-owned river corridors and other forest lands.



licensing of NEP's Fifteen Mile Dam on the Connecticut River. (NEP also recently negotiated a similar agreement regarding its dams on the Deerfield River in southern Vermont and western Massachusetts.) Not long after these agreements were signed, and with re-licensing in hand, NEP sold its hydro-facilities, as required under deregulation legislation. The buyer? Pacific Gas & Electric. While PG&E is required to respect the existing agreements, the fate of additional land not covered by easements is still uncertain.

Hydro-facilities on Maine's Androscoggin and Kennebec Rivers are going through a similar transfer of ownership. As in Massachusetts, the Maine legislature mandated that utilities unload their electric generation assets as part of a statewide restructuring bill. In response, Central Maine Power has recently negotiated a deal to sell its generating plants to a subsidiary of utility giant Florida Power & Light, FPL Group.

The proposed buyer, however, apparently does not want to buy land and water rights that accompany ownership of the hydro dams. These include the Mooselookmeguntic, Richardson, Flagstaff and Moosehead (both in Kennebec watershed), Rangeley, and Umbagog lakes and 6500 associated acres—all in western Maine. The future of the flooded lands and forested bottom lands of the watershed, once considered vital to the operation of the hydro-facilities, is in suspense. Fortunately, some local citizens and legislators are concerned about the future of these lands whose "protection" had been taken for granted until recently. Another Maine utility, Bangor Hydro (whose dams are on the Penobscot River) has yet to find a buyer for its dam complex.

Further north, Hydro-Quebec, the provincially owned utility behemoth, has announced intentions to divert eight wild rivers including the Great Whale, Rupert, and headwaters of the Moisie in order to meet projected US demand for power after deregulation. Hydro-Quebec hopes to become one of the four or five dominant players—competing with PG&E, ENRON, General Electric, BC Hydro, FPL Group, Duke Power, and other industry titans—in a deregulated North American energy market. Hydro-Quebec's proposed expansion of an already colossal hydro system into undeveloped regions will encourage new logging, mining, and associated industrial development as the frontier is pushed back into northern Quebec and Labrador, eastern North America's grandest remaining wilderness.

With these thoughts in mind, conservationists should be alert to both the dangers and opportunities

presented by the profound changes sweeping the electric industry. Although some New England states and California will be the first to deregulate, over a dozen states have already passed restructuring bills, and virtually every state legislature and the federal government will be debating similar legislation this year. While the divestment of utility-owned forest lands is cause for concern, it also presents an incredible opportunity for conservation buyers, both public and private. But if conservationists are to acquire and protect these lands, we will need to act quickly.

Electric restructuring has not yet received from conservationists the attention it deserves. Although proponents have argued that consumers will be given the "power of choice," renewable or truly green power alternatives will likely suffer in a deregulated market without strong legislative protections. Consumers will be increasingly distanced from the source of their electricity, and the ecological consequences of our consumption will be pushed away from public consciousness—and further into the Earth's remaining wildlands. Still, electric restructuring provides a narrow window of opportunity for legislative reform. Now is the time when activism is most needed—and can be most effective. Whatever the outcome of electric restructuring, the consequences for the Earth will be enormous. ■

John Clark is chair of the Vermont Consumers' Coalition for Energy Responsibility. Clark and Alexis Lathem also serve as coordinators of Friends of Nitassinan (POB 804, Burlington, VT 05402; 802-425-3820 phone/fax; egebroe@zoo.uvm.edu), an international support network for the Innu people of the Quebec-Labrador Peninsula (Nitassinan) who are struggling to defend their homelands from industrial intrusion.

The need to rapidly assess the current status of lands managed by electric utilities is urgent. Compiling data regarding deregulation time-lines and lands likely to come on the market is a first step.

If you have such information on your bioregion, or are interested in incorporating this research into a regional conservation strategy, please contact John Clark at Friends of Nitassinan (address above).



CORING CONTROVERSY

As a dendrochronologist, that is, a person who investigates a variety of phenomena through tree rings, I need to respond to the article, "CAUTION: Increment Boring Is Hazardous To The Health Of Trees" [by Paul Kalisz and Amy Carrico, *WE* spring 1997]. I think that the article treated a complex subject cavalierly and irresponsibly. The authors suggest, without qualification, that increment boring always leads to decay and shortened lifespan in any tree sampled in that way. They say that "common sense" suggests this, and that "the scientific literature supports these common sense expectations" and that increment boring "sacrifices trees" (1). But does the literature support their expectations (which have little to do with common sense, in my opinion)? The answer is "NO," as I will document below.

I admit that wounds can (but not necessarily will) lead to decay in trees. This needs to be put into perspective, however. First, wounding and decay occur naturally in trees, so even if (as the authors imply), increment boring inevitably resulted in decay (it does *not*), it would be a minor addition to a pervasive natural

process. Of the hundreds of previously unbored trees that I have cored in my career, a large percentage already had some degree of heartrot. Of course, dendrochronologists preferentially sample the oldest trees, which could be expected to have already developed heartrot naturally.

A fact not even hinted at in the article is that some species are far more susceptible to wounding than others, and by chance or design Kalisz and Carrico deal with the most vulnerable, such as American beech, trembling aspen, birch, cucumbertree, sugar and red maple, and basswood. The unusual vulnerability of these species to decay is well known, but even these might be cored without creating decay if rigorous precautions were taken (2). In any case, *none of the species mentioned are important for dendrochronology in the USA*, a fact conveniently ignored by the authors. The Europeans do use their beech (*F. sylvatica*) for dendrochronology and have learned to cope with decay problems (2). So the problem that Kalisz and Carrico see is confined mostly to species of no interest to dendrochronologists, and in



fact is *not a big problem with most tree species*. They do not even address the susceptibility to decay of Gymnosperms (conifers), probably because they know it to be low in many Gymnosperm species (3).

Why don't all trees display the extreme sensitivity to decay of the species selected by Kalisz and Carrico? The fact is that most tree species have the ability to compartmentalize decay with physical and chemical barriers (4,5,6). The real mystery is why a few species don't do this as well as all the others, but the most important species for dendrochronology, both Angiosperms and Gymnosperms, apparently have this capability. In some cases dendrochronologists have sampled and resampled the same individual trees over periods of decades and have not seen damage. The Forest Service rou-

tinely samples all the trees on fixed plots (Continuous Forest Inventory, or CFI) and any induced decay problems would defeat the whole purpose. Some trees used in fire history studies have been scarred repeatedly for centuries, yet remained free of decay (7).

The authors admit that the knowledge of climate and ecology gained through dendrochronology is "important," but claim that opportunistic sampling of dead trees and estimates of age are as good as systematically acquired, accurate data. That may be true if all you want to do is say, "That's an old tree." If you want to study climate (8), fire history (7), ecology (9), or the chronology of historic (10) or prehistoric (11) structures, you must see and measure the rings in both living and dead trees.

An additional consideration is that the abil-

ity to accurately document advanced age may be critical for conservation of old growth. For example, our work (12) with Black River, NC baldcypress (*Taxodium distichum*) led to an appreciation of the area that has resulted in its protection (13). Previous vague estimates of age had not convinced people, although the trees were believed to be "old." Also, many very old trees do not look old to the public because the trees are small. For example, we hope that our ability to conclusively demonstrate maximum ages approaching 400 years and the scientific usefulness (14) of small post oak (*Quercus stellata*) trees in the Crosstimbers of Kansas, Oklahoma, and Texas will result in the preservation of some part of that ecosystem (15).

Do we really need to know more about past climate or ecological processes? This knowledge may be critical to our appraisal of global change and ecosystem stability. Do we really need to know that some small, twisted trees are 350 years old beyond any shadow of a doubt? I think there is no doubt that this is valuable information for many reasons. At the very best, Kalisz and Carrico are far too alarmist and far too inclusive in their condemnation of increment boring. At worst, they will

have done extremely great harm to science if people unquestioningly accept the misleading information in their article. For example, the summer 1997 issue of *Appalachian Alternatives* included (without comment) a copy of Kalisz and Carrico's article, so the damage has already begun.

—Malcolm Cleaveland,
Associate Professor of
Geography, University of Arkansas,
Department of Geography, 108A Ozark
Hall, Fayetteville, AR 72701

References

- (1) Kalisz, P. and A. Carrico. 1997. CAUTION: Increment boring is hazardous to the health of trees. *Wild Earth* 7:29-30.
- (2) Thiercelin, F., M. Arnould, F. Mangelot and H. Polge. 1972. Alterations du Bois provoquées par les Sondages a la Tariere. Leur controle. [Changes in wood caused by increment borer damages. Their control.] *Annales Sciences Forestieres* 29(1):107-133.
- (3) Jaeger, T.A. 1970. Increment borer damage and its control: A review of the literature. *Canadian Forestry Service Publ. No. 1270*. Ottawa, Ontario: Dept. of Fisheries and Forestry. 18 p.
- (4) Shigo, A.L. 1983. Tree Defects: A Photo Guide. *General Technical Report NE-82*. Delaware, OH: USDA Forest Service Northeastern Forest Experiment Station. 167 p.
- (5) Shigo, A.L. 1984. Compartmentalization: A conceptual framework for understanding how trees grow and defend themselves. *Annual Review of Phytopathology* 22:189-214.
- (6) Shigo, A.L. and H.G. Marx. 1977. Compartmentalization of Decay in Trees. *Agriculture Information Bull. No. 405*. Washington, DC: USDA Forest Service. 73 pp.
- (7) Stokes, M.A. and J.H. Dieterich, Technical Coordinators. 1980. Proceedings of the Fire History Workshop, Oct. 20-24, 1980, Tucson, AZ. *General Technical Report RM-81*. Fort Collins, CO: USDA Forest Service Rocky Mountain Forest and Range Experiment Station. 142 pp.
- (8) Cook, E.R., D.M. Meko, D.W. Stahle and M.K. Cleaveland. 1996. Tree-ring reconstructions of past drought across the coterminous United States: Tests of a regression method and calibration/verification results. In: Dean, J.S., D.M. Meko and T.W. Swetnam, eds., *Tree Rings, Environment and Humanity*. Tucson, AZ: Radiocarbon. p. 155-169.
- (9) Fritts, H.C. and T.W. Swetnam. 1989. Dendroecology: A tool for evaluating variations in past and present forest environments. *Advances in Ecological Res.* 19:111-188.
- (10) Stahle, D.W. 1979. Tree-ring dating of historic buildings in Arkansas. *Tree-Ring Bull.* 39:1-29.
- (11) Dean, J.S. 1969. Chronological Analysis of Tsegi Phase Sites in Northeastern Arizona. *Laboratory of Tree-Ring Res. Papers No. 3*. Tucson, AZ: Univ. of Arizona Press. 207 p.
- (12) Stahle, D.W., M.K. Cleaveland and J.G. Hehr. 1988. North Carolina climate changes reconstructed from tree rings: A.D. 372 to 1985. *Science* 240:1517-1519.
- (13) Earley, L.S. 1990. Clues from the Methuselahs. *Audubon* July:68-74.
- (14) Stahle, D.W. and M.K. Cleaveland. 1988. Texas drought history reconstructed and analyzed from 1698 to 1980. *J. of Climate*. 1:59-74.
- (15) Therrell, M.D. 1996. A Predictive Model for Locating Ancient Forests in the Cross Timbers of Osage County, Oklahoma. M.A. thesis. Fayetteville, AR: University of Arkansas. 76 pp.

**PAUL KALISZ
RESPONDS**



Malcolm Cleaveland interpreted the article "CAUTION: Increment Boring Is Hazardous To The Health Of Trees" as intentionally biased, and as a personal attack on dendrochronologists and others who routinely collect increment cores from living trees. This was not our intention. We did not "conveniently ignore" studies that showed that increment boring was benign, nor is it true that "They do not even address the susceptibility to decay of Gymnosperms (conifers), probably because they know it to be low in many gymnosperm species." We did not selectively edit the literature, but simply searched computer databases available at the University of Kentucky for the terms INCREMENT BORING and INCREMENT CORING, and reported the results. Since the 15 references in Cleaveland's commentary on our paper include no new literature citations on the effects of increment boring, and

provide no information contrary to what we found, I assume that our search was reasonably thorough. Oaks or pines were not mentioned in our paper because we found no studies dealing with these species, not because we intentionally excluded them from consideration.

Cleaveland's statement that increment boring "is a minor addition to a pervasive natural process" is misleading since it implies that humans understand more about ecosystems than they really do, and since it assumes that increment boring mimics natural wounding processes. In reality, natural wounding processes often take place over relatively long periods of time (e.g., degradation and decay of a dead branch), influence only a few trees in a stand (e.g., excavations by animals), or only affect the surface of the tree or the exterior portion of the wood (e.g., scarring by fire). Increment boring, on the other hand, occurs nearly instantaneously, affects many individuals in a stand (often with multiple cores taken from each individual tree), and opens channels from the bark surface to the center of the tree. Decay resulting from wounds that are confined to the outer portions of the tree may

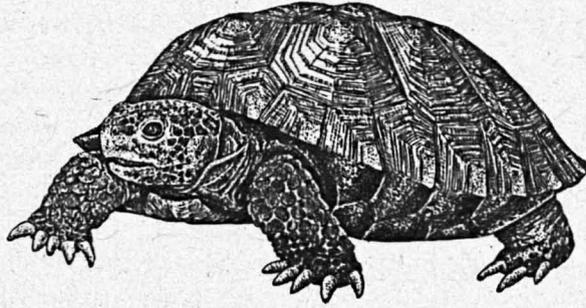
be compartmentalized in the sapwood, but decay resulting from wounds that extend into the interior of the tree cannot be compartmentalized in the heartwood since cells are dead and contain relatively small amounts of the enzymes that counter decay processes. This suggests that the ecological effects of increment boring are neither "minor" nor "natural."

As stated in our paper, we believe that increment boring may "provide information that is essential, or at least useful, to the preservation and management of forests." This implies that in some special cases, boring of living trees may be justifiable. We do not, however, feel that the examples given in Cleaveland's letter represent such special cases: boring numerous living, old-growth bald cypresses in North Carolina and post oaks in the Crosstimbers simply to "conclusively demonstrate maximum ages" seems unnecessarily invasive. The same information could almost certainly have been obtained by boring dead trees.

To bore or not to bore? This is a question that can only be answered on a case by case basis. Our preferred default position is to favor less invasive and less potentially harmful

techniques over increment boring, and to favor boring only dead trees over boring living trees. We feel that this is a conservative and common sense approach. Think about a tree that is near and dear to your own heart—given a choice, would you let Malcolm Cleaveland bore this tree?

—Paul Kalisz,
*Associate Professor of
Forest Soils & Silviculture,
University of Kentucky,
Department of Forestry,
205 Thomas Poe Cooper
Bldg., Lexington, KY
40546-0073*



FIRE FIGHTING

After reading Robert Hunter Jones's article "National Park Service Prescribed Fire in the Post-Yellowstone Era" [WE fall 1996 and summer 1997], I felt compelled to write a short response. Most of my concerns relate to the first section on the Nevershine Complex. I was the initial attack incident commander on the Nevershine and became the resource advisor to the Incident Management Team that assumed responsibility for fire suppression operations after the second day. I spent ten years on hand crews and engines prior to becoming BLM's desert tortoise specialist for the area.

Jones writes, "The ostensible reason for fighting these fires is to 'protect' the habitat of the Desert Tortoise, an endangered species. The only example of that retiring reptile any firefighter will see on the Nevershine will be the one run over by a show-

er truck en route to a fire camp that, in a saner world, would not have been organized in the first place" (emphasis added).

The Nevershine Complex fires occurred in the Pakoos Basin, which is the extreme northeastern portion of the Mojave Desert. Unlike most of the west, the Mojave is not a fire-dependent or even a fire-tolerant ecosystem. Prior to the arrival of European settlers, who brought cheatgrass with them, fires in the Mojave were relatively few and small. The Mojave was characterized by widely-spaced shrubs, with little, if any, vegetation in the spaces between those shrubs. During the spring of each year there can be a flush of desert wildflowers in these open areas, but the plants dry up and blow away after flowering, leaving little or no fuel.

Cheatgrass grows through the winter and early spring, based on the amount of available soil moisture. It goes to seed in the spring, and

quickly dies and cures. Cheatgrass cures standing, meaning that after it goes to seed the plant dries up but remains mostly intact. The exotic plant is fire-adapted, and at a sufficient density provides a continuous fine fuel that carries fire through the desert shrubs. The thickest cheatgrass is directly under the shrubs (usually creosote or white-bur-sage) where there is more organic matter and moisture than out in the interstitial spaces.

The native desert shrubs are not fire-tolerant. These plants have a very thin bark and little or no underground storage, like the root bolls of scrub oak and manzanita. Although capable of recovering from low intensity fires, moderate or high intensity wildfires generally kill these natives.

* After a wildfire, the natives are gone, and may take decades to return. The cheatgrass, whose seeds have survived the fire, return the next year. Using the organic material in the ash, the cheatgrass quickly dominates a burned site. There is no shade, no cover from predators, no diversity. The natives are gone, replaced by a few exotics that tend to cure out in the spring and summer, leaving little

forage for the surviving animals. The native Mojave Desert has been converted to a Eurasian Steppe. The site becomes dominated by cheatgrass and will, under the right conditions, burn again and again, spreading out into the adjacent desert scrub like cancer.

Webster's defines *ostensible* as apparent, seeming, or professed. The real reason, the only reason, that we fight fires in the Mojave is to minimize this type conversion of this ecosystem. In other vegetation types, such as Great Basin sagebrush or in pinyon-juniper woodlands, we have moved toward allowing fire to play its natural role. We believe that our strategy is soundly based on ecological principles, not merely knee-jerk reactions to fire.

Additionally, we have taken an extreme proactive position with regard to protecting tortoises from fire suppression activities. We were the first Federal agency to consult, before a fire occurred, with the US Fish and Wildlife Service on our fire suppression plans. In addition to using Minimum Impact Suppression Techniques specifically tailored to the Mojave, we provide extensive briefings to the crews and overhead on desert wildfires, desert

tortoises, and how to minimize the impacts of suppression operations.

A desert tortoise was run over by a fire suppression vehicle, but it wasn't a shower truck. Five desert tortoises were reported by firefighters on the Nevershine Complex. A tortoise was moved out of the way of a truck hauling water to the camp. As part of our mitigation we had biologists preceding vehicles in and out of camp. The tortoise that was crushed was killed by a vehicle traveling to the line. Unfortunately, multiple fires burning within a 200,000 acre basin stretched our resources so that we could not precede every vehicle. We did provide extensive briefings to the crews and support folks (and continue to do so on new fires) on why we fight fires in the desert and how to minimize impacts.

I didn't understand Jones's statement "Out there in the dark a Desert Tortoise drags its shell in the direction hunger argues. For tortoise, as for us, it is the wrong way to go." Tortoises are diurnal or crepuscular creatures, active in the early morning and during the day if it's not too hot. At night they hole up in burrows or cavities. And finally, tortoises have been sur-

living for millions of years, going in the right direction. They just need a little help from us to overcome problems that we have created.

Unless I'm mistaken, the right way to go is to act appropriately based on the best available scientific information. When I was on a crew, digging line on some remote section of a fire, I too sometimes formed impressions based on inadequate information. In fire-dependent ecosystems a combination of fire suppression and inappropriate land uses has created the situation we now face—huge fuel loads and extreme, stand-replacing fires. But the Mojave proves that every rule has its exception. In ecosystems that are not fire-dependent or fire-tolerant, or in habitats where wildfire moves us away from our management goals, fire suppression is an important tool that should be used wisely. In fire-dependent systems, we need to figure out how to reintroduce fire, what Secretary Babbitt called the grey wolf of the forest.

—Timothy Allen
Duck, *Wildlife Biologist*,
Arizona Strip BLM, 345
E. Riverside Dr., St.
George, UT 84790



ROBERT HUNTER JONES REPLIES

Timothy Allen Duck complains that I use the word "ostensible" when describing the rationale for suppressing fires in the Pakoon Basin. There are several reasons for this, but I'll touch on just one. It is puzzling to me that there is no mention in his letter of the ranches in the immediate area and of those ubiquitous exotic species of the four-legged variety (which can leave BLM officials feeling cowed and a little sheepish). Don't ranching activities affect the spread of cheatgrass? Do roads and the habitual use of motorcycles and ATVs in ranch operations affect the fragmentation of habitat Mr. Duck connects to the tribulations of the desert tortoise? Have ranchers no say in fire management decisions? Riddle me that.

I do not dispute the fact that cheatgrass contributes to the spread of fires in the Mojave, or that some use of fire suppression, so long as its effects are strictly studied, might be useful in developing long-term strategies to minimize the type of landscape conversion Mr. Duck refers to. However, that should be one option among others, and all should be rigorously

researched using funds freed up by reconfigured fire management budgets. (The highest priority should go to programs aimed at restoring the remnants of native grasses that have gone into decline due to overgrazing.) It does not necessarily follow, however, that full fire suppression is a reasonable policy over the long term. Here's why.

To claim that infrequent fires played no role in shaping the Mojave is like claiming that infrequent rainfall had nothing to do with it either. Mr. Duck states that "the Mojave is not a fire-dependent or even a fire-tolerant ecosystem." He says that prior to the introduction of cheatgrass, fires in the Mojave were "relatively few and small," both terms left undefined. It seems likely that when native plant species reached a certain density in a landscape regularly visited by lightning, these "relatively few" fires would, under the right circumstances, play a significant role in maintaining an ecosystem "characterized by widely spaced shrubs," particularly when native grass species were not as heavily grazed as they are now and might occasionally influence the spread of fires. I would be happy to provide Mr. Duck with half a dozen

photographs from our shifts on the Tank Fire, which reveal shrub densities clearly capable of abetting the spread of wind-driven fires. Is it possible that decades of fire suppression and other management "improvements" have already increased the density of native plant cover to the extent that it is capable of sustaining fire with or without the presence of cheatgrass?

That is certainly the case with the other two fuel types Duck mentions: pinyon juniper woodlands and Great Basin sagebrush. Fire exclusion has caused an explosion in density and/or acreage encroached upon by these fuel types, adversely affecting the availability of surface water and grazing land, key issues in the world of ranching, which may help explain why the BLM has "moved toward allowing fire to play its natural role" in those vegetation types.

I do not wish to impugn Mr. Duck's motives. I feel sure he is working actively to protect the desert tortoise. I am happy to hear that there is some effort being made to mitigate the impact of fire suppression activities on threatened species. I would be curious to learn what portion of the \$1.1 mil-

lion Nevershine budget was spent on such mitigation as opposed to, say, the amount spent on air operations.

It is easy to get the wrong impression about budget priorities when one is out there on the line watching air tankers freelance for days on end, dropping load after load of retardant on scree slopes deep in the belly of a wilderness area, all to prevent the fire from burning those last two hundred feet to the base of the sheer cliffs above. It may be, as Mr. Duck seems to suggest, that I am simply too far removed from the lofty sort of thinking that goes on around the coffee machine while budget priorities are being rationalized.

Finally, Mr. Duck gives me a well deserved paddling for not realizing a tortoise doesn't move at night, but rather is a "crepuscular creature." He pretends to miss my inept metaphor linking its plodding in the direction of mundane needs with our own hapless bumbling. In this Mr. Duck is surely on target. I expect to hear soon from E.O. Wilson that ants, in fact, don't "scurry," as I foolishly stated in my opening sentence, and from someone else that the sun doesn't really "lean down." The tortoise has indeed been

around a long time, as Mr. Duck notes—far longer, I suspect, than we will be, partly because it hasn't tried to engineer its environment around a hopeless jumble of inconsistent desires. One thing is certain, though: If we do drive it to extinction, we'll make damn sure the last one isn't run over by a shower truck.

—Robert Hunter
Jones, Poetzleinsdorferstr.
10-2-4, 1180 Vienna,
Austria



**KUDOS TO
WILD EARTH**

I've just finished reading the excellent "Subdivisions and Extractive Industries" in the fall 1997 *Wild Earth*. George Wuerthner's essay is well reasoned, clearly expressed, heartfelt, and aimed at an important target.

I'm an especially big fan of Wuerthner because he keeps hammering away at the livestock industry. The ecological impacts associated with livestock production are a huge problem and, unfortunately, a problem that seems invisible to most people—including environmentalists.

Keep up the good work—*WE* should keep the spotlight on the livestock industry, and continue to publish Wuerthner's work; nobody writes better about grazing issues.

—Denis Jones, 38
Bowerdean St., London
SW6 3TW, England

Your fall 1997 issue of *Wild Earth* is splendid—splendiferous [= bearing splendor!]—in every way, from Foreman to Bill McKibben to Worster (brilliant) to LaBastille (I live quietly in the woods, and the last weekend in a noisy, downtown St. Louis

motel was enough to drive my mammalian brainstem crazy), and finally to the dispassionate, icily analytical article by Walter Kuhlmann, an equally brilliant analysis of those confused (mostly academic?) souls who don't know (or want to know) any biology or ecology, but who *feel* that they have just as much to say as those that do, and who substitute a kind of "religious" faith for hard facts.

And the damage they accomplish is incalculable. We can deal with the rabid followers of Rush Limbaugh, but what to do with the rabid and equally blind left-wingers like Alex Cockburn, who frothing in factless indignation attack Gore (surely a good and well meaning, ecologically informed man) with doctrinaire fervor, much like the Lysenkoites attacked poor old Vavilov who as a consequence ended in Siberia? Just read Cockburn's diatribe ("Blowing smoke about global warming: Could it be that poor people in the Third World aren't the problem?," *Isthmus*, 17 October 1997), full of vitriolic innuendo, lies, misstatements—a whole menu of blind rage typical of the hate the Marxists reserved for—not the Nazis or the Fascists—but their sup-

posed allies the Socialists, back in the pre-WWII days. Such people are not dumb, but that hate runs too deep to be argued with, with ecological reality.

I do love *Wild Earth* and what it stands for—and best of luck to the new editor!

—Hugh H. Iltis,
Professor Emeritus and
Director Emeritus, UW
Herbarium, University of
Wisconsin-Madison,
Dept. of Botany, 132
Birge Hall, 430 Lincoln
Dr., Madison, WI 53706

ERRATUM

Due to an unfortunate editorial glitch, part of a sentence (highlighted below) was omitted from last issue's interview with Stuart Pimm. The passage on p. 33 should have read:

*What groups of organisms are most imperiled worldwide? All of them are! All groups of organisms, at least all of the ones that we know about, tend to have **these centers of endemism.***



Blue-eyed Grass by David Peter Hunsberger

Jocassee Gorges Update

A joint effort by public, federal, and state officials has resulted in securing almost enough funding to assure the acquisition of the pristine Jocassee Gorges tract, which lies in a rugged and remote section of North and South Carolina along the Southern Blue Ridge Mountain Escarpment. These 50,000 acres of wildlands where scenic, cascading waterfalls and rare wildlife abound were offered for sale last year by Duke Energy Corporation to state natural resource agencies [see "Gems of the Southern Blue Ridge Escarpment," fall 1997 *WE*].

In what has been described as the largest conservation purchase in South Carolina history, the Department of Natural Resources has completed an agreement to take possession of 24,000 acres of the property this May, and an additional 8000 acres in 1999. The state legislature has committed \$10 million toward the purchase. A similar measure is before the North Carolina legislature; passage would allow the state to acquire 10,000 acres of the property. In 1997, the US Interior Appropriations Committee approved a total of \$5.7 million for the Forest Service to acquire the Thompson River Gorge in North Carolina's Nantahala National Forest, as well as other portions of Duke Power Property in South Carolina that connect with the Sumter National Forest and Lake Jocassee. The total acquisition by the Forest Service in both states would be 5600 acres.

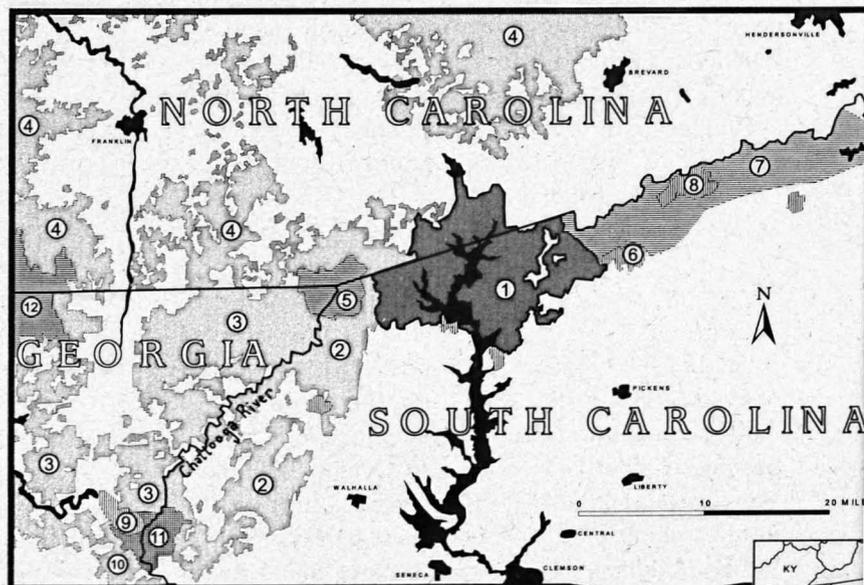
While the combined effort to acquire the Jocassee Gorges property has been impressive, achieving adequate protections for the area's ecological values is not yet assured. The South Carolina Department of Natural Resources, the state agency that would manage the bulk of the Jocassee Gorges property, is governed by a politically appointed Board of Directors steered by timber and real estate interests. In North Carolina, hunters are pitted against those who want the acquired lands designated as a state park, which would prohibit hunting. Meanwhile, Duke Power is retaining 8000 acres for future pump storage sites that would, if developed, fragment critical wildlife habitat and sever wildlife corridors. There is also talk that the Forest Service in South Carolina is considering swapping a tract of public land that is contiguous with the land that Duke retains, to augment the potential of yet another pump storage site.

The Chattooga River Watershed Coalition (CRWC) is spearheading an effort to seek the

designation of the South Carolina properties as a Heritage Trust Preserve, which would provide an increased level of protection for the significant biological and cultural resources of the Jocassee Gorges area. This designation would protect the region's biological diversity while allowing traditional uses of the land such as hunting, camping, and some forest management. In addition, the CRWC is working on a similar, collaborative effort in North Carolina that would designate the majority of the property as a state park while also setting aside traditional hunting grounds. The Chattooga River Watershed Coalition is also proposing that the affected land management agencies jointly coordinate a unified plan to manage the area as a contiguous ecosystem, and seek counsel from a committee of scientists with expertise in landscape ecology and conservation biology.

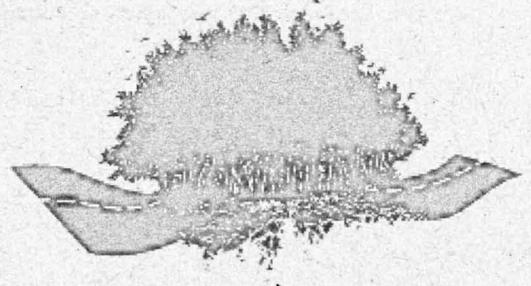
Comments are needed to influence the Forest Service (POB 96090, Washington, DC 20090-6090), the South Carolina Department of Natural Resources (POB 167, Columbia, SC 29202), and the North Carolina Department of the Environment and Natural Resources (POB 27687, Raleigh, NC 27611) as soon as possible, to assure the implementation of the land management principles that will protect this globally significant wildland. ■

—Buzz Williams, executive director, Chattooga River Watershed Coalition (POB 2006, Clayton, GA 30525; 706-782-6097; fax 706-782-6098; crwc@acme-brain.com)



1. Jocassee Gorges
2. Sumter National Forest, South Carolina
3. Chattahoochee National Forest, Georgia
4. Nantahala National Forest, North Carolina
5. Ellicott Rock Wilderness
6. Table Rock State Park
7. Mountain Bridge Wilderness
8. Caesar's Head
9. Tallulah Gorge State Park
10. Panther Creek Gorge Recreation Area
11. Georgia Power Lands
12. Southern Nantahala Wilderness

map courtesy of Chattooga River Watershed Association



Road RIPort #8

Construction for logging roads on National Forest land was a controversial issue in Congress and the media throughout the country last year. This debate focused on congressional funding and environmental impacts of forest roads. Rarely, however, did it include information on other funding mechanisms for roads or environmental impacts from related activities such as road reconstruction.

The Emergency Relief for Federally Owned (ERFO) roads program is administered by the Federal Highway Administration (FHWA) and pays for emergency repairs and reconstruction of roads on federal lands (e.g., National Forests, Bureau of Land Management holdings). The program applies only to roads damaged in natural catastrophes. Almost all ERFO projects, however, are categorically excluded from environmental analysis. Wildlands CPR is working to change this.

Wildlands CPR has joined Hells Canyon Preservation Council, Oregon Natural Resources Council Action, Native Fish Society, and Northwest Environmental Defense Center in a legal challenge to the categorical exclusions routinely applied to road repairs and reconstruction under ERFO. This case may provide a precedent setting ruling for people or organizations interested in challenging ERFO projects. In addition, a favorable ruling would fundamentally change how the Forest Service and Federal Highway Administration jointly approach road repairs and reconstruction after natural disasters.

In the past, ERFO funding has been used almost exclusively for “repairs in kind,” meaning that a road must be rebuilt exactly as it was prior to the failure. In too many cases, this recreates the same conditions that led to the failure in the first place, and when weather events are right, the road will fail again. In addition to changes that might be precipitated by this legal challenge, the FHWA is also rewriting its guidelines to broaden the types of work that can be done with ERFO money, most significantly to include road obliteration work.

The Gumboot Creek Road in Hells Canyon National Recreation Area was one of many roads that failed in the New Year’s Day storm of 1997. This failure dumped tons of sediment directly into Gumboot Creek, which provides critical spawning and rearing habitat for summer steelhead trout. Gumboot is also a direct tributary of the Imnaha River, which provides spawning and rearing habitat for Snake River spring/summer chinook salmon. Both the steelhead and chinook populations are listed as Threatened under the Endangered Species Act.

A proposed project would reconstruct the road nearly in the same place, though a revised proposal would move the road bed slightly away from the creek (40 feet). The National Marine Fisheries Service found that the project is “likely to adversely affect spring/summer chinook salmon or summer steelhead trout.” Regardless, the FHWA and Fisheries Service propose to go forward with the reconstruction. Categorical exclusions, however, cannot be applied to projects that are likely to impact species listed under the Endangered Species Act. While this is the basis of our suit, the implications of a successful legal challenge could extend beyond projects that affect Endangered species, by forcing revision of the categorical exclusion process as it applies to ERFO projects.

—Bethanie Walder, director, Wildlands Center for Preventing Roads (POB 7516, Missoula, MT 59807; 406-543-9551; WildlandsCPR@wildrockies.org; www.wildrockies.org/wildCPR/)

Eastern Old Growth Clearinghouse Report *by Mary Byrd Davis*

UPDATES ON THREATENED EASTERN OLD GROWTH

Many of the threats to eastern old growth described in the summer and fall 1997 issues of *Wild Earth* are still unresolved. However, we can report progress on several issues as well as a major setback.

The situation in New Brunswick's Christmas Mountains is improving. The vice president of Repap Miramichi has halted logging directly around Mounts Serpentine, Nalausk, and Dashe for three years; and the Minister of Natural Resources and Energy has confirmed that the Logan Lake study area, south of the Christmas Mountains, will not be logged for 25 years. The provincial government is currently developing a protected areas strategy. The Endangered Spaces Campaign is lobbying for the protected areas to include Logan Lake and a habitat linkage up to and including Mounts Serpentine, Nalausk, and Dasher (Roberta Clowater, Endangered Spaces Campaign, nbpnac@nbnet.nb.ca).

In the White Mountain National Forest's Kearsarge North area, both documented and possible old-growth sites have been saved from logging and road-building. Two appeals of the US Forest Service (USFS) decision to log in Kearsarge were filed. USFS denied an appeal by RESTORE: The North Woods that sought to protect the old growth and addressed broader management issues in the region; the Forest Service settled with Earthworks Projects, which asked for no logging or road-building in old growth (David Carle, RESTORE, POB 1099, Concord, MA 01742; 508-287-0320; Frank Shea, Earthworks Projects, 508-343-4836).

The Allegheny Defense Project has won its appeal of the Mortality II timber sale in Allegheny National Forest. The Forest Service will now have to conduct an environmental impact study (EIS) before it can proceed. Two of the triggers that prompted the EIS requirement were the proximity of the sale to the Tionesta old growth and the controversy over the sale, reflected in the public outcry against it (Susan Curry, Allegheny Defense Project, POB 245, Clarion, PA 16214; 814-226-4918).

In Minnesota, the Superior Wilderness Action Network (SWAN) appealed the Greenwood timber sale, and the Minnesota Center for Environmental Advocacy appealed the Beaver River sale. Both of these areas targeted for cutting are in the Laurentian District of Superior National Forest and contain large blocks of lowland black spruce likely to be old growth. Regional Forester Robert Jacobs upheld the appeal of the Greenwood sale; subsequently, the Laurentian District Ranger withdrew the Beaver River sale (Ray Fenner, SWAN, 2052 Carroll Ave., St. Paul, MN 55104; 612-646-6277).

On the negative side, the Ontario Ministry of Environment and Energy turned down a request for an environmental assessment of the Temagami old growth. Therefore logging of the ancient red and white pine, which had been deferred while the ministry con-

sidered the request, will recommence. Letters stating that all remaining ancient forest in Ontario needs complete protection can be sent to Premier Mike Harris, Legislature Building, Queen's Park, Toronto, and to the Honorable John Snobelen, Ministry of Natural Resources, 6th Floor, Whitney Block, 99 Wellesley St. West, Toronto, both in Ontario M7A 1W3, Canada (Lea Ann Mallett, Earthroots, 401 Richmond St. W., Suite 410, Toronto, Ontario, Canada M5V 3A8; 416-599-0152).

In response to our remark that "non-native species...may be the biggest threat to old growth," Thomas P. Rooney of the University of Wisconsin-Madison has reminded us that native species in overabundance can also be a serious problem. Overbrowsing by white-tailed deer is preventing regeneration of species at numerous old-growth sites, including Tionesta and Heart's Content in Allegheny National Forest. Any permanent solution should include reintroduction of extirpated carnivores.

OLD-GROWTH ACTIVISM ON CAMPUS

The Cornell Greens are demonstrating that old-growth research and advocacy can be a rewarding pursuit for student conservationists. Led by Jonathan Mawdsley, coordinator of the Cornell Greens' Biodiversity Survey, the Greens have played a key role in preserving known sites and have discovered new old-growth areas near Ithaca, New York.

About a year ago the Greens, in conjunction with other organizations, saved the Murphy Tract, an 18-acre hemlock-hardwood stand on the steep western slope of the southern Cayuga Inlet Valley. The Murphy family, who had owned the site for generations, logged it once (apparently around 1920) to salvage dead chestnut. In the 1950s, the one surviving family member sold the land to a local timber company; forty years later, the company decided to log the stand. Responding to pressure from conservationists, Cornell University purchased the site and now maintains it as a natural area.

A recent Cornell Greens campaign contributed to the preservation of the Buttermilk Falls Park old growth. Within the upper portion of the rural park are two old-growth, hemlock-hardwood sites each approximately twenty acres in size. The campaign stopped a major housing development near the park and led to the establishment of buffer zones surrounding the upper portion.

Current campaigns focus on two old-growth stands, Middaugh Woods and Palmer Woods. Middaugh Woods is probably the only site in

Tompkins County that has never been logged. Large eastern hemlock, basswood, cucumber magnolia, beech, and white ash are present; a section of the "Warrior's Trail," a Cayuga Indian trail, runs through the woods. The Middaugh family, who have owned the site since the 18th century, recently logged a portion of it, leaving about twenty acres intact. At this writing, the family has resisted efforts by agencies to purchase or to obtain a conservation easement on the land.

Palmer Woods is a 25-acre tract that Mawdsley describes as "easily the finest old-growth oak forest in Tompkins County." The largest and most spectacular trees are northern red oak, but white oak and black oak are also common. The northern half is "quite pristine"; the southern half was damaged by construction of two golf course fairways in the 1920s but has regenerated. Cornell University was given the land and assigned management to its Department of Planning, Design, and Urban Construction, which considered building dormitories there. The possibility that the old growth could be cut in the near future has been forestalled, and efforts to obtain permanent protection are underway.

New discoveries include Behrends Woods Hemlock Grove on land adjacent to and managed by Cornell Plantations, an arboretum. Before the university forestry department disbanded, it conducted experiments on the adjacent land—except for the ten-acre hemlock grove. Although the soils and vegetation on this site show no signs of disturbance and records in the Cornell archives indicate that the department did not touch it, all the natural area inventories of Tompkins County had overlooked the area as an old-growth site.

Six Mile Creek Old Growth, an approximately fifty-acre stand in the steep gorge of that name, was also overlooked by the inventories of the county but was identified by the Greens. The old growth is within a younger forest, more than one thousand acres in extent, all owned and/or managed for watershed protection by the City and Town of Ithaca.



The Biodiversity Project is now systematically searching the more inaccessible parts of the Six Mile Creek valley, and Mawdsley judges the prospects for finding additional old-growth sites to be good. Old growth, he notes, is an area in which students can make original contributions to knowledge.

Mawdsley would be glad to work with students on other campuses interested in starting groups to identify and protect old growth. He can be contacted at the Department of Entomology, Comstock Hall, Cornell University, Ithaca, NY 14853; 607-273-8832; jrm20@cornell.edu.

CLEARINGHOUSE PUBLICATIONS

The Eastern Old-Growth Clearinghouse is now revising *Old Growth in the East: A Survey*, published in 1993 by *Wild Earth*. We would greatly appreciate receiving information on newly discovered sites and on the status of sites already identified. The conservation status of sites will be emphasized in the revision.

Supplementing the Clearinghouse report that appears in *Wild Earth* is the Clearinghouse's quarterly newsletter *Eastern Old-Growth Notes*. Readers can find the most comprehensive news of old-growth developments and reviews of the old-growth literature in this invaluable publication. *Notes* is sent to Clearinghouse supporters (regular annual rate \$30; low income \$15). Checks should be made out to the fiscal sponsor Appalachia-Science in the Public Interest (ASPI) and sent to the Clearinghouse at POB 131, Georgetown, KY 40324 (502-868-9074; wildearth@igc.apc.org). The Clearinghouse is a project of ASPI, *Wild Earth*, and Earth Island's Yggdrasil Institute. ■

Author and researcher Mary Byrd Davis is coordinator of the Eastern Old-Growth Clearinghouse. She edited the anthology *Eastern Old-Growth Forests: Prospects for Rediscovery and Recovery* (Island Press, 1996).

Old Growth in the East: A Survey by Mary Byrd Davis (149 pp., spiral bound) is available from *Wild Earth* for \$15 postpaid.



The Splendor of the Eastern Forest

An Update on Big Trees

by Robert T. Leverett

BERKSHIRE UPDATE

In August 1997, my son Rob and I were exploring a ridge in the Hoosic range of the Massachusetts Berkshires. We came to an outwash terrace of the Cold River about 100 vertical feet above water level. White ash, sugar maple, northern red oak, basswood, and bitternut hickory grow on the terrace. The canopy trees are slender, 6-8 ft. in girth, densely distributed, and extraordinarily tall. In the ash-dominated areas, the canopy averages 115-120 ft. Individual trees surpass 130 ft. Ages are between 80 and 125 years. The basal area of this hardwood stand averages 195 square feet per acre. The stand is mature, but not old growth.

A week later, Rob and I discovered another mixed ash-maple-oak stand on an outwash terrace farther upstream. From averaging 13 separate samples, we estimated the stand's basal area to be at least 205 sq. ft. per acre. Trees growing above the terraces are part of a continuous swath of old growth that reaches to the top of the ridge and halfway down the opposite side. The old growth is the seed source for the mature second-growth stand. During his October 1997 visit to New England, big tree sleuth extraordinaire Will Blozan remeasured what appears to be the tallest individual in the stand, an ash tree. Will calculated its height at 138 ft., corroborating my earlier measurements.

It is tempting to see these beautiful ash trees as transients. We tend to think that something is wrong when white ash is seen in abundance in New England forests. Ash often proliferates following large-scale disturbances, but gradually drops in abundance where the time interval between major disturbances increases. However, in his famous *Trees and Shrubs of Massachusetts* compiled between 1836 and 1846, George Emerson observes the following about the white ash:

It is sometimes seen nestling among rocks where it can hardly get foothold, and is frequent on the steep sides of the Hoosic Mountains. In swamps it gives place to the black ash. In the old

forests, in the narrow valleys in the western part of the state, it towers to a great height. Not infrequently, it may be found one hundred ft. high and more, with a diameter of four ft. and upwards.

Ash trees fitting Emerson's description still grow in the old growth and adjacent mature second growth of the Hoosic Mountain Range of western Massachusetts, where human interference has been minimal. In May 1997, Professors Tom Wessels and Rick Van de Poll of Antioch New England Graduate School and I used laser equipment to measure an ash tree on the north side of the Todd-Clark Ridge. One tree measures a remarkable 144 ft. in total height and 67 ft. to the point of first branching. Its girth slightly exceeds 9 ft. Other tall ash trees in the vicinity commonly reach 120-135 ft. *The 144 footer is probably the height champion of its species for the entire Northeast.* The crowns of these tall in-forest ash trees spread into a "V" shape, like a skinny American elm. Accurate height measurements for this shape are tricky; without the use of laser equipment, it is easy to overstate them. Careful use of a transit can produce accurate heights, but the process of crown triangulation must be done.

GREAT SMOKY MOUNTAIN UPDATE

In July, a group of arboreal aficionados—Dr. Alan Gordon, Dr. J. Christopher Haney, Bruce Allen, Christina Bolgiano, her husband Ralph, and Rob Messick—accompanied Will Blozan and me to visit some of the great eastern hemlocks of the Cataloochee District in Great Smoky Mountains National Park. Earlier in the year, this stand of towering hemlocks had been discovered on Caldwell Branch by Michael Davie. Subsequent measurements by Blozan and Davie suggest that the all-time height champion for the species may be in the stand. The tangle of rhododendron that must be negotiated to reach the grove makes it understandable why these skyscrapers have remained hidden, and until recently, unmeasured. *But here are trees to redefine the growth limits attainable by the species.* Two hemlocks in the grove top 173 ft. in height! No accurately measured eastern hemlock, past or present, is known to surpass these two giants. Both hemlocks exceed 14 ft. in girth at breast height. They are imposing. Other hemlocks and tulip-poplars in the stand top 150 ft.

Will Blozan and Michael Davie climbed one of the 170 footers (the Yonaguska Hemlock), measuring its girth

at intervals of one meter. Their effort enabled us to model the volume of the tree as a series of frustums of cones. The total volume including limbs is roughly 1500 cubic feet! The national champion Greenbrier hemlock is in the 1200-1300 cubic foot volume range. Its 16-foot, 10-inch girth gives it the advantage on the American Forest Big Tree Formula, but the Greenbrier tree tapers more quickly than both Caldwell Fork giants. An even larger hemlock on Gabes Mountain may exceed 1600 cu. ft. Only by climbing it and taking incremental measurements, will we know for sure.* Many Smoky Mountain hemlocks approach or exceed 1000 cu. ft. of trunk and limb volume, leading Will Blozan to believe that they are our largest eastern *evergreen* conifers—at least across today's landscape. The bald cypress is our largest eastern conifer, and the white pine reigns supreme as our tallest eastern species.

As massive as the Smoky Mountain hemlocks are, they are dwarfed by the Park's largest trees—its giant tulip-poplars. The Greenbrier Giant's volume probably exceeds 3500 cu. ft., and Dr. Robert Van Pelt of the University of Washington believes the Mill Creek Monster to be even larger. Both trees are tall. The Greenbrier tulip-poplar is 153.5 ft., and the Mill Creek tree exceeds 165 ft.

Thanks to Will Blozan virtually every big tree record in Great Smoky Mountains National Park has been broken, and we are just beginning to tell the story. There are some disappointments, however. The Cataloochee white pine that we measured at 207 ft. in August of 1995 continues to lose height as it breaks up due to Hurricane Opal, a subsequent snowstorm, and summer thunderstorms. The pine is down to a height of 180 ft. On the positive side, we have found additional pines in Cataloochee District that measure between 160 and 175 ft. tall. Giants still grow elsewhere in the southern Appalachians. A white pine near Clayton, Georgia, measured by Jess Riddle and his father is reportedly 186 ft. tall.

CONGAREE SWAMP NATIONAL MONUMENT

Thanks to the work of Drs. Robert Jones and Rebecca Sharitz we recently became aware of another big tree hot spot in the Southeast. In March 1997, Will Blozan, my wife Jani Leverett, and I headed for the Congaree Swamp, about 20 miles southeast of Columbia, South Carolina. Will had measured big trees there before, but it was my first visit for that purpose. We were dazzled. Loblolly

*By the time this article is published, Will Blozan and Michael Davie will likely have carefully measured the tree.

pinus, cherrybark oaks, sweetgums, and bald cypresses rose through the mists like giants from a lost world. We measured two cherrybark oaks to 21 ft. in girth. Several were 140-150 ft. tall. Their immense crowns make finding the crown high point next to impossible. The loblollies are awesome. We measured one to 162 ft. and probably did not find the tallest. The volumes of the biggest loblollies exceed 1000 cu. ft. One may reach 1300. Tall, stately sweetgums are everywhere. A few exceed 150 ft. in height. Several bald cypresses are true giants, but finding them in a 17,000-acre swamp can be a challenge. Sadly, Congaree was hit hard by Hurricane Hugo, but the swamp is proving amazingly resilient. In another two decades the Congaree will likely have recovered much of the volume it lost from blowdown. Tree growth rates in the swamp far exceed those in more northerly climes. Congaree is an extraordinary place that we will revisit, but anyone tempted to visit there, be prepared. Truly, it is a swamp!

COOK FOREST BONANZA

At the Fourth Ancient Eastern Forest Conference at Clarion University, PA, in June 1997, the team of Robert Van Pelt, Will Blozan, Chris Kane, Jack Sobon, and I measured the champions of Cook Forest State Park. While I did my duty politicking at the President's reception, my friends sneaked off to Cook Forest and measured a new height champion—the Longfellow Tree. They returned smiling and sprang the number on me. I was green with envy. I had walked by the tree many times. At 179.1 ft. the Longfellow pine is the tallest confirmed tree in the Northeast. Separate measurements taken with a laser unit brought by Robert Van Pelt and with a transit by Jack Sobon came within 1.25 in. of each other. We also got accurate measurements of the huge Seneca Pine. At 12 ft. 5 in. in girth, 172 ft. in height, with an average crown spread of 43 ft., and an estimated volume of 850 cu. ft., the Seneca Tree is the new Pennsylvania state champion.

The measurement team went on to confirm a hemlock of 142 ft. and a black cherry 136.7 ft. tall, the latter being a record for Cook Forest. The previous year, I had measured another hemlock in Cook Forest to 142.6 ft. It is the hemlock height champion for Cook Forest, but not for Pennsylvania. Mike Perlman and I measured a 145-foot hemlock in the appropriately named Tall Timbers Natural Area.

FINAL THOUGHTS

Listings of very tall eastern trees carried in the National Register of Big Trees should be viewed with caution. Height measurements are technically demanding. Published figures are often seriously flawed. Over the past three years Will Blozan and I have been on a non-stop crusade to put truth into the big tree numbers. The second edition of our book *Stalking the Forest Monarchs—A Guide to Measuring Champion Trees* will be published in 1998 and available through *Wild Earth*. Like the limited first edition, it will include the mathematics necessary to measure the dimensions of individual trees. The second edition will also include rudimentary techniques for measuring stand characteristics, big tree records, big tree lore, and unabashed sentiment expressed on behalf of the big trees. ■

The indefatigable eastern old-growth evangelist Robert Leverett and his partner in big tree sleuthing Will Blozan would enjoy hearing from readers who know about potential champion trees. Contact Leverett by e-mail at dbh.guru@chicopee.com and Blozan at treehunter@worldnet.att.net. Their aim is to build a big tree database and make it available through the Eastern Native Tree Society (ENTS). The University of Arkansas Tree-Ring Laboratory will eventually be used as the principal vehicle for communicating with ENTS.

THE KILL

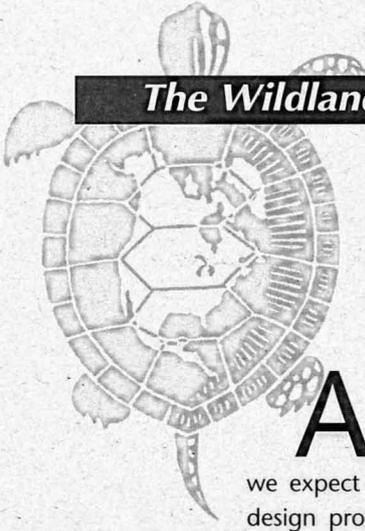
For three days the pack had trailed the great elk herd through thin forest of pine and maple, the wolves lean and limber in the mottled light falling on their fur. Sunlight silvered it but in the shade they were grey or grey-black, and their trot was so effortless they seemed to be dreaming. On the fourth morning the herd fled into a meadow where the wolves attacked an aging buck, snapping at his flanks and rump. Once they'd dropped him they tore into his hide, their teeth ripped it open. Now their breathing grew labored, their narrow chests heaving, long snouts dripping as they glutted on venison. Feeding until dusk, they shared the carcass with cawing ravens wafting up and down, plucking bits of flesh then prancing away.

When they'd eaten all but the long shards of bone, antlers, hooves, portions of the shredded hide, the wolves cleansed themselves of the elk's dense scent, lapping at their fur, ruffled and bloodied. They swabbed it with slobber then matted it with their mouths, meticulously tonguing it, bathing themselves and each other, rising through their fatigue and turning to lick the ears or the spine of a partner, another. Soon their coats glowed like woodsmoke in the moonlight. Retreating among the trees, the pack gathered itself in a clearing. Trampling their tight circle into the grass, the wolves lay down at peace because all that lives, all that dies, all of it is holy. Then they shut their eyes and slept with their hearts beating beneath the night.

—George Keithley



©Diana Dee Tyler



The Wildlands Project

Update

by Steve Gatewood

As we move into 1998, The Wildlands Project enters a critical year for a variety of reasons. First and foremost, we expect to have three or four regional reserve design proposals ready for peer review this year. While we have worked hard to assist local activists and scientists with the process of reserve design, we have yet to see a product that is at the stage where evaluation and review by a group of independent scientists and activists is warranted. Proposals drafted by regional cooperators in the Southwest, Southeast, and Northeast are very close to that point. We hope that these models will be inspirational examples of what can be and needs to be done to restore biotic integrity across the landscape.

Essential work will also be done at this year's meetings, meetings, meetings! The science workshop hosted by TWP in November was incredibly successful; an eminent group of conservation biologists gathered to discuss various topics pertinent to our mission. The resulting dialogues around such key issues as cores, habitat linkages, buffers, large carnivore recovery, and restoration are now being edited by Michael Soulé for publication.

The results from the science workshop will be disseminated to an expected 300-400 attendees at TWP's first Grassroots Rendezvous, rescheduled for 9-11 October 1998 at Estes Park, Colorado. The Rendezvous will be our first opportunity for a large-scale gathering of wildlands cooperators and supporters.

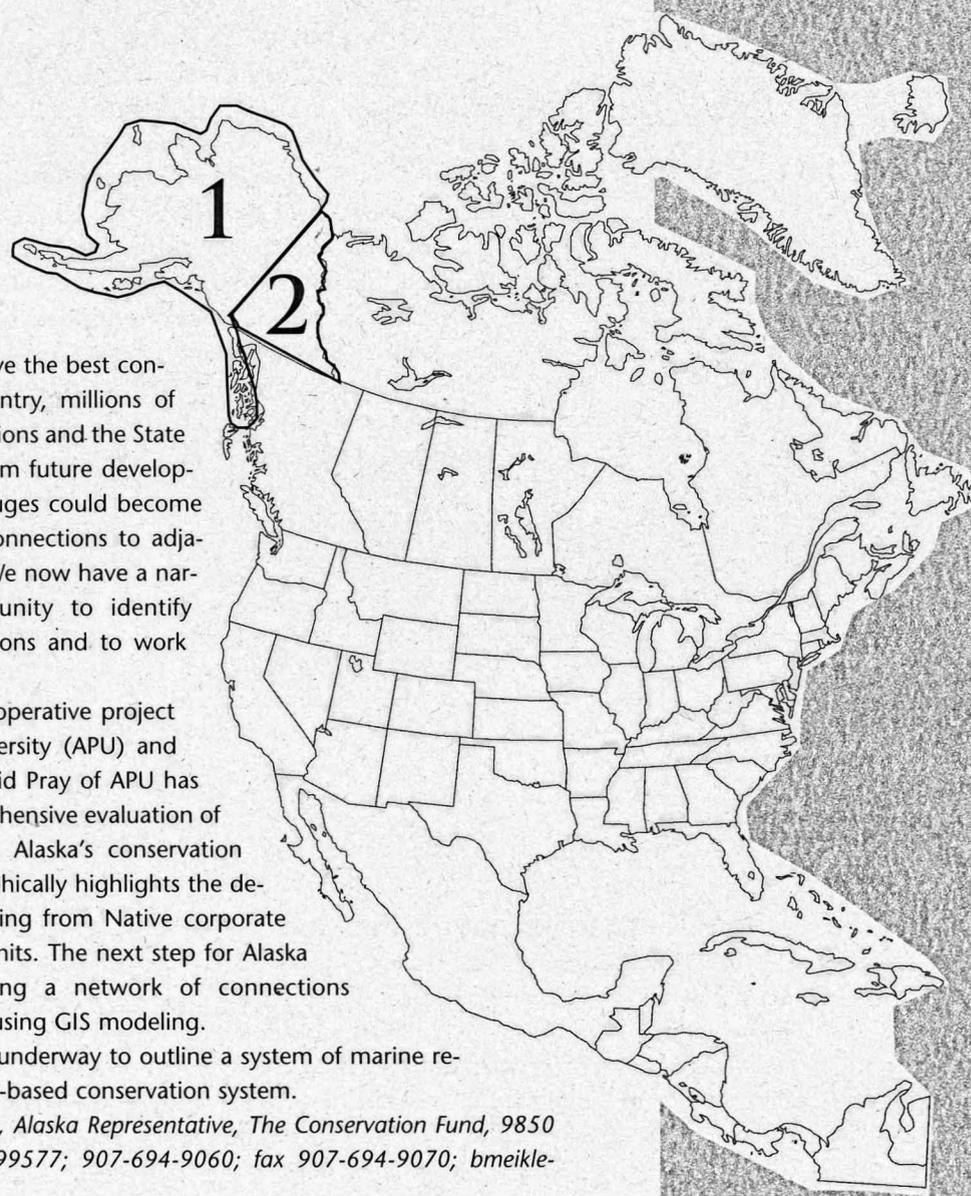
In mid-November, we'll convene an implementation workshop. Using the Sky Island reserve design proposal as a model, biological and social scientists as well as experienced conservation activists will investigate and discuss the opportunities, challenges, and pitfalls of making rewilding and biodiversity conservation happen on the ground. We will begin preparations to host, along with *Wild Earth* and the Natural Areas Association, the 26th Annual Natural Areas Conference that will be held in Tucson in October of 1999. We hope to see many of you at these meetings.

By the time you read this, our newly hired Wildlands Ecologist will have established her office in Austin, Texas. Dr. Barbara Dugelby comes to TWP from the Latin America and Caribbean Division of The Nature Conservancy. Barbara received her PhD from Duke University (where she did tropical research with board member Dr. John Terborgh) and in earlier days was a prominent conservation activist in Texas. Barbara will jump right into the action with a series of meetings and visits to regional cooperators in April and May, and will spend the rest of the year restructuring our conservation science program and working with our partners. Give us a call in Tucson if you would like her coordinates in Austin.

And finally, we now have the resources to make these many initiatives successful. Because of our healthy financial position, we have been able to provide financial support for many of our cooperators. In fact, of a total TWP budget of just under \$1 million in 1997, more than half (\$524,000) was passed through to local cooperators and regional projects, or went to support the science workshop, regional meetings, or *Wild Earth*. Our 1998 budget is just over the million dollar mark, with similar sources of revenue and expense categories. Several foundation grants and major gifts from individual donors have already been received, so we are well on the way to meeting budget.

As we approach the next century, let's make sure that in 1998 we remain focused on that long-term vision of a vibrant, diverse, and healthy North America and work ever more diligently to make it a reality. ■

Steve Gatewood is executive director of The Wildlands Project. For more information, contact TWP at 1955 West Grant Rd., Suite 148A, Tucson, AZ 85745; 520-884-0875; wildland@earthlink.net; <http://www.wild-lands.org>.



1 Alaska Wildlands

Although Alaska may have the best conservation system in the country, millions of acres held by Native corporations and the State of Alaska lack protections from future development. Alaska's parks and refuges could become disjunct habitat islands as connections to adjacent wildlands are severed. We now have a narrowing window of opportunity to identify important wildland connections and to work for their protection.

Alaska Wildlands is a cooperative project between Alaska Pacific University (APU) and The Conservation Fund. David Pray of APU has recently completed a comprehensive evaluation of ecosystem representation in Alaska's conservation system. This GIS project graphically highlights the degree of fragmentation resulting from Native corporate inholdings in conservation units. The next step for Alaska Wildlands will be identifying a network of connections between conservation units using GIS modeling.

Preliminary work is also underway to outline a system of marine reserves to match Alaska's land-based conservation system.

Contact: Brad Meiklejohn, Alaska Representative, The Conservation Fund, 9850 Hiland Rd., Eagle River, AK 99577; 907-694-9060; fax 907-694-9070; bmeiklejohn@compuserve.com

2 Yukon Wildlands Project

A Protected Areas Strategy for the Yukon territory will be completed by May of 1998, with implementation to follow through the year 2000. We are currently continuing cooperative work on candidate protected area assessments. A comprehensive report will result from two seasons of mapping and reconnaissance field surveys in cooperation with aboriginal organizations in the Wind, Snake, and Bonnet Plume watersheds. This research and mapping work will contribute to wildlands reserve proposals in the 60,000 km² area.

Yukon Wildlands worked with the Liard First Nation in the southeast Yukon to identify ecological reserve candidates and important corridors throughout their traditional territory. This yielded two major protected area proposals and set the stage for a regional protected areas plan that will follow settlement of land claims. Both of these wildlands initiatives are within the Yellowstone to Yukon region. In the spring of 1998, northern conservationists and First Nations organizations will host a protected areas workshop to help implement the Y2Y vision in the North.

Contact: Juri Peepre, 30 Dawson Rd., Whitehorse, YUK Y1A 5T6; phone/fax 867-668-6321; peepre@yknet.yk.ca

The Wildlands Project



3 Yellowstone To Yukon (Y2Y) Project

The Yellowstone to Yukon Conservation Initiative is known as Y2Y, but its autumn launch in Glacier-Waterton Lakes International Peace Park attracted a sold-out crowd of conservationists from T2T: Tucson to Tuktoyuktuk. The 309 delegates to the October "Connections" conference learned about Y2Y's vision "of a bright green thread, uncut by political boundaries, stitching together 1800 contiguous miles of the Rocky, Columbia, and Mackenzie Mountains"; experienced its issues firsthand through field trips into the Castle-Crown Wilderness; discussed regional needs and established networks to address them; and celebrated the wild spirit of the Rockies through poetry, prose, song, dance, and theater workshops. Conference media coverage included articles in *The Washington Post* and *The Globe and Mail* and radio features on National Public Radio and the Canadian Broadcasting Corporation.

Within days of the conference's successful conclusion, the British Columbia government announced its decision to set aside 11 million acres of new protected lands and special management areas in the northern part of the province.

On other fronts, the much-anticipated Y2Y atlas, entitled "A Sense of Place: Issues, Attitudes and Resources in the Yellowstone to Yukon," will be published in the spring of 1998, and the Y2Y Coordinating Committee is exploring the possibilities of regional approaches to conservation planning.

Contact: Bart Robinson, 710-9th St., Studio B, Canmore, AB T1W 2V7; 403-609-2666; fax 403-609-2667; y2y@banff.net; <http://www.rockies.ca/y2y>

4 The Klamath-Siskiyou Project

The Klamath-Siskiyou Biodiversity Conservation Plan is now fully funded and scheduled for completion by summer 1998. This state-of-the-art ecological reserve design is headed by Dr. Reed Noss and Dr. Jim Strittholt of Earth Design Consultants. Five grassroots bioregional conservation groups (Siskiyou Project, Citizens for Better Forestry, Headwaters, Klamath Forest Alliance, and Northcoast Environmental Center) have formed an alliance to develop an implementation plan for the nature reserve. The World Wildlife Fund has also joined this effort as a partner.

Since change is a factor in both natural and human communities, we've given the project a new name: The Klamath-Siskiyou Living Map. We held an initial data review session in October 1997 to solicit input from regional experts in conservation and biological sciences. We're planning another session to review the reserve design principles in March. If you have pertinent information to share, please contact the Siskiyou Project or view the instructions at www.earthdesign.com. If you'd like to join an e-mail discussion group about the Klamath-Siskiyou Living Map, contact me at the e-mail address below.

Contact: Kelpie Wilson, POB 220, Cave Junction, OR 97523; 541-592-4459; fax 541-592-2653; kelpie@siskiyou.org; www.siskiyou.org

5 California Wilderness Coalition

Enthusiasm about The Wildlands Project is growing in California. The California Wilderness Coalition is working toward wildlands protection in areas of the state not covered by other regional TWP cooperators.

In 1998, we hope to initiate mapping projects in California's Sierra Nevada, Southern Desert, Central Valley, and northeast regions. Efforts in the Sierra Nevada are already underway. In 1997 we began working with the Sierra Nevada Forest Protection Campaign to create a long-term vision for managing the region. With the release of the Sierra Nevada Ecosystem Project report, which documents the importance of and threats to the Sierra, this region will be a focus for upcoming map work. We are also hosting a statewide Wildlands Project meeting in February 1998 to plan the next step of TWP in California.

Contact: Paul Spitler, 2655 Portage Bay East, Suite 5, Davis, CA 95616; 530-758-0380; fax 530-758-0382; cwc@wheel.dcn.davis.ca.us

6 Grand Canyon Wildlands Project

Grand Canyon Wildlands Council is a group of conservationists, scientists, river runners, backcountry enthusiasts, academicians, as well as agency and Native American resource specialists who have joined to protect the pristine ecosystems and to restore the degraded ecosystems of the Greater Grand Canyon Ecoregion.

This 25,000 square-mile region on the southern edge of the Colorado Plateau includes a suite of ecosystems of tremendous biological diversity: low-elevation arid and semiarid deserts, grass and shrublands, part of the largest ponderosa pine forest in the world, 400 miles of the Colorado River and other rare riparian areas, and high alpine environments. Already protected within this ecoregion are renowned National Parks: Grand Canyon, Zion, Bryce Canyon and the newly created Grand Staircase-Escalante National Monument. With the region's growing human population and visitation, these lands need watchful stewardship.

To this end, the Council is compiling information for a regional ecological report and reserve design proposal. This mapping effort has so far identified at least eight initial core areas in the ecoregion. In addition, we have been active in helping draft the wilderness management plan for Grand Canyon National Park, and with other environmental groups in promoting conservation biology in planning for Zion and Grand Staircase-Escalante. In ongoing discussions with various agency staff, we are attempting to introduce conservation biology precepts at the earliest stages of their planning efforts.

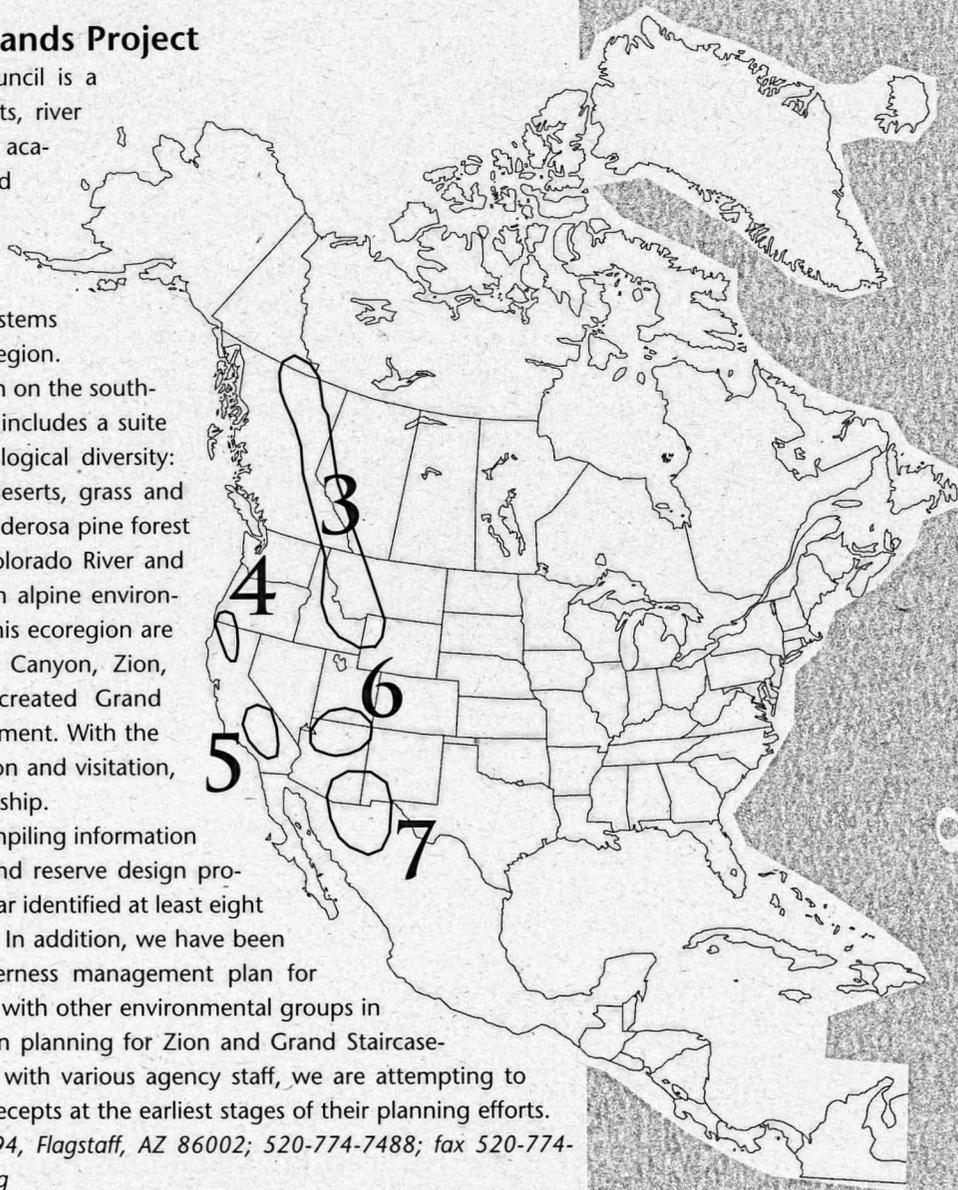
Contact: Kelly Burke, POB 1594, Flagstaff, AZ 86002; 520-774-7488; fax 520-774-7570; burkek@grandcanyontrust.org

7 Sky Island/Greater Gila

Sky Island Alliance hosted a successful workshop in Kingston, New Mexico in February that gave experts from the ranching, hunting, conservation, and business communities a last shot at critiquing and refining the Sky Island/Greater Gila Nature Reserve Network proposal before a scientific peer review takes place in early spring 1998.

After the proposal has been modified to incorporate reviewers' comments, we will begin implementation. Starting with our natural allies and branching out to forge alliances with groups not normally associated with wilderness protection, we will present our vision through slide shows, articles, and other written materials in order to gain a wide base of support. Finally, with a network of supporting organizations, we will release our proposal to the public, perhaps as early as fall 1998. Through press releases, articles, op-eds, wilderness expansion and designation campaigns, wild and scenic river campaigns, and state and federal land management plan revision, we'll work to reflect on the ground what we have outlined in the proposal: a vision of restored biotic integrity to the Sky Islands bioregion.

Contact: Jack Humphrey, 1315 Coal Ave. SE, Albuquerque, NM 87106; 505-243-5319; fax 505-243-3477; skisland@swcp.com





8 Southern Rockies Ecosystem Project

The Southern Rocky Mountains of southern Wyoming, Colorado, and northern New Mexico form the confluence of three great bioregions: the Great Plains, the Colorado Plateau, and the continental spine of the Rockies. Since 1992, the Southern Rockies Ecosystem Project (SREP) has been defining and defending this region's ecological values. By the summer of 1998, SREP will publicly release a mapped core reserve plan, as well as the rationale for such a vision: a "State of the Ecosystem" report. The plan and the report are intended to serve the public, local, state, and federal decision-makers, land managers, and other partner groups as tools for bringing a vision of ecological integrity to a region coping with overwhelming development pressures. Rather than accepting current and future ecological devastation, SREP's use of maps and science is stretching the limits of political reality, so that it more closely matches biological reality.

Contact: Marianne Moulton or Bill Martin, POB 1182, Nederland, CO 80466; 303-258-0433; fax 303-458-7665; srep@indra.com

9 Minnesota Ecosystems Recovery Project

During the summer of 1997, the Minnesota Ecosystems Recovery Project (MERP) made significant progress in the ecological reserve design process. Our current reserve design efforts focus on completing a roadless areas map for the Laurentian Mixed Forest Province in the northeast third of the state; completing a rough-cut GAP analysis to determine how representative Minnesota's existing protected lands are of the state's ecosystems; and developing a demonstration of our reserve design process to gain expanded participation from Minnesota's scientific community.

MERP is also planning a Midwest Regional Wildlands Conference that will bring together scientists and activists to work toward our goal of creating science-based wildlands reserve proposals for our region.

Contact: Mike Biltonen, POB 293, Red Wing, MN 55066; 612-385-7512; merp@win.bright.net

10 Greater Laurentian Wildlands Project

A fundraiser to benefit TWP brought *Mission: Wolf* to Falmouth, Massachusetts last October. The event attracted 400 people eager to experience contact with ambassador wolves "Sila" and "Merlin." The fundraiser provided an ideal forum to address the issues surrounding eastern timber wolf recovery in the Greater Laurentian Region.

The Maine Wildlands Reserve Project is a current priority. Our draft reserve design for Maine will be evaluated by regional biologists and conservationists in March. Using GIS techniques and input from scientists, the reserve network is being designed to meet the ecological needs of a suite of focal species—including both indicator and wide-ranging umbrella species. By implementing a reserve network that provides for the long-term viability of focal species and native communities, we aim to restore and protect the ecological integrity of Maine's landscape.

Additionally, we are working with a bi-national consortium of conservationists to provide ecological connectivity from Algonquin Park in Ontario to Adirondack Park in New York. Affectionately known as "A2A," this initiative envisions "an ecologically sustainable 'home place' centered on the rugged landscape of the Frontenac Axis." The unique ecological characteristics of this area, coupled with its relatively unexploited landscape, provide breeding areas, travel routes, and seasonal habitat for a myriad of native species. We will continue to play a leadership role in A2A's progress via our work within the consortium and outreach to the Adirondack region.

Contact: Robert Long, 4 Laurel Hill Dr., South Burlington, VT 05403; 802-864-4850; glwildland@sprynet.com

11 Appalachian Restoration Campaign

Progress continues on the Central Appalachian Assessment, a wildlands recovery proposal for the plateaus, ridges, and valleys of Central Appalachia. Part I of the Assessment identifies Priority Restoration Areas based on ecoregion representation and interconnection criteria with hotspots of rare and endemic species. Part II refines these goals for ecological and political restoration opportunities, documenting forest interior remnants, currently "protected" lands, and land ownership patterns.

The Assessment will be presented to the Lucy Braun Association annual meeting in March 1998 in Huntington, West Virginia and to the 2nd Central Appalachian Ecological Integrity Conference (CAEIC) in June 1998 in Elkins, West Virginia. The CAEIC theme, *Defining Problems and Solutions for Appalachian Restoration*, will be addressed through panel discussions, field trips, and keynote presentations by Dr. Orié Loucks (Miami University) and Dr. John Cairns (Virginia Polytechnic Institute). Please contact ARC for registration information or to get involved with the on-going Central Appalachian Assessment.

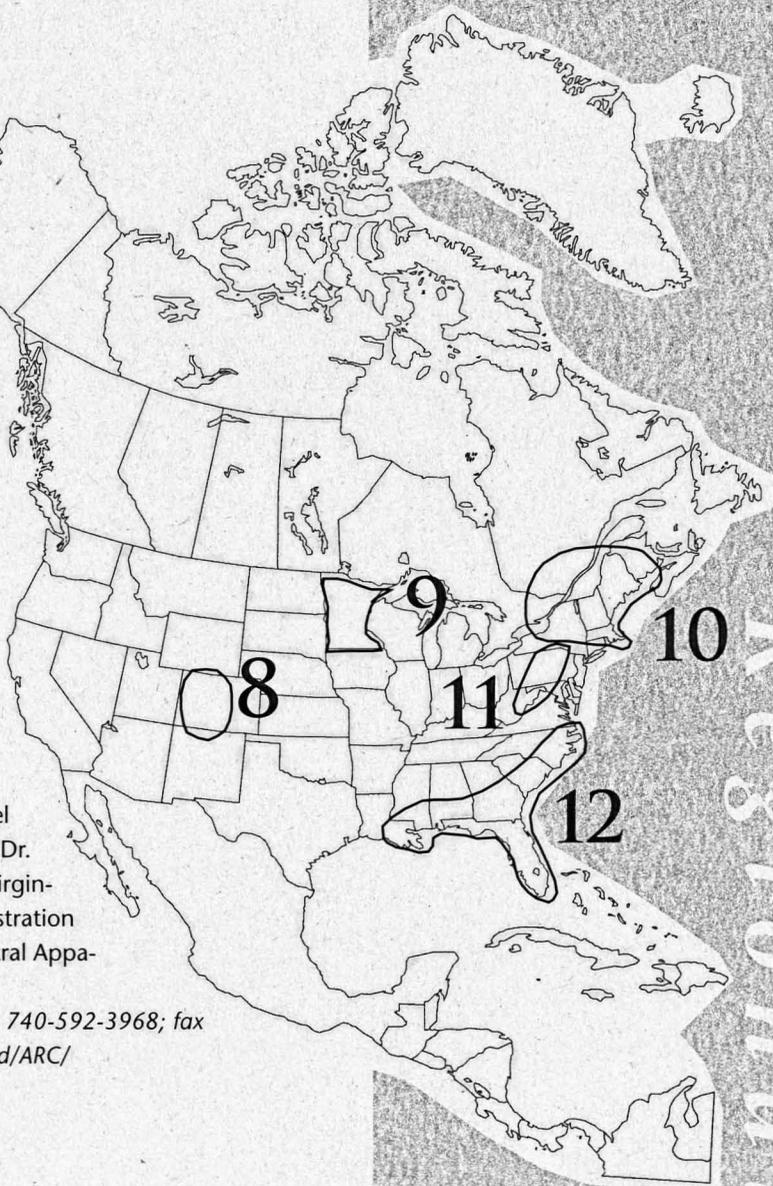
Contact: Than Hitt, POB 5541, Athens, OH 45701; 740-592-3968; fax 740-592-3967; arc@frognet.net; <http://www.heartwood/ARC/>

12 Southeast Wildlands Project

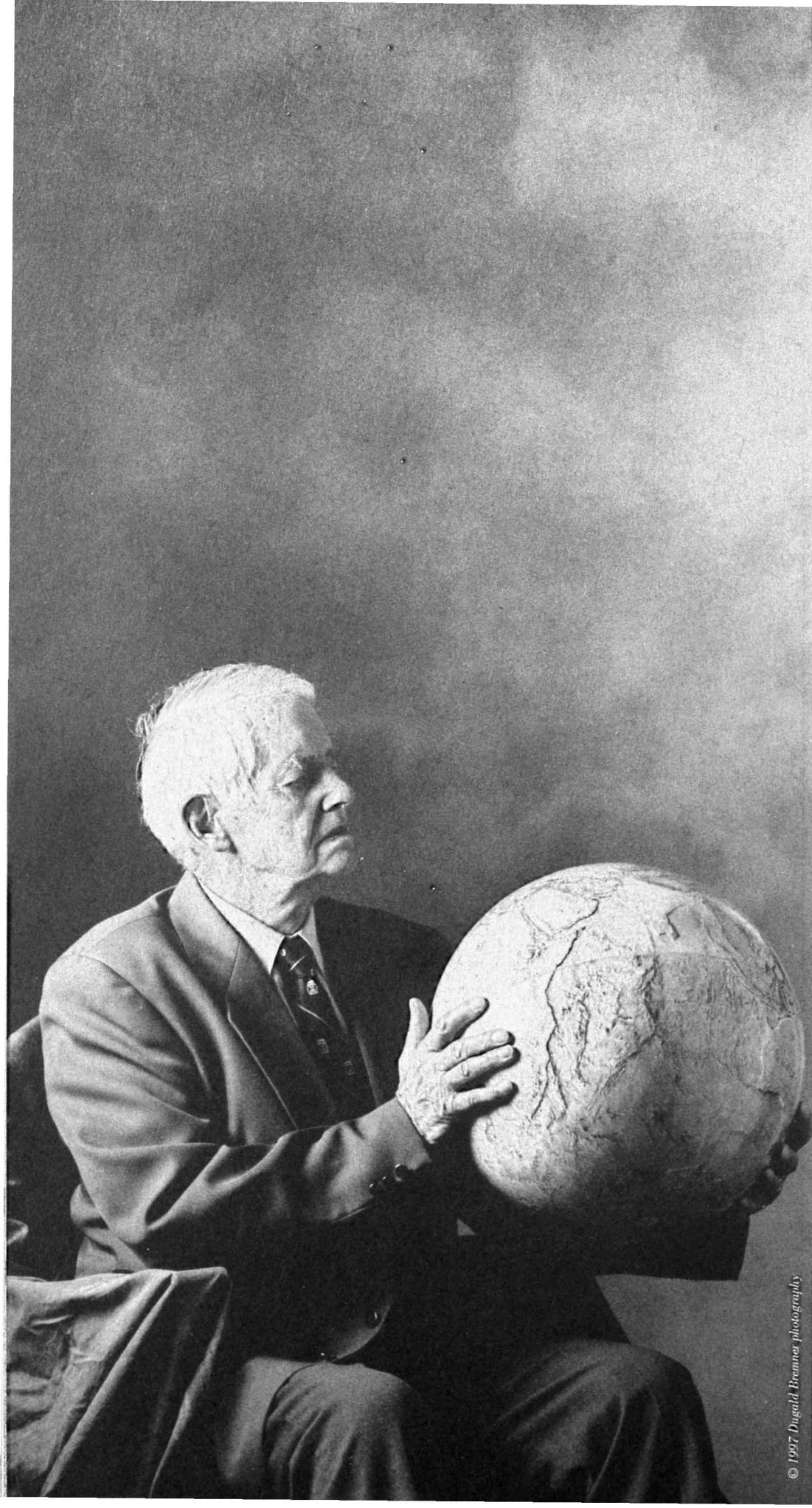
The Southeast Wildlands Project's priority is to initiate statewide planning of natural area networks. We are organizing a series of mapping charettes to bring together conservation leaders and to produce preliminary wildlands maps.

Large-scale conservation planning processes are already well underway in Florida, so our efforts are directed toward other states. Conservation vision maps produced through the October 1997 North Carolina Wildlands Charette will be available in early 1998. The Georgia Wildlands Charette is scheduled for April-May 1998, and the South Carolina Wildlands Charette will be held in the late spring or early summer.

Contact: Linda Duever, POB 949, 507 NE Chokolka Blvd., Micanopy, FL 32667; phone/fax 352-466-4136; conwayconsrv@igc.apc.org; <http://www.conway.com/cconserv/>



Regional Reports



David Ross Brower is the elder statesman of the American conservation movement. For over 60 years he has tenaciously defended wilderness and wildlife. He was integral in efforts to create Kings Canyon, Redwood, North Cascades, and Olympic National Parks and led opposition to dam construction in the Grand Canyon and Dinosaur National Monument. Brower served as the Sierra Club's first executive director; co-founded the League of Conservation Voters; and founded Friends of the Earth and Earth Island Institute, where he currently serves as chairman. Now nearing his 86th birthday, he is still active and involved in a myriad of conservation campaigns, still fighting to protect the planet he loves.

David Brower

We shouldn't trash this planet anymore. We can admire, celebrate, and get along with it, instead of getting rid of it.

EARLY DAYS

WE: As a child growing up in California, were you able to ramble about in Nature? Weren't you a butterfly collector?

DB: Yes. I collected butterflies in my early teens and even had one named after me. I learned a great deal from that hobby and got quite proficient...to where I could identify butterflies at a distance simply by the way they flew, which shows what you can do if you start paying attention. Why don't we pay attention to the Earth? This is one of the things I most regret—people aren't paying attention to the natural world.

I've just written the foreword for a book to be published by University of California Press, *Natural Step*, that contains the work of Jack London, Mark Twain, Wallace Stegner, and many California authors he taught. The amazing thing about these writers is that they show a deep understanding of Nature; they could describe the terrain in detail...what species were present, how the country looked and smelled. I don't think we know that anymore. How do you come to appreciate Nature these days just watching a dinky screen with a lot of garbage on it? You lose more and more direct experience of what's going on, on the Earth. The theologian Thomas Berry has suggested that we should put the Bible on the shelf for 20 years and read the Earth. I think he's right.

WE: Did your parents have a background in natural history?

DB: Quite the contrary. My father got his masters in engineering at Michigan; my mother was an English major at Berkeley and later got a masters in history at Stanford. But she grew up on a farm and they both liked the outdoors and got all four of us children out into it at every opportunity. And we scrambled a bit on our own. We had a good sense of what was going on around us. I went on camping trips with my family starting when I was about six years old. Those wilderness trips continued with hardly any interruption until I was fully grown and useless.

WE: Did those childhood experiences set the stage for your mountaineering adventures in the Sierra as a young man?

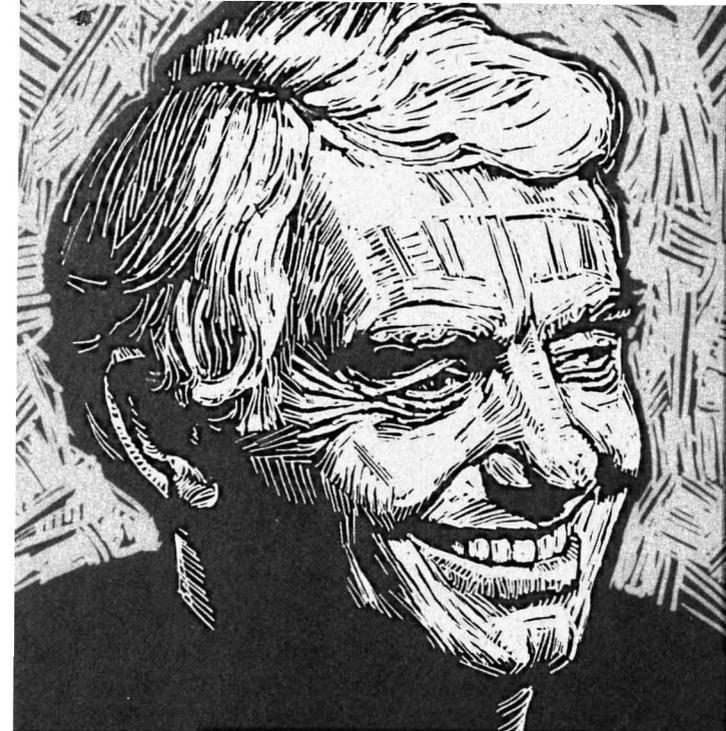
DB: Yes. I didn't do much mountaineering with the family early on because I was rather afraid of it. My first experiences in Yosemite included not wanting to go up Sentinel Dome because it was too far, and not wanting to cross the bridge near Vernal Fall because it was just a log with a rail over it and it scared me. That was excusable—I was only six. But I got over that later.

WE: Would you say that your wilderness activism evolved in part out of your mountaineering?

DB: I think it was the mountaineering. But there was an earlier experience, when I was around six, that also got me excited about protecting wild places. One of our early family trips was to Lake Tahoe. It took us four days to get there driving a 1916 Maxwell along a little one-lane dirt road, on what is now I-80. On the way we camped in a wonderful forest, and in that forest I found a spring. A spring is an awfully nice thing to find. Recall Wallace Stegner's remark "the sudden poetry of springs"—he was right on target. Clean, bubbling water coming out of the dirt.

The next time we came by—I was about eight at that point—the forest had been clearcut; there was no sign of a spring or anything else. I was quite upset by that. I've never forgiven the Forest Service. And I don't intend to.

These excerpts are from an interview conducted on 12 September 1997; present during the conversation with Brower were Tom Butler, John Davis, and Chris Franklin. The interview was transcribed by *Wild Earth* intern David Pontes.



ON GOVERNMENT, BILL CLINTON, AND THE ENVIRONMENTAL MOVEMENT

WE: Do you believe it likely that we will ever see meaningful reform of the Forest Service, or should the agency be abolished and a different federal agency assume management of those lands?

DB: I spoke at a Sierra Club banquet once during which I said that the Club had a hand in founding the Forest Service and now it should help to unfound it—start over on a new track. They applauded. The philosophy behind multiple use and abuse of the National Forests was informed by Gifford Pinchot, who said that everything in the National Forests is for sale. John Muir had the absolutely opposite reaction with the National Park Service—he thought the public lands should be off limits to commercial exploitation.

Of course the Park Service has not always done its job. The NPS's Denver Office of Design and Construction is a notable failure. If there is anything to be done that's bad in the National Park System, they'll do it. They seem to have no hesitation; it's as if they think parks are something to build roads in and carve up.

The Tioga Road across the Sierra, for example, should never have been realigned; the people responsible for it should have been put in jail. The destruction caused in order to make an unnecessary high-speed road across those mountains is a tragedy. If you wanted to go across fast you could cross fast somewhere else. The Park Service forgot their mission. I haven't gotten over that yet, either. My criticism of the National Park Service is usually muted by still more severe criticism of the Forest Service, which is a misnomer. We don't have a Forest

Service, we've had a Timber Service since 1920, to my knowledge.

In much of my experience, I've seen the Park Service shy away from public brawls. The Forest Service welcomes them. They know how to successfully play the multiple users—the dammers, loggers, miners, grazers, recreationists—against each other to prevent substantive reforms. They play that game beautifully.

Certainly there are enormous opportunities for reform in the government agencies overseeing our public lands. The National Park Service, US Forest Service, and Bureau of Land Management are perfect examples of the kind of performance that caused former Supreme Court Justice William O. Douglas to tell Franklin Roosevelt that every government agency should be abolished after it's ten years old, because after that they become more concerned with image than with their mission.

That comment applies also to the conservation organizations that are supposed to be watching over the government agencies. We are seeing the gradual dismemberment of the environmental movement by people who are more concerned with image than with mission. Think about what's happened to the Sierra Club. I just can't stand watching an organization that's been so good in the past start crumbling in front of my eyes.

WE: In what way do you think the Sierra Club is not as strong as it should be?

DB: They are more concerned with access than with performance, more with procedure than substance. They want to have access to the big people...to Mr. Clinton and Mr. Gore. I have a bumper sticker on my car that says "Free Al Gore." It probably should be changed to "Restore Al Gore." He forgot what he wrote his book about. I never expected to be quite so disappointed in our government as I am now. In an op-ed piece for the *Los Angeles Times* I wrote that Bill Clinton has caused more environmental damage already than Reagan and Bush did together, and he's still up to it.

The salvage rider, NAFTA [North American Free Trade Agreement], and GATT [General Agreement on Tariffs and Trade], among other policies, are a disaster for the Earth. Our political leaders don't want peace, the environment, or human rights to interfere with trade. Part of the blame for the failures of this administration lies with the environmental movement's placidity. Doing the right thing hasn't crossed Clinton's mind because it hasn't been made attractive to him to do the right thing. We haven't packaged it well enough. I can go on and rationalize his failure but it's much more fun just picking on him. It would be nice if he believed in something.

illustration by Neil Shigley

The mainstream environmental organizations all get a low rating in my estimation right now; although to their credit, the Sierra Club, Friends of the Earth, Earth Island Institute, and Ralph Nader's group, Public Citizen, are against NAFTA and GATT.

WE: What do you think of The Wilderness Society? TWS is prominent in American conservation history, yet seems moribund at present. Can it be revived?

DB: I think that all of them can be revived! But conservationists need to work together the way we did when I was younger, when the principal glue in the environmental movement came from Howard Zahniser, executive secretary of The Wilderness Society. He was my coach. Terribly good man. There isn't anybody out there now like Zahniser; groups are so busy trying to outdo each other that they forget what they can do together. I would like to see the Sierra Club play that leadership role again, but right now they're just in an environmental sandbox. They're not doing the real stuff: saving species, forests, rivers, parks, and fighting developers.

Still, I'd rather come out on the cheery end of this discussion—we *can* change things. There are many people who want to see a revival take place. Yes, there is resistance to it, but I see some good changes happening.

REDESIGN EVERYTHING

DB: A few years ago I got my pacemaker. It made me think—what the world is going through now is a global fibrillation. We are so overextended in everything we're doing that we don't know how to manage anything anymore. Wall Street needs therapy. It has major daily fluctuations—a couple hundred down, a hundred up, two hundred down, and so on...crazy. My wife calls it greed-lock. The people who work on Wall Street have no concept about what their actions are costing the Earth, costing their future. That principle is built into my thinking now: *What does it cost the Earth?*

Now there are other ways to express that; you can use more complicated language and it will hide your meaning quite successfully. But when you say, "What does it cost the Earth?" then you get to the heart of the matter. *How do our actions affect the Earth?* I'm looking out the window at the Berkeley Hills above San Francisco Bay and the air is not

as transparent as it ought to be, by a long shot. And it's better than most days right now.

We've done that. We've done it, Detroit has done it, the oil, tire, concrete, and electronics industries have done it, and they are allowed to get away with it. That can be changed.

That's why I get excited when I talk about ecological design and about people who are working very hard to change things...like interface entrepreneur Ray Anderson. Look what he's done in the carpet business: built a hopeless hopeful idea into a billion dollar corporation; now he's trying to show other business people that you can redesign what you're doing so you don't harm the Earth.

We need to pay attention to *The Ecology of Commerce* author Paul Hawken and to eco-architect Bill McDonough, who teaches at the University of Virginia. He's one of the brightest people we've got; all kinds of things are snap-crackling and popping in his mind, and they all make sense. McDonough says we have to redesign everything. He's right.

I often joke that there should be an eleventh commandment: Thou shalt not commit stupidity. Right now we are outdoing ourselves in stupidity and that has got to change. Until recently, there weren't enough of us doing bad things to force us to see the ecological consequences. Now there are.

We've been dodging reality too long. I'll give two figures: (1) In the last 50 years, the US has used more resources than the rest of humanity in all previous history; (2) If current population trends continue, the world will need to produce as much food in the next 40 years as it has in the last eight thousand. These are very hard numbers to comprehend unless you grasp what exponential growth is doing. Obviously, if such growth continues much longer the Earth is going to say buzz off.

WE: Is there a danger that in stressing the need to redesign technologies—to make our machines more efficient and so forth—we will delude ourselves into thinking that we can continue to use machines that are fundamentally incompatible with the natural world? Cars that run on fuel cells, for example.

DB: Well, I'd like to know a lot more about fuel cells than I do. I do know that Amory Lovins [of the Rocky Mountain Institute] has great hope for fuel cells. And there are all kinds of gains from the so-called hypercar. I suppose we could have ten times as many cars if they used one-tenth as much fuel; of course, that doesn't help us learn how to build a civilization that doesn't assume everyone must be able to get into a car and drive somewhere to feel happy.



illustration by Jim Nollman

WE: Exactly—the ecological problems associated with cars are not based solely on efficiency but on infrastructure. Cars, regardless of fuel source, require roads. Roads fragment habitat, alter hydrology, are a barrier and mortality sink for wildlife, exacerbate problems with exotic species, etc. The deeper question is: Should conservationists acknowledge that sanding the rough edges off the existing paradigm is inadequate, and that we need to move beyond industrial growth culture if we are to fully protect Earth's biological diversity?

DB: Yes. There is a simple answer. We will have to rethink the industrial age. It puzzles me. Where did we get this addiction to growth? Why do we think it necessary to keep growing, and growing, and growing? Our devotion to constant growth has done nothing but cause trouble. Nature doesn't work that way. In Nature you have a period of growth, a period of maturity, an editing out, and a reallocation of resources. The old tree dies and becomes soil again; that's a system that works. It's worked a very long time.

Still, some of the conveniences we have might be affordable; perhaps a lot of them would be if we didn't have so many people wanting to use so much stuff once and then throw it away. It's that stupidity thing again. We could redesign our way out of many of these problems.

THE FUTURE

WE: The US has a rich legacy of environmental destruction, but we also have an impressive roster of conservation heroes: Thoreau, Muir, Rachel Carson, and many others. In this era, we have David Brower. Would you care to speculate about where the conservation movement is headed?

DB: We're going to focus on global CPR—that's conservation, preservation, and restoration. Start with preservation. That's easy—we have to preserve what we can't replace.

We're going to articulate a vision of human communities based on conservation, not waste. Today we have a marketplace that is essentially stupid—run by economists who are essentially stupid. In their calculations, they do not figure in costs to the Earth or the future. Some conservationists will shy away from discussing economics but I say let's get into it, there are a lot of people who can only think in that language. So let's think as well as we can and make sure the despoilers don't win the debate.

The marketplace doesn't yet know the value of a tree. It tells us what a tree is worth for pulp or lumber; nothing about what it's doing for the CO₂ and O₂ balance, air quality, nutrient cycling and soil health, water quality and quantity, habitat for known species and those we've yet to discover, and beauty. These things are ignored by the marketplace. People are beginning to see that this must change. We're going to explain the real costs of trashing Nature and then count on the basic intelligence of people to quit screwing up the all the way to the bank.

Restoration is a very exciting challenge. I look into my own past and think how long it was before I even had that word in my vocabulary. In one of the publications I helped put out after the 1972 Stockholm conference on the human environment, *Did We Save the Earth at Stockholm*, the word restoration was used just twice in a minor way. Until recently, we weren't talking about it. We must let the Earth heal. Of course, it's arrogant to think that humans can save Nature, but at least we can get out of the way, and assist natural recovery. The growth of conservation biology is very promising in this regard. Scientists can help inform ecological restoration efforts.

I was challenged once by the then president of Tufts University when I called for restoration. He thought I was trying to stop the clock. "No," I said. "I just want to see the clock keep running."

Read the Earth. Take a look at it. These eyes we have—incredible! They have a marvelous ability to see detail; they have good acuity because you have so many rods and cones in each retina; they present us with all this visual image...in full color! Listen, and you get 3D sound. Our senses work pretty well. When you start looking, you can't help but see that we shouldn't trash this planet anymore. We can admire, celebrate, and get along with it, instead of getting rid of it.

Restoration of Earth's human and natural systems is the task at hand. Restoring the human systems is a piece of cake—you redesign, go back and give it another thought. The trashing of the Earth as we've done in the past is no longer affordable. That's over. This need not depress us. It should delight us. The business of making something better, getting something back in shape—helping Nature heal—should make us feel good. And it will probably make our children feel better about us if we spent more time trying.

WE: So we need to begin an era of restoration?

DB: CPR. Global CPR. ■

T · r · a · c · k · s

by Peter Friederici

Narrative in the deer world is a track of scents that is passed on from deer to deer with an art of interpretation which is instinctive. A literature of bloodstains, a bit of piss, a whiff of estrus, a hit of rut, a scrape on a sapling, and long gone.

—Gary Snyder, *The Practice of the Wild*

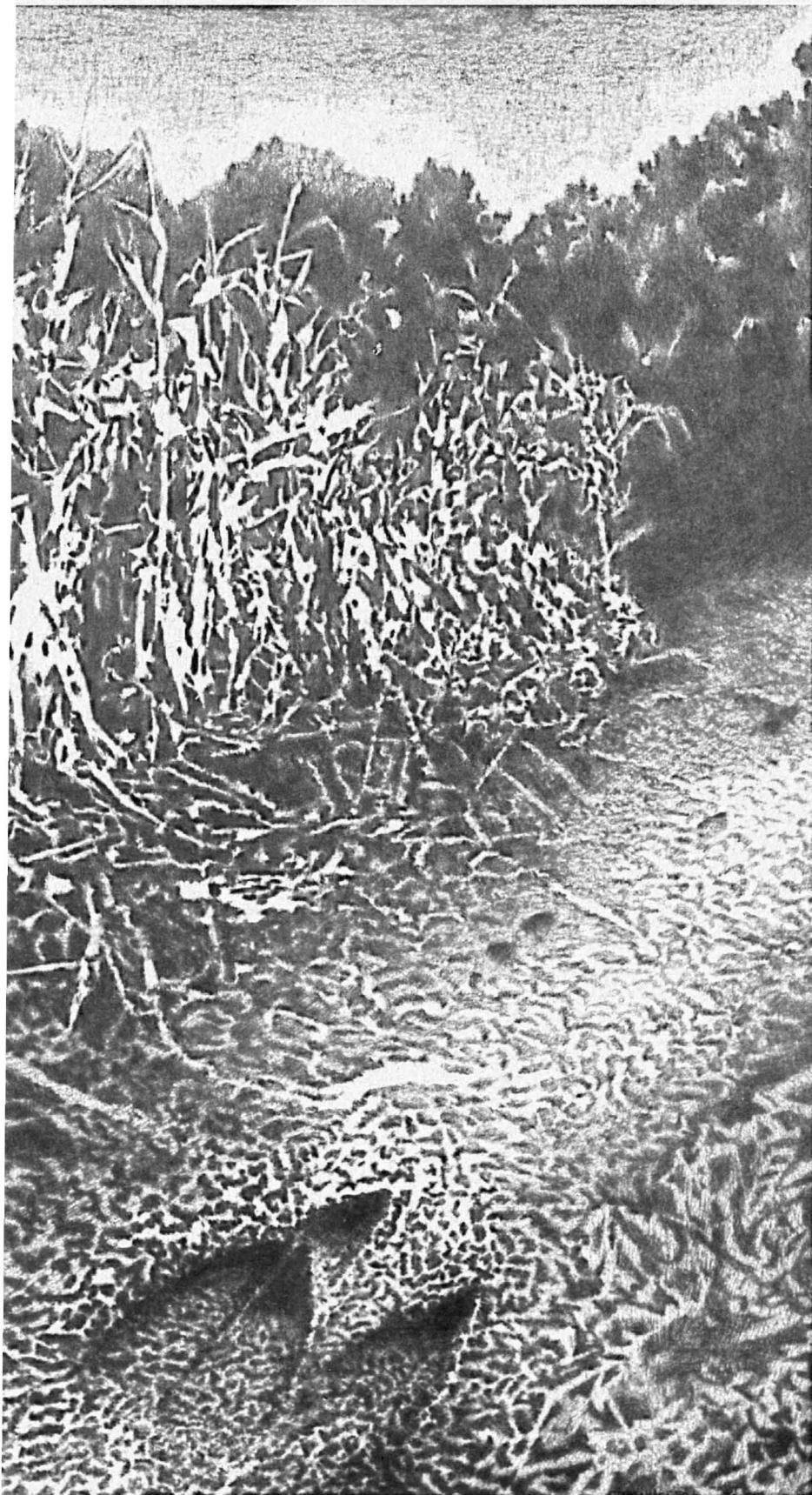
Brushing against beggar-ticks that fastened their seeds on my pants, I entered the November woods. In beyond the edge the undergrowth fell away and the leaves that covered the forest floor were the only tangible reminder of summer. They sank brown and tan, russet and amber into the wetness of low ground that released a dank odor of decay with my every step. Up on a slight rise they were lighter in color: washed-out beige, or a sheen of bronze on fine red-orange. Reddish leaves still hung like ragged flags from the limbs of white oaks, their trunks butted with mantles of moss that glowed damp and livid green from recent rains.

Deer tracks rutted the mud along the little creek that ran from the railroad tracks toward the road and then on down the hill. Deer were so common in the area that suburban town officials talked of shooting some in order to protect the carefully landscaped shrubs and uncommon woodland wildflowers they liked to eat. In the suburbs they were protected from hunting, and from all enemies except motor vehicles; and they knew it. When I rode along the bike trail they were reluctant to get out of the way. I felt the same impatience with them as with squirrels raiding the bird feeder. They were brazen. Their ability to live directly in our midst seemed to cheapen the experience of encountering them.

On this day, though, I wanted to see a deer. In the woods the experience meant more than it did on the trail, or on a road. In the woods the deer were like summer's green grown faded and tawny and skittish, ghosting along between the trees. They were much shier there, and consequently more interesting.

I walked slowly and carefully, treading quietly on the damp leaves, though some superstition told me that my desire itself reduced my chances. I see animals most readily when I'm not trying to do so. It's as if they know how grace grows from a lack of desire. But not thinking of deer was hard to do once I started finding more tracks. One set followed the narrow, muddy trail, thickly littered with fallen leaves, that meandered in an uneven circle inside the perimeter of the forest preserve. The other followed the creek. I followed these tracks, jumping over mud puddles, hanging onto skinny buckthorn trunks for balance. After a hundred or so yards the tracks veered from the creek in the direction of a small, dry knoll crowned with red oaks, where they vanished into the heavy leaf litter.





The forest preserve is a small rectangle about twenty miles north of the Chicago city limits; it is an island surrounded by roads on two sides, houses and yards on the third, the railroad on the fourth. From the roads it's a blur of trees. Only from the inside, among the trees, is it possible to see the small details—the muddy creek, the scant rises—that distinguish this place from any other. For the deer, these details define the place. The creek is a travel corridor relatively free of underbrush; the knoll is dry and grassy.

In our automotive society, we seldom take the time to perceive this sort of specific detail. We drive the roads, or perhaps are driven by them. We don't take the time to meander cross-country. Even when we walk it is the driveway, the highway, the road to the train station and the mall that do not just guide us, but define our image of the land. Everywhere our surroundings are cut into straight-edged rectangles whose sides run dead east and west, north and south. This we take as a given. More than pollution, more than the extinction of native species and the introduction of exotics, more even than the taming of wild forest and prairie into lawn and garden, this is the primary change Western culture has wrought upon the land of North America: we have chopped it up into so many bits that it requires a great effort to think of it whole again. The fences run straight up the hills and through the low marshes. The lines that demarcate county, township, section, and lot show an indifference to the lay of the land that may once have seemed god-like, but now, as expressed in the sweep of bland tract homes set on tiny lots where once were expansive prairies, seem arrogant and petty. It's as if we were in such a hurry to parcel out the land that anything other than a straight line, and a right angle, seemed a luxury (in the Midwest, the few diagonal streets mark the approximate course of old

white-tailed deer tracks by Heather K. Lenz

Indian trails). Everywhere our mark is the grid, and the fence—the parceling-out.

It is difficult to think that it has not always been this way, that in fact the land has its own logic that sometimes still defies the roads and the straight lines. You see it in the low-lying corner where the puddles always gather and freeze over, regardless of what the highway department does; or in the hill of glacial steepness whose crest looks west to where the chain of marshes once ran. You see it when the lakefront bluffs and beaches crumble and fall away during winter storms, ignorant of the breakwaters built to protect them. These features, these snapshots of processes endlessly cycling through biological and geological time—they endure, flash by them as we may.

It was to re-establish this sense of the land that I walked cross-country whenever I could while I lived in the suburbs. Even if I was going to the convenience store I might walk through the forest preserve, though at the end I would have to return to the road anyway. It was an effort. It was always quicker to take the road, and there was far less chance of getting muddy, or ending up with burrs sticking to my socks. The feeling of doing something slightly subversive helped me make the decision to go cross-country. Listening to the land, letting its contours decide which way to go, calls into question all our easy assumptions about our role in the world. “Every walk is a sort of crusade,” wrote Thoreau, one of America’s greatest walkers.

A strange thing about walking, as opposed to driving: distances often seem shorter to me when I walk. The faster we go, the more we lose the connection between places. When I drive across town, the landscape that connects starting point and destination is all exterior, a view outside the window. Walk, and it becomes part of me: the fecund odor of downed leaves wet in a puddle, the tentative tapping of a downy woodpecker mining for grubs on a dead branch, the particular muddy ruts or grass-grown cracks in the sidewalk. It is the intimacy of this contact that makes the distance seem less; however many steps may make up the walk, they all start and finish on the ground.



I looked at the oaks crowning the knoll and considered how a dog, or a wolf, would be able to follow the deer trail I could not see, detecting the scent traces that clung to leaf and branch and trunk for—how long? Days and weeks, perhaps. The woods were suffused with scent trails that formed a web, as invisible to my senses, and as vital to the place’s workings, as the intertwining strands of mycorrhizal fungi that tie together a forest’s

roots—trails that, as John Burroughs wrote, remind us of “the friction that is going on all about us, even when the wheels of life run the most smoothly. A fox cannot trip along the top of a stone wall so lightly but that he will leave enough of himself to betray his course to the hound for hours afterward.” In all the world nothing is truly independent. We rub against one another, we chafe, we mingle, until we find that we are composed of trees and deer, and the woods echo with our presence.

I wanted to follow those deer trails. They could help me find the deer. More importantly, I knew that they overlay the land in an entirely different way than did our roads. To the deer, a habitat consisting of forest preserves and private yards is all of a piece. It is all home. A fence can be leaped; plants on both sides are equally edible. I could only imagine how the deer trails flowed like clear rivulets across the land, circling and gathering the place into a perfect unity that lacked nothing. And I could only regret the extent of what remained hidden to me.

Try as I might, I couldn’t find any deer that day, though I came across their tracks often enough. Once I found an area clear of leaves where a large deer—a buck, probably—had bounded along, leaving hoof imprints deep enough that the dewclaws showed clearly. I opened my notebook and drew the tracks, detailing their contours and textures. This was the nearest intimacy I would feel with the deer today, I knew—this tedious procedure of translating a little bit of its trail into something I could take home. As I worked, crouched on the muddy ground, I sensed that in this act lay the beginning of literature, of history, possibly of language itself; in stooping to read what the animals have been up to, and in returning home and telling the story to the rest of the tribe. Learning just a little about how a wild animal lived on the land we shared, and relating the story, was the oldest thing I could ever do. Here, just for a moment, I could sense the land the old way, as it must feel to those who bound across its contours on hooves and paws.



I think a biological imperative draws me out to walk, even in the cold and rain. If I work inside for two or three days and do not take a look at what’s happening outside I find myself pacing as restlessly as Rilke’s panther, scarcely aware anymore of the world beyond the walls. But I can never adequately tell why I need to get outside just then, and my best explanations of why I feel so much more comfortable and relaxed afterwards always sound over-rationalized. It’s better just to walk

I see animals most readily when I'm not trying to do so.

and expect nothing; when the land flows in through my senses there hardly seems a need to explain anything.

A few days after I followed the deer trail I took a walk to the beach after a long day of desk work. It was sunset. Because the woods on the sides of the ravine were made up largely of maples whose leaves had fallen yellow, the place shone with an even golden light that seemed to come as much from the leaf-littered ground as from above. The woods were a continuous rolling rug of glowing yellow and bronze. A sheet of leaves covered the placid creek and left only small patches of open water that still reflected luminescent sky.

The tracks were pressed like talismans into the hard, moist sand around the creek's outlet. The sprawling five-toe prints of raccoons mobbed the flat banks. Crows had written a neat chronology of events by dragging their middle toes over the raccoon spoor. Perpendicular to the creek danced the deeper traces of fox toes. On the hardest sand only the sharp, parallel claw marks were visible. The fox had been running here, then leaped the creek, and in softer sand the impressions showed up firm and deep: four toe pads, rounded, longish, unmistakable. Here one of the middle claws had clicked on a pebble half-buried in sand and pressed it down; here the deep claw marks had filled with water.

Since the weather was cool I knew the tracks would remain until the next storm pushed its waves over the beach, or sent its runoff coursing down the ravine, or pelted the sand with hard, cratering raindrops. In July these tracks would have dried in the sun and blown away in the wind; tracks that clearly delineate the summer night's activities at dawn can be all but indistinguishable by afternoon. These fall tracks, instead, were a modest stab at permanence.

I walked toward the path along the creek. Already the golden light was fading. Suddenly a gold-red form was coming toward me on the path. The thought registered instantly that this was a fox. In the next moment I regretted my standing on the open beach, where there was absolutely no place to hide. All I could do was stand and watch as, in a second, the fox crested a rise in the path, saw me, and turned tail. It ran back down the path, vanishing more swiftly than I could have imagined, quickly enough that I scarcely saw it at all. I cannot say, now, that I saw legs, or a tail, or eyes. I know it was a fox, but that impression was formed as much by fluid speed and shadowiness as by physical form. The fox left



red fox tracks by Heather K. Lenz

's as if they know how grace grows from a lack of desire.

behind only the thought of sound, the barest whisper of a rustle among the leaves, a hint of passing that left me wondering whether I'd heard the trace of a footfall, or just of my desire.

The fox was gone, and yet in the gathering darkness it was as if I'd seen an apparition anyway, which, having never been fully present, could also never really vanish. I walked forward to look for traces. I could see where a few leaves had been kicked up. A couple of deep scrapes in the sand at the top of the rise showed how the fox had turned around and powered off. There were no clear prints, and the signs quickly vanished along the path, where the leaf litter and the darkness both grew thicker. The trail was no more distinct than the sighting itself.

It is such moments that I commemorate when I look at tracks. The instant of seeing an animal animates the many moments spent analyzing its traces. I turned around and looked again at the prints along the creek. What, I wondered, were the raccoons snuffling after here on the beach? Did the crows fly off suddenly because a hawk swept by? Was the tail of the fox fully extended as it leaped the creek? I pictured the front legs stretched out, the claws breaking through the sand until the pads reached their perfect equilibrium, then the rebound and the next leap. The muscles compress, and stretch again. The scene slowed into a frame-by-frame mental picture, an image frozen into all the permanence a mutable mind can muster. If I looked long enough I could almost convince myself that I was there, that I saw the fox jumping the creek more clearly than the animal I really did glimpse in the shadows.

Seeing the fox was a gift. With tracking I try to make a gift of every walk. Tracking is a matter of becoming increasingly sensitive to subtlety. When I can read a story in the dirt I go home content, knowing that the deer and foxes are leading their lives undisturbed in their privacy. They don't mind if we don't meet. And, increasingly, neither do I. Just knowing they are there is often enough. The landscape we inhabit is not made solely of earth and air and plants and animals—the details are what we fill in with memory and desire, and love. Love is what does not need to be explained. Love is in the shadows, on the trail, and reading its traces is one of its own truest expressions. ■

Peter Friederici is a freelance writer, field biologist, and wildlands advocate who lives in Arizona.



raccoon tracks by Heather K. Lenz



The Exotic Species Problem and Freshwater Conservation

by Anthony Ricciardi

ALIENS AMONG US

Wherever humans have traveled, they have either accidentally or deliberately carried other species with them. Within the borders of most countries, hundreds to thousands of nonindigenous (exotic) species have become established (Lodge 1993). Their numbers are increasing, because the growing world market has created new pathways by which flora and fauna are rapidly shuttled from one continent to another (e.g., inside a packing crate of vegetables, or in the ballast tanks of a ship). The result has been a widespread redistribution of life on Earth.

The most visible evidence of biological invasion is in the terrestrial environment, and we probably don't have to look any further than our own backyard. In contrast, the effects of exotic species in lakes and rivers are unnoticed by the general public, even though these ecosystems have been invaded for centuries. The world's largest freshwater ecosystem, the Great Lakes-St. Lawrence River basin, holds over 140 species of non-indigenous algae, plants, fishes, and invertebrates; every

level of the food chain is occupied by at least one exotic organism (Mills et al. 1993). Similarly, in the Hudson River, foreign species make up 29% of the fishes, 21% of the mollusks, and 17% of the vascular plants (Mills et al. 1996). In these and other aquatic systems, the number of established exotics is increasing with time.

WHERE DO THEY COME FROM? SOURCES & CAUSES OF INVASION

In many cases, we have deliberately placed exotic species into new environments to do our bidding. Within North America, game fishes are commonly transferred from one basin to another to stock sport fisheries with little regard for the potential impacts on native fauna (Moyle 1976; Mills et al. 1993). In recent decades, expanding aquaculture has led to worldwide introductions of rainbow trout (*Oncorhynchus mykiss*), European brown trout (*Salmo trutta*), Eurasian carp (*Cyprinus carpio*), Chinese carps (*Ctenopharyngodon*, *Hypophthalmichthys* spp.), and African cichlids (*Tilapia*, *Oreochromis* spp.). In fact, during this century,

illustration by Libby Davidson

160 species of fish have been transferred into 120 countries for recreational and aquacultural purposes (Welcomme 1984).

Exotics are also used as biological tools to control unwanted organisms. Asian grass carp (*Ctenopharyngodon idella*) have been released into reservoirs in the southern US to reduce nuisance weed growth, and many have escaped and formed reproducing populations in the Mississippi River (Taylor et al. 1984). Mosquito fish (*Gambusia affinis*) and guppies (*Poecilia reticulata*) have been used widely to control mosquito larvae, and consequently have become established in freshwater habitats throughout the world (Taylor et al. 1984).

The aquarium trade involves the shipment of thousands of fishes, mollusks, and plants around the world for sale as ornaments and pets, and is the source of a large number of species that have been accidentally or intentionally released into North American waters. Hence, the widespread occurrence of goldfish (*Carassius auratus*) in wild ponds (Welcomme 1984). Many tropical aquarium fishes have found new homes in climatically favorable habitats in the southern US; common pets such as tiger barbs (*Barbus razona*), swordtails (*Xiphophorus* spp.), and mollies (*Poecilia* spp.) are now permanent residents of Californian lakes and rivers (Moyle 1976). Even the hydrilla (*Hydrilla verticillata*) weed problem in US lakes can be traced back to its original introduction to Florida by the aquarium industry (Joyce 1992).

The bait-fish industry has also played a role in the introduction and spread of exotics within North America. In the 1980s, the industry imported the European rudd (*Scardinius erythrophthalmus*) for culturing because it was considered to be a hardy bait fish. The rudd subsequently became established in several states through bait-bucket dumping (Burkhead and Williams 1991).

The major force for the global redistribution of species is international trade, which is primarily carried by ships. The ballast water of cargo ships leaving inland ports may contain a rich soup of freshwater flora and fauna, including microscopic organisms, cysts, eggs and larvae (Locke et al. 1993). This water is carried to maintain the ship's stability while it travels the high seas without heavy cargo, and is then discharged when the ship arrives at another port to load. Not surprisingly, one-third of all known introductions to the Great Lakes occurred after the opening of the St. Lawrence Seaway in 1959 (Mills et al. 1993). Increased shipping traffic in recent decades has introduced several ballast-water stowaways to North America, including the infamous

Eurasian zebra mussel (*Dreissena polymorpha*). Even more significant to human ecology, and a striking reminder that we are living in a biological "global village," is the discovery of cholera bacteria in the ballast water of cargo ships docked in US ports on the Gulf of Mexico (McCarthy and Khambaty 1994).

Another example of the insidious quality of human-assisted introductions involves the Asian tiger mosquito (*Aedes albopictus*), a species that can reproduce in small containers of water. Its larvae were shipped into North America with imported automobile tires in the 1980s; the species has since been spreading throughout the US. In its native range, the tiger mosquito is a vector for animal (including human) diseases such as dengue fever and encephalitis (Moore et al. 1988).

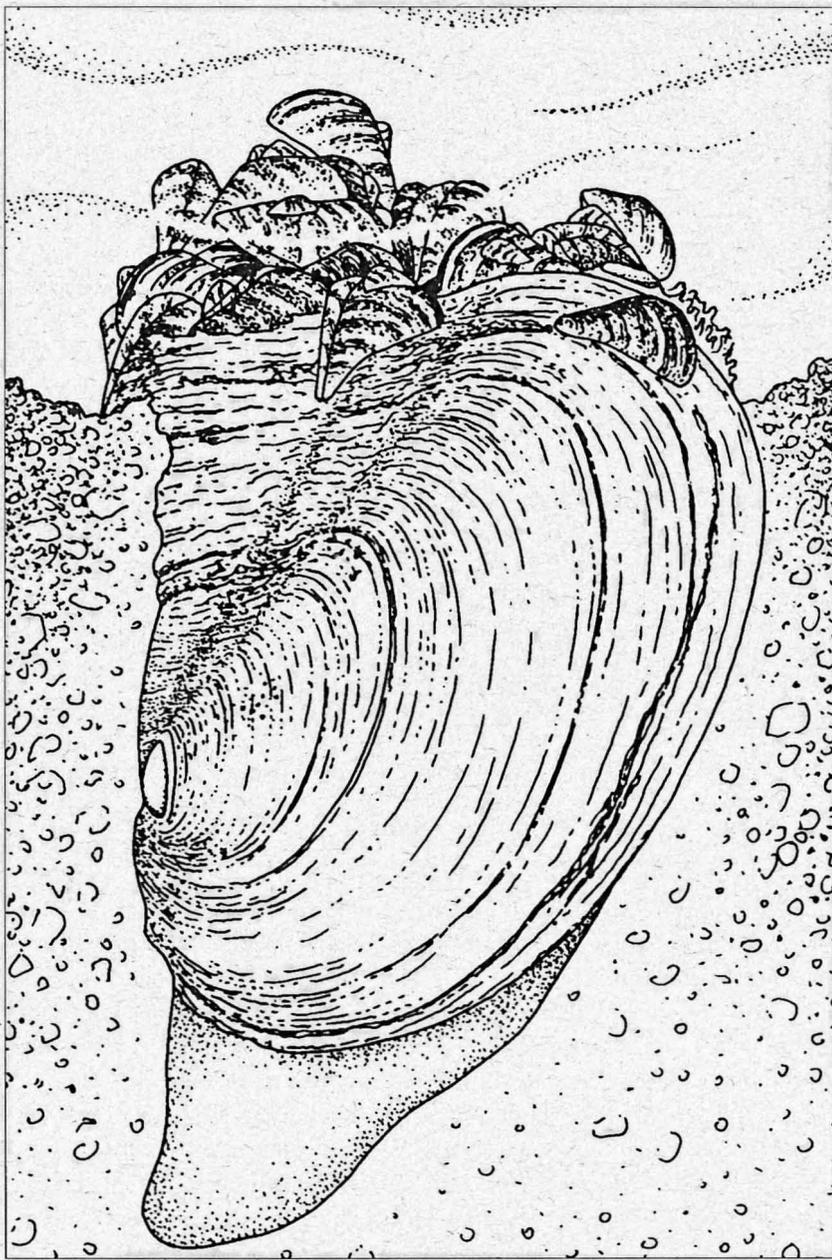
Once established inside a region, exotics are almost impossible to eradicate and often spread with further assistance from humans. Exotic weeds caught on recreational boat trailers are driven from one watershed to another (Johnstone et al. 1985; Joyce 1992). Zebra mussels attached to the hulls of barges are transported hundreds of miles upriver (Keevin et al. 1992), and those attached to boating equipment may survive several days out of water until they reach another basin (Ricciardi et al. 1995). The eggs, larvae, and other life stages of a multitude of creatures can reside in the water of bilges and bait-buckets, waiting to be delivered to new habitats. Given the vagaries of finding a mate, obtaining food and other resources, and surviving predation and competition, a successful invasion may require multiple introductions; the growing number of invasions indicate that human activities have loaded the dice in favor of many exotic species.

THE THREAT TO FRESHWATER ECOSYSTEMS

The effects of most exotic species on freshwater ecosystems are undetectable (Mills et al. 1993, 1996). However, a small proportion (typically 10-20%) of introduced species can have a conspicuous and sometimes catastrophic influence on food webs, habitat quality, and biodiversity. Their effects fall into six categories:

1. *Habitat alteration*

Exotic species may alter habitats and degrade water quality. Both the common carp, whose bottom-feeding activities uproot vegetation (Taylor et al. 1984), and purple loosestrife (*Lythrum salicaria*), an invasive weed that crowds out native marsh plants (Rawinski and Malecki 1984), can destroy wetland habitat. Water hyacinth



(*Eichhornia crassipes*) and hydrilla (*Hydrilla verticillata*) have crowded out native flora in southern US lakes (Joyce 1992), and Eurasian watermilfoil (*Myriophyllum spicatum*) is affecting northern lakes in a similar weedy fashion (Mills et al. 1993). Conversely, invasive herbivores and omnivores like grass carp and the rusty crayfish (*Orconectes rusticus*) have greatly reduced submerged vegetation in some lakes to the detriment of native fauna (Olsen et al. 1991).

Some of the "clearest" examples of habitat alteration are provided by the zebra mussel, an efficient and powerful filter-feeder. In Lake St. Clair, zebra mussels removed vast amounts of suspended particles, causing a dramatic increase in water transparency and the prolific growth of submerged plants; bass and northern pike subsequently became abundant, but walleye (which are

adapted to turbid conditions) have virtually disappeared (MacIsaac 1996). Zebra mussels also removed most of the phytoplankton from the Hudson River estuary in the early 1990s, causing 600 million native clams to die by starvation (Strayer and Smith 1996).

2. Predation

Introduced predators can profoundly disrupt food webs. The invasion of the spiny water flea (*Bythotrephes cederstroemi*), a planktonic predator from northern Europe, has reduced native zooplankton in Lake Michigan (Branstrator 1995). Predation by sea lamprey (*Petromyzon marinus*), in combination with overfishing, caused the extermination of lake trout from the upper Great Lakes in the early half of this century (Lawrie 1970). A piscivorous cichlid (*Cichla ocellaris*) introduced into Lake Gatun, Panama, rapidly eliminated several native fishes and provoked a chain reaction that caused waterfowl to decline (Zaret and Paine 1973). Other examples are too numerous to list, but the most dramatic in recent years is Lake Victoria, East Africa, where predation by the introduced Nile perch (*Lates niloticus*) has driven hundreds of native cichlids to extinction (Kaufman 1992).

3. Competition

Exotic species often outcompete native species for scarce resources. Competition for food with introduced blue tilapia (*Tilapia aurea*) caused widespread displacement of shad (*Dorosoma* spp.) from lakes in Florida and Texas (Taylor et al. 1984). Similarly, introduced lake trout (*Salvelinus namaycush*) probably contributed to the extinction of the cutthroat trout (*Salmo clarki*) population in Lake Tahoe, and the spread of mosquito fish accelerated the decline of pupfishes (*Cyprinodon* spp.) in southern California (Moyle 1976).

Exotic species are frequently involved in serious cases of environmental mismanagement, often because of unforeseen competition with native biota. A textbook example is the deliberate introduction of mysid shrimp (*Mysis relicta*) into Flathead Lake, Montana, as supple-

Zebra Mussels (*Dreissena polymorpha*) on a Fragile Papershell (*Leptodea fragilis*) illustration by Libby Davidson

mentary food for kokanee salmon. The shrimp avoided predation (because of their nocturnal habits) and out-competed the kokanee for zooplankton, causing not only the collapse of the salmon population but also severe reductions in the eagle and grizzly bear populations that fed on the salmon (Spencer et al. 1991).

An unusual form of interference competition occurs between the zebra mussel and native freshwater mussels. Zebra mussels, like their marine cousins, attach to firm surfaces using adhesive byssal threads that protrude through the base of the shell. Colonies of the mussel rapidly smother any solid object—including the shells of other mollusks. The normal feeding, respiration, and mobility of native clams are impaired by thick clusters of zebra mussels attached to their shells. Through direct fouling and competition for food, the zebra mussel has caused severe declines in native clam populations in the Great Lakes-St. Lawrence River (Ricciardi et al. 1996) and Hudson River systems (Strayer and Smith 1996). Unfortunately, the exotic mussel has also spread throughout the Mississippi River basin, which contains the world's highest diversity of freshwater clams, many of which are endangered. This invasion will likely provoke a series of extinctions in the near future.

4. Hybridization

Geographic barriers to species mixing maintain genetic diversity; when these barriers are circumvented by human-assisted introductions, native gene pools are threatened. This has been observed in freshwater fishes that interbreed with closely related exotics. Rainbow trout and brown trout, both introduced widely and intentionally for recreational purposes, have endangered other trout species through extensive hybridization (Moyle 1976; Taylor et al. 1984). Moreover, some western species of chub (*Gila* spp.) and sticklebacks (*Gasterosteus* spp.) have become endangered as a result of hybridization with similar species introduced from adjacent basins (Moyle 1976). In total, hybridization has played a major role in 38% of documented extinctions of North American fishes (Miller et al. 1989).

5. Diseases and parasites

Introduced species may arrive with one or more sinister hitchhikers, posing a compounded threat to the native community. A fungal parasite (*Aphanomyces astaci*) introduced with North American crayfish into Europe caused a large-scale plague that wiped out native crayfish populations (Reynolds 1988). *Aeromonas salmonicida*, the bacterium responsible for a number of

salmonid infections including furunculosis and ulcer disease, was introduced in the Great Lakes in the early 1900s during trout stocking efforts (Mills et al. 1993). The shipment of infected trout has also caused the spread of whirling disease across the US (Bergersen and Anderson 1997). Similarly, the Asian fish tapeworm (*Bothriocephalus acheilognathi*) was introduced to North America with a variety of its hosts (e.g., mosquito fish, carp, shiners); at least one endangered native fish (the woundfin, *Plagopterus argentissimus*) in a western US river has become infected with the tapeworm (Deacon 1988). Overall, the transfer of infected stock fish has caused at least 48 parasites and pathogens to become established on continents outside of their natural range (Hoffman 1970).

6. Homogenization of ecosystems

A subtle consequence of biological invasions is the homogenization of ecosystems. Through the effects mentioned above, species mixing ultimately favors a minority of dominant organisms and a net loss of genetic diversity. Evidence of the increasing homogenization of freshwater ecosystems can be found in the Great Lakes-St. Lawrence River and Hudson River systems, whose flora and fauna are comprised largely of Eurasian species (Mills et al. 1993, 1996). Invaders like the common carp, mosquito fish, brown trout, and water hyacinth have become dominant components of many freshwater communities throughout the world, and have taken over niches formerly occupied by indigenous species.

COMING TO A LAKE NEAR YOU: FUTURE INVADERS

We are likely to witness the arrival of more exotic species to our lakes and rivers every year. A small, filter-feeding crustacean (*Corophium curvispinum*) that builds dense networks of mud tubes over rocky areas is spreading like wildfire across western Europe. In the early 1990s, it achieved population densities on the order of several hundred thousand individuals per square meter in the Rhine River, where it displaced even the zebra mussel (Van den Brink et al. 1991). It could reach North America with the aid of ship ballast water.

Elsewhere in the world, a Chinese freshwater mussel (*Limnoperna fortunei*) that has striking similarities to the zebra mussel, has become a significant fouling pest in southeast Asia. It was recently introduced into the Rio de la Plata estuary in South America through ship ballast-water release (Darrigran and Pastorino 1995). This

The Biodiversity Legal Foundation (BLF) seeks information regarding the adequacy of the various states' "surrogate species" programs as related to the implementation of the Clean Water Act. In particular, we are asking the scientific community, especially conservation biologists, to send us any data they may have concerning known instances where a state's water quality program uses surrogate species that *are not* sensitive enough to ensure that the state's whole effluent toxicity (WET) testing (both acute and chronic) fully protects the most sensitive native aquatic species in the state's waters.

We believe that several states currently rely upon surrogates that are hardier and more resistant to the adverse effects of priority pollutants than are the state's native critters. For example, is the fat head minnow as sensitive to the chronic effects of chlorine as are sea urchins? Such information could help us ensure that the most important indicators of aquatic health are being considered when the Environmental Protection Agency approves state water quality programs.

The BLF is currently engaged in research in this area with the goal of upgrading state water quality programs where aquatic species are biologically imperiled. Any help in this matter would be greatly appreciated. The BLF seeks to use only scientifically valid data to integrate biology and law on behalf of native species and their habitats in order to defend and protect biological diversity.

—Jasper Carlton, Director (BLF, POB 18327, Boulder, CO 80308-1327; fax 303-440-0434; BLFrog@AOL.com)

species tolerates warmer temperatures and lower calcium concentrations than does the zebra mussel; therefore, if introduced to North America, it could invade habitats that currently provide refuge for our beleaguered native clams.

Although American and Canadian legislation directs ships to exchange their ballast water in the open ocean before entering North American ports, not all ships comply, and incomplete exchanges that retain significant amounts of fresh water are common (Locke et al. 1993). Both *Limnoperna* and *Corophium* tolerate a wide range of salinities, and would likely survive an incomplete ballast-water exchange. These are just two examples from an army of potential future immigrants to North American freshwaters.

THE CHALLENGES TO CONSERVATION

The preceding examples illustrate the broad threat that exotic species pose to the biodiversity and stability of freshwater ecosystems. They present an array of challenges to conservation efforts. Some of these challenges arise from conflicting public interests regarding fisheries management. In particular, perceived economic benefits of aquacultural schemes may create political pressure for new introductions. This game of ecological roulette (i.e., stocking exotics in the hopes of revitalizing mismanaged fisheries) is enticing; despite a legacy of catastrophic

introductions in the Great Lakes, hatchery-raised salmonids are still being released, and there have even been suggestions of introducing striped bass (*Morone saxatilis*) to the system. Conservationists must always be prepared to loudly question the wisdom of such schemes, even in the face of hostile public opinion.

Another challenge is the perceived need for radical action to combat "pest" species. This perception promotes the use of pesticides and propagates vicious circles of biological control (the deliberate introduction of one exotic to reduce the effects of another). For example, homeowner associations in Florida have released exotic snails in attempts to control *Hydrilla* and water hyacinth infestations, despite the indiscriminate damage wrought by the snails on native habitats (Simberloff and Stiling 1996). In recent years, the molluscivorous Chinese black carp (*Mylopharyngodon piceus*) has been proposed as a control for zebra mussels. These fish possess thick molariform teeth that are capable of chewing mollusks the size of golf balls (Shelton et al. 1995). One can imagine the effect they may have on threatened populations of native clams and snails, if the fish escaped into the wild. Again, conservationists must be at the forefront to demand proper impact assessments before the implementation of biological control programs, which are often seen as an "environmentally friendly" alternative to chemical treatments.

In my view, one of the keys to addressing these challenges is personal responsibility. Personal responsibility involves political support for preventative exotic species legislation, routine inspection of boating and fishing gear for exotic hitchhikers, making intelligent decisions regarding the use of live bait or the disposal of aquarium pets, sharing information about harmful exotics with outdoorspeople, aiding detection efforts, and publicly questioning dubious aquaculture schemes. These actions could go a long way toward minimizing the threat of invasion. ■

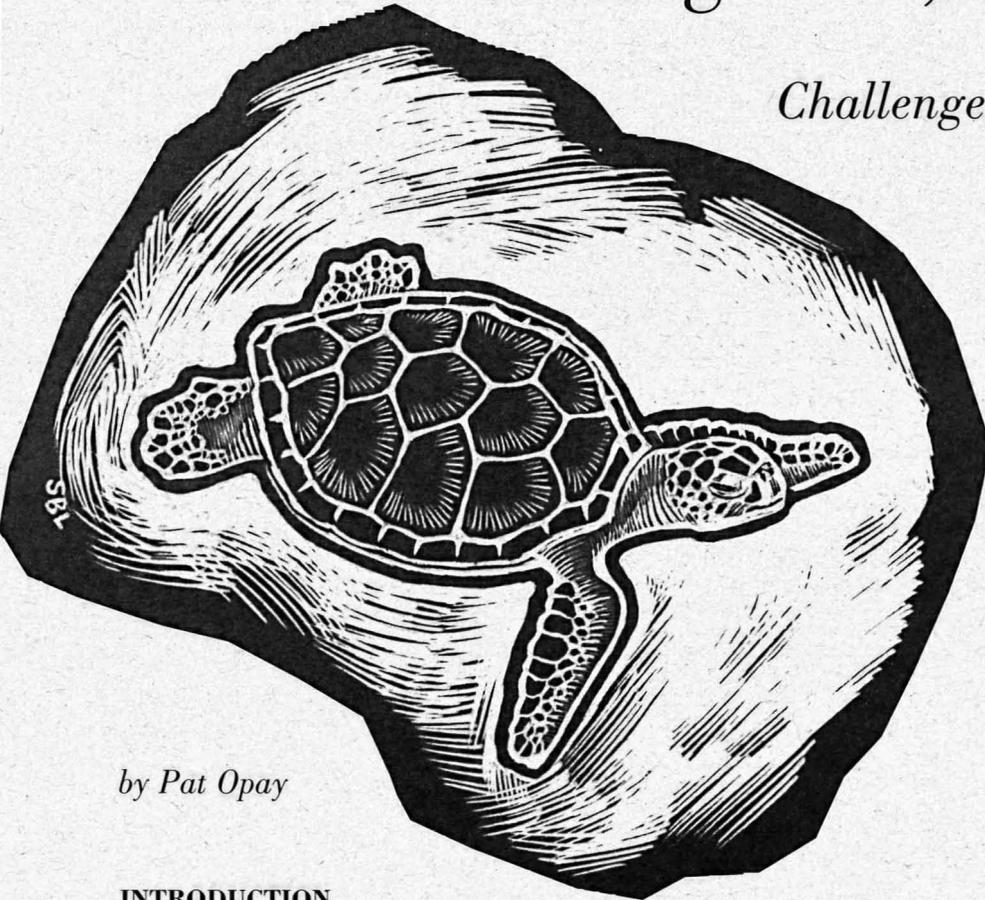
Anthony Ricciardi, PhD, is a postdoctoral research scientist at Université Laval in Québec (Département de Biologie, Université Laval, Ste-Foy, QC, Canada G1K 7P4).

References

- Bergersen, E.P., and D.E. Anderson. 1997. The distribution and spread of *Myxobolus cerebralis*. *Fisheries* 22(8): 6-7.
- Branstrator, D.K. 1995. Ecological interactions between *Bythotrephes cederstroemi* and *Leptodora kindtii* and the implications for species replacement in Lake Michigan. *Journal of Great Lakes Research* 21: 670-679.
- Burkhead, N.M., and J.D. Williams. 1991. An intergeneric hybrid of a native minnow, the golden shiner and an exotic minnow, the rudd. *Transactions of the American Fisheries Society* 120: 781-795.
- Darrigran, G., and G. Pastorino. 1995. The recent introduction of a freshwater asiatic bivalve, *Limnoperna fortunei* (Mytilidae) into South America. *Veliger* 38: 171-175.
- Deacon, J.E. 1988. The endangered woundfin and water management in the Virgin River, Utah, Arizona, Nevada. *Fisheries* 13: 18-24.
- Hoffman, G. 1970. Intercontinental and transcontinental dissemination and transformation of fish parasites with emphasis on whirling disease (*Myxosoma cerebralis*). *American Fisheries Society, Special Publication* 5: 69-81.
- Johnstone, I.M., B.T. Coffey, and C. Howard-Williams. 1985. The role of recreational boat traffic in interlake dispersal of macrophytes: a New Zealand case study. *Journal of Environmental Management* 20: 263-279.
- Joyce, J.C. 1992. Impact of *Eichhornia* and *Hydrilla* in the United States. *ICES Marine Science Symposium* 194: 106-109.
- Kaufman, L. 1992. Catastrophic change in species-rich freshwater ecosystems. *BioScience* 42: 846-858.
- Keevin, T.M., R.E. Yarbrough, and A.C. Miller. 1992. Long-distance dispersal of zebra mussels (*Dreissena polymorpha*) attached to hulls of commercial vessels. *Journal of Freshwater Ecology* 7: 437.
- Lawrie, A.H. 1970. The sea lamprey in the Great Lakes. *Transactions of the American Fisheries Society* 4: 766-775.
- Locke, A., D.M. Reid, H.C. van Leeuwen, W.G. Sprules, and J.T. Carlton. 1993. Ballast water exchange as a means of controlling the dispersal of freshwater organisms by ships. *Canadian Journal of Fisheries and Aquatic Sciences* 50: 2086-2093.
- Lodge, D.M. 1993. Biological invasions: lessons for ecology. *Trends in Ecology and Evolution* 8: 133-137.
- MacIsaac, H.J. 1996. Potential abiotic and biotic impacts of zebra mussels on the inland waters of North America. *American Zoologist* 36: 287-299.
- McCarthy, S.A., and F.M. Khambaty. 1994. International dissemination of epidemic *Vibrio cholerae* by cargo ship ballast and other nonpotable waters. *Applied and Environmental Microbiology* 60: 2597-2601.
- Miller, R.R., J.D. Williams, and J.E. Williams. 1989. Extinctions of North American fishes during the past century. *Fisheries* 14: 22-38.
- Mills, E.L., J.H. Leach, J.T. Carlton, and C.L. Secor. 1993. Exotic species in the Great Lakes: a history of biotic crises and anthropogenic introductions. *Journal of Great Lakes Research* 19: 1-54.
- Mills, E.L., M.D. Schuerell, D.L. Strayer, and J.T. Carlton. 1996. Exotic species in the Hudson River Basin: a history of invasions and introductions. *Estuaries* 19: 814-823.
- Moore, C.G., D.B. Francly, D.A. Eliason, and T.P. Monath. 1988. *Aedes albopictus* in the United States: rapid spread of a potential disease vector. *Journal of the American Mosquito Control Association* 4: 356-361.
- Moyle, P.B. 1976. Fish introductions in California: history and impact on native fishes. *Biological Conservation* 9: 101-118.
- Olsen, T.M., D.M. Lodge, G.M. Capelli, and R.H. Houlihan. 1991. Mechanisms of impact of an introduced crayfish (*Orconectes rusticus*) on littoral congeners, snails, and macrophytes. *Canadian Journal of Fisheries and Aquatic Sciences* 48: 1853-1861.
- Rawinski, T.J., and R.A. Malecki. 1984. Ecological relationships among purple loosestrife, cattails and wildlife at the Montezuma National Wildlife Refuge. *New York Fish and Game Journal* 31: 81-87.
- Reynolds, J.D. 1988. Crayfish extinctions and crayfish plague in central Ireland. *Biological Conservation* 45: 279-285.
- Ricciardi, A., R. Serrouya, and F.G. Whoriskey. 1995. Aerial exposure tolerance of zebra and quagga mussels (Bivalvia: Dreissenidae): implications for overland dispersal. *Canadian Journal of Fisheries and Aquatic Sciences* 52: 470-477.
- Ricciardi, A., F.G. Whoriskey, and J.B. Rasmussen. 1996. Impact of the *Dreissena* invasion on native unionid bivalves in the upper St. Lawrence River. *Canadian Journal of Fisheries and Aquatic Sciences* 53: 1434-1444.
- Shelton, W.L., A. Soliman, and S. Rothbard. 1995. Experimental observations on feeding biology of black carp (*Mylopharyngodon piceus*). *Israeli Journal of Aquaculture* 47: 59-67.
- Simberloff, D., and P. Stiling. 1996. Risks of species introduced for biological control. *Biological Conservation* 78: 185-192.
- Spencer, C.N., McClelland, B.R., and Stanford, J.A. 1991. Shrimp stocking, salmon collapse, and eagle displacement. *BioScience* 41: 14-21.
- Strayer, D.L., and L.C. Smith. 1996. Relationships between zebra mussels (*Dreissena polymorpha*) and unionid clams during the early stages of the zebra mussel invasion of the Hudson River. *Freshwater Biology* 36: 771-779.
- Taylor, J.N., W.R. Courtney, Jr., and J.A. McCann. 1984. Known impacts of exotic fishes in the continental United States. In Courtney, W.R., Jr., and J.R. Stauffer, Jr. (eds) *Distribution, biology, and management of exotic fishes*. Johns Hopkins University Press. p. 322-373.
- Van den Brink, F.W.B., G. Van der Velde, and A. Bij de Vaate. 1991. Amphipod invasion on the Rhine. *Nature* 352: 576.
- Welcomme, R.L. 1984. International transfers of inland fish species. In Courtney, W.R., Jr., and J.R. Stauffer, Jr. (eds) *Distribution, biology, and management of exotic fishes*. Johns Hopkins University Press. p. 22-40.
- Zaret, T.M., and R.T. Paine. 1973. Species introduction in a tropical lake. *Science* 182: 449-455.

Area de Conservación de Tortuguero, Costa Rica

*Challenges to the Conservation
of Biodiversity*



by Pat Opay

INTRODUCTION

Costa Rica is often lauded as a paragon of conservation virtue. While its system of protected natural areas, biological riches, political stability, and commitment to conservation are notable, Costa Rica's many accomplishments should not blind biodiversity advocates to the profound challenges still facing the country.

World famous for its wild places and the tropical research activities of biologists, Costa Rica is also a country that has historically suffered from one of the highest deforestation rates in the world (Stiles and Skutch 1989). Cattle ranching, banana cultivation, and logging have helped precipitate this loss. "More than half the country's forests have disappeared since 1940...and the wet lowland forests that once covered more than one-third of Costa Rica are now reduced to less than a third of their former area, with the remainder disappearing with appalling rapidity" (Stiles and Skutch 1989). "Despite governmental environmental protection efforts, in the past 50 years, the percentage of land covered by forest declined from 80 to 25%.... Despite considerable environmental legal protection, enforcement is rare and ineffective" (Holl et al. 1995). Questions about the economic, social, and ecological effects of banana plantations persist. Further, a recent gap analysis of "true" protected natural areas (ignoring symbolic, non-functional forest reserves or protection zones—paper parks) suggests "that 98% of the protect-

Green Sea Turtle by Sarah Lauterbach

ed area [of Costa Rica] represents only 10% of the 23 life zones or major transitional life zones in the country, leaving most zones with little or no protection" (Powell et al. 1995, 96). Thus, a significant portion of the country's biodiversity remains at risk.

AREA DE CONSERVACIÓN DE TORTUGUERO

The Tortuguero Conservation Area, one of Costa Rica's most interesting and biologically important systems, currently faces such challenges. One of ten conservation areas that divide the country, it contains the Barra del Colorado Wildlife Refuge (officially 92,000 hectares), the Tortuguero National Park (18,946 ha. terrestrial and 52,265 ha. marine), a corridor between the park and the refuge (purchased and donated to the park), and the Archie Carr Beach Refuge (30 ha.). This paper concentrates on these protected areas, especially the portion that is closest to the village of Tortuguero, the heart of the conservation area. The green sea turtle (*Chelonia mydas*), the inland waterway of canals, and the tropical wet forest and its biodiversity have made the area one of the most unique and special places in Costa Rica. It is this Nature—ostensibly protected—that attracts the many visitors to Tortuguero each year, and while many use their cameras, few leave with a complete picture.

CHALLENGES TO THE TORTUGUERO CONSERVATION AREA

Present day threats to biodiversity abound and include uncontrolled development, illegal poaching, squatting, inadequate resources to manage the area, economic greed, and politics.

Consider the green sea turtle (*Chelonia mydas*). A government institute (INCOPECA) annually issues 1800 permits to hunt this animal, an endangered species, but it does not know how the harvest number was chosen or whether it is sustainable. The village of Tortuguero and the Tortuguero National Park are famous for the green sea turtle, as their 22 miles of beach are the most important turtle nesting habitat in this part of the Caribbean. Interestingly, the people who receive the commercial hunting permits are mostly from the city of Limón, two to three hours south of Tortuguero by boat, and they are using this resource with little concern for its future or the future of other residents who depend on the turtle. Some estimates have the actual take much higher than the 1800 limit—perhaps three times or greater (personal communication, conservation area staff 1997).

This mortality estimate does not include the turtles or eggs poached by non-fisherman along the beaches, nor turtles being killed in Nicaragua or Panama.

There are many questions concerning the status of the Tortuguero turtle population, but the best guess based on available information is that the population is at risk. Current harvesting allowances are not based on adequate scientific study and there is inadequate oversight of the hunting. The decision to allow commercial harvest of this species is economically suspect, biologically unsound, and morally incorrect given the current circumstances.

While most prominent, the green sea turtle is not the only victim of illegal hunting. The iguana (*Iguana iguana*), wild cats including the jaguar (*Felis onca*), and other species are also being poached in the area.

As it is for natural areas in most parts of the world, uncontrolled development is also a significant challenge within the Tortuguero Conservation Area. The village of Tortuguero and its surrounding area serve as a good example. The first development schemes started in the 1950s with the introduction of saw mills, but none of the mills lasted because the idea was ill-planned and unsustainable. Tourism is now the town's main industry; if managed correctly, tourism has the potential to be "more sustainable" than some other types of development, but concerns are growing about whether the resources and the will exist to manage and control tourism and its effects.

One alarming development is a proposed road through the corridor of the park that would bisect the biological connectivity. *Illegally* started with the help of several politicians, the road was stopped by conservation area officials. However, the weak conservation staff faces a difficult task in halting road-building permanently, especially when the politicians who broke the law continue working in bad faith, and certain individuals seek to profit from the construction of the road.

It is unclear what the exact effects of a road would be, but given the current struggle to manage the area due to lack of resources and poor local cooperation, it would most likely bring additional damage and problems to the park, and possibly to the village of Tortuguero. Proper discussion of the long-term effects of this kind of development is needed (village meetings are currently a mess), and an environmental impact study should be conducted. Instead, road proponents (some from outside the village or with economic interests regarding the location of the road) act illegally and independently of those in charge of caring for and managing the park. Much of



this development mentality comes from outsiders who do not have an interest in protecting the natural areas; this type of development threatens the ecological integrity of the conservation area as well as the people of the village of Tortuguero whose livelihoods depend on the turtles and Nature.

Squatting is also affecting the conservation area. Several of the squatters near Tortuguero are land speculators who already have a home or business. As this problem sorts itself out, key sections of the forest are lost. A few people are abusing the system while damaging forest lands important to the conservation area and the people living in it.

Deforestation is another, but certainly not new, problem in the area. Poor management of logging permits, ineffective mechanisms to control what timber is transported out of the zone, and questionable replanting policy and management are among several concerns regarding proper use of the forest resource. Forestry laws (e.g. 7575) are currently under nationwide criticism.

Finally, all of the best plans, the best park concepts, and the most attractive and colorful maps showing park boundaries mean nothing if there is inadequate staffing to oversee the protected areas, as well as help communities in and around Tortuguero. The conservation area director lists "lack of personnel" as one of their principal problems in managing the area (personal communication). Certain sections of land within the boundaries remain neatly represented on paper, but, as in the case of the wildlife refuge, actually exist "on paper" only.

THE FUTURE

The increasing pressures on the Tortuguero Conservation Area raise questions about its long-term effectiveness in the conservation of regional biodiversity. A lack of sound leadership for the future is evident; this problem is compounded by recent settlers who often arrive unaware of the attributes and fragility—as well as the dangers of improper human use—of this biologically

map by N.P. Shear

diverse area. It is a pity, for with cooperation and hard work, the residents of Tortuguero and surrounding communities might enjoy a higher standard of living than other rural communities because of the park and refuges.

To fulfill its promise, the Tortuguero Conservation Area will require increased government commitment to the area; efforts to ensure that the community has the opportunity to benefit from eco-tourism; and improved cooperation between conservation area staff, other national institutions (e.g., universities, museums), lodges, local residents, and the private non-profit conservation organizations that currently exist in the zone. Successful conservation will also depend on education efforts that help local people recognize the potential dangers of unwise development, and appreciate the ecological and economic value of the ecosystem to their community—both for this and future generations of Costa Ricans.

Does the *will* to conserve this area exist? This is the fundamental question for the future of the northeast corner of Costa Rica. It would be a shame, if in the shadow of Costa Rican conservation and eco-tourism prominence, we were to wake up one morning and realize that we had destroyed this very special place, the Tortuguero Conservation Area. ■

References

- Defensoria de Los Habitantes. 1997 Expediente No. IO 1575-23-96. Informe Final Con Recomendaciones, Costa Rica.
- Holl, K.D., G.C. Daily, and P. R. Ehrlich. 1995. Knowledge and Perceptions in Costa Rica Regarding Environment, Population and Biodiversity Issues. *Conservation Biology* 9(6):1548-1558.
- Powell, G.V.N., R.D. Bjork, M. Rodriguez and J. Barborak. 1995/96. Life Zones at Risk-Gap Analysis in Costa Rica. *Wild Earth* 5 (4):46-51.
- Stiles, G.F. and A. Skutch. 1989. *A Guide to the Birds of Costa Rica*. Ithaca, New York: Cornell University Press.

Pat Opay (gsaenz@sol.rasca.co.cr) received his graduate degree in conservation biology and sustainable development from the University of Wisconsin-Madison. He has been working on conservation projects in the Tortuguero Conservation Area for over four years.

ATLANTIC RIDLEY SEA TURTLE

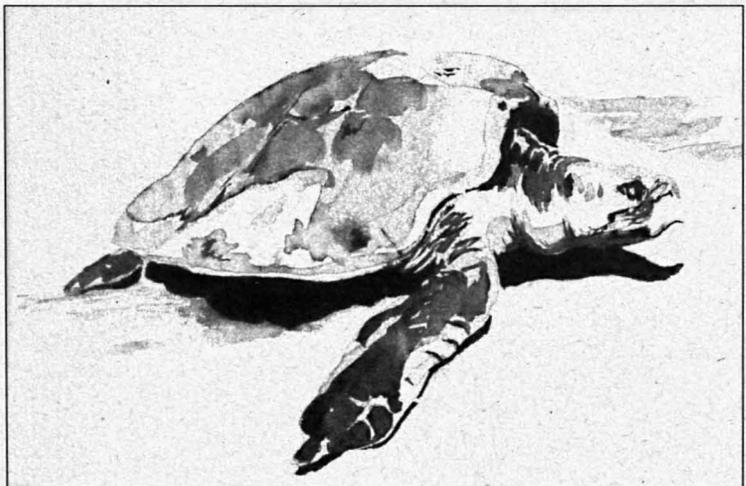
—*Lepidochelys kempii*

*In the give and take of water, she swims
with sharks, jawfish, limbs arcing, birdlike,
pressing an ocean back over the axis
of her spine. She emerges loudly. Sunlight
erupting from her shell, she glances
sideways, over the green light of land, climbs
the colossal dunes. Above the reach of tides
she curls her forelimb inward: shoveling
her shadow out of sand. She lays
her eggs two at a time. For hours.*

*The descent to the sea is the darkness
she was born to, hatched first and waiting,
passive beneath one hundred of her
hatchling kind—shells breaking,
caving the roof and walls; bodies
wet and scrambling, sands falling,
the floor rising; the whole nest
quaking in that first disorder.*

—Barbara Helfgott Hyett

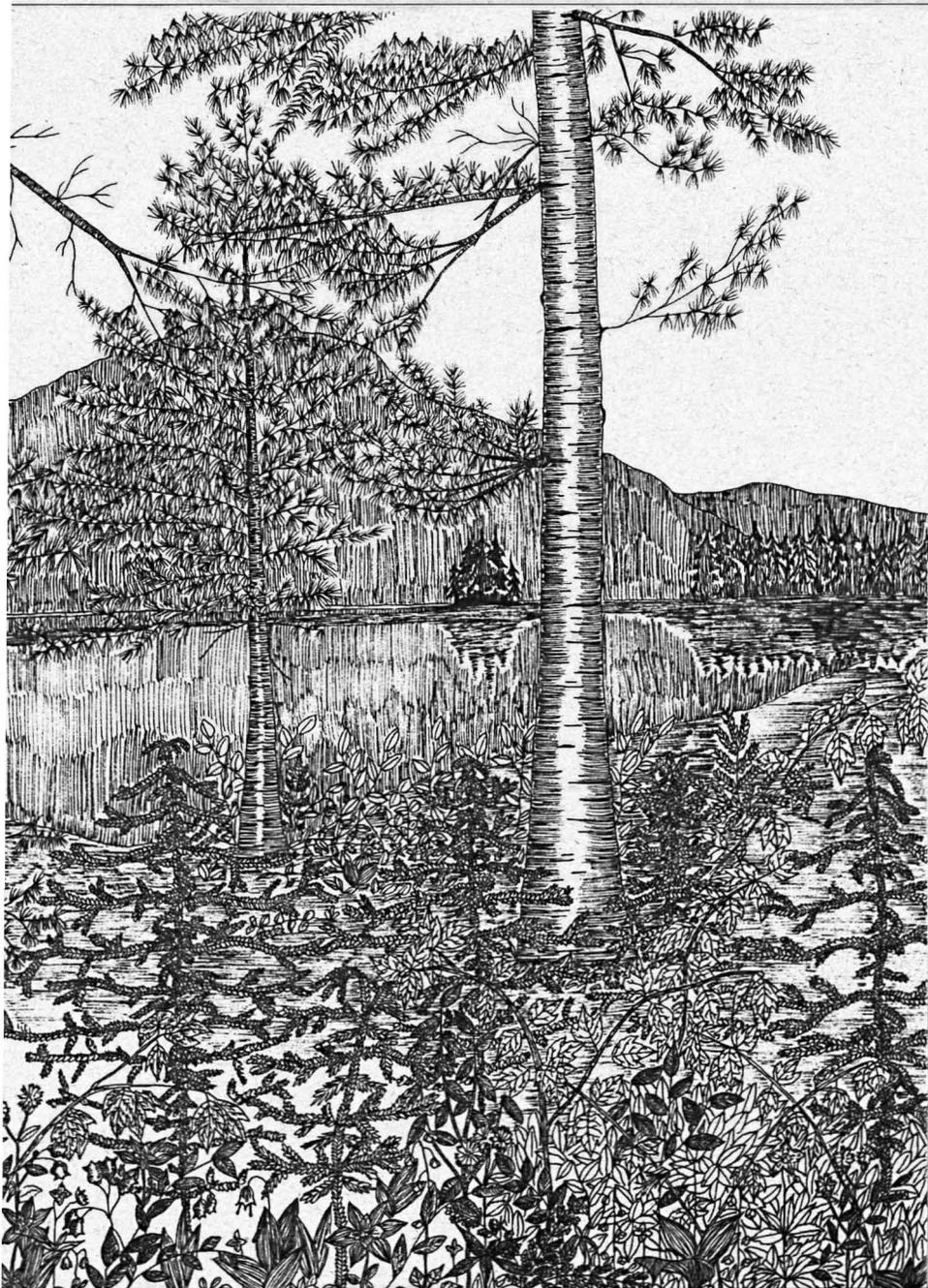
Reprinted from The Tracks We Leave: Poems on Endangered Wildlife of North America by Barbara Helfgott Hyett. ©1996 by the Board of Trustees of the University of Illinois. Used with the permission of the University of Illinois Press.



Atlantic Ridley Sea Turtle by Robert W. Treanor

Boundary Waters Wilderness Attacked in Congress

by Kevin Proescholdt



The Boundary Waters Canoe Area (BWCA) Wilderness in northern Minnesota, the largest “protected” Wilderness east of the Rockies and north of the Everglades, faces a legislative assault in Congress this spring that would degrade its wilderness protections and further motorize the most popular wildland in the National Wilderness Preservation System.

Senator Rod Grams (R-MN) and Representative Jim Oberstar (D-MN) have introduced legislation (S. 783 and H.R. 1739) that would allow truck and jeep traffic to haul motorboats across three wilderness portages, and would eliminate the scheduled 1999 termination of motorboats on the wilderness portion of the spectacular 5000-acre Seagull Lake. Congress planned this motorboat phase-out 20 years ago as part of the 1978 BWCA Wilderness Act.

Congressional committees approved the Grams and Oberstar bills in 1997, and the measures could be taken up by the full Senate and House at almost any time prior to adjournment this fall. Both Grams and Oberstar have announced that they hope to push their anti-wilderness bills for a vote sometime this spring.

The BWCA Wilderness is the most loved, most heavily visited unit in the entire National Wilderness Preservation System. The million-acre wild waterway contains over a

illustration by Kari Mowers

thousand lakes, connected by hundreds of miles of streams and portages. It is the largest designated Wilderness in the US between Idaho and Florida, and contains the largest block of unlogged, virgin forest east of the Rockies. The area was the stronghold for the gray wolf before and after its protection under the Endangered Species Act, allowing this magnificent predator to survive in Minnesota. The Boundary Waters became the nation's second Wilderness in 1926, but the area has since been the site of repeated battles as conservationists fight to protect its wilderness character. The most recent skirmish occurred 20 years ago, and resulted in the 1978 law that added additional protections to the canoe country.

Wilderness advocates have joined together to fight the Grams and Oberstar motorization bills, and have gained support from a bipartisan coalition of congressional members that includes Representatives Bruce Vento (D-MN) and Jim Ramstad (R-MN), and Senators Russ Feingold (D-WI), Paul Wellstone (D-MN), and Jim Jeffords (R-VT). The Clinton Administration has formally opposed the motor bills as well, testifying in opposition at hearings and issuing a formal position paper against them last November.

Despite this opposition, however, the legislation is supported by powerful anti-wilderness legislators as part of a larger agenda to chip away and degrade the entire National Wilderness Preservation System. These legislators include Representative Don Young (R-AK), chair of the House Resources Committee; Senator Frank Murkowski (R-AK), chair of the Senate Energy and Natural Resources Committee; Representative Jim Hansen (R-UT); and Representative

Helen Chenoweth (R-ID). Anti-conservation forces in Congress are also pushing bills that threaten Hells Canyon in Idaho and Oregon, the Emigrant Wilderness in California, and the Izembek Wilderness in Alaska; and bills that would fundamentally weaken the very definition of Wilderness in the eastern United States and Utah by allowing roads, dams, mining, and motor vehicle traffic in Wilderness areas.

Young and Murkowski could succeed in forcing passage of the Boundary Waters motorization bills, especially if they are able to attach them as riders to a larger, desirable bill that would make a presidential veto difficult. If the Boundary Waters Wilderness's existing protections are weakened, assaults on all of our "protected" wildlands will continue.

Conservationists who cherish wild country, wild habitat, and the silence and solitude of the Boundary Waters Canoe Area Wilderness, and want to pass along this priceless wilderness legacy unimpaired to future generations, will need to work tenaciously to see these latest legislative assaults on Wilderness defeated. ■

Kevin Proescholdt is executive director of the Friends of the Boundary Waters Wilderness. For the most current information, contact: 1313 Fifth St. SE #329, Minneapolis, MN 55414; 612-379-3835; kevin@friends-bwca.org; or www.friends-bwca.org.

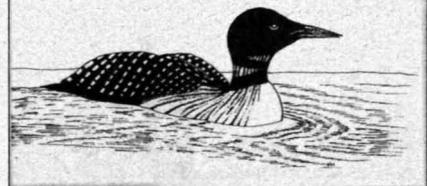
WHAT YOU CAN DO

The Boundary Waters now faces its most serious crisis in decades. Your help, *now*, is critical for blocking the pro-motor bills in Congress.

- **Write to your Representative and Senators**, even if you have done so before. Ask them to oppose the Grams and Oberstar Bills (S. 783 and H.R. 1739) or any bill that increases motorization of the canoe country wilderness (Sen. ____, United States Senate, Washington, DC 20510; Rep. ____, House of Representatives, Washington, DC 20515; capitol switchboard for all members of Congress: 202-224-3121).

- **Contact President Clinton**. Ask him to continue his Administration's strong support for protecting the BWCA Wilderness. Thank him for the recent Statement of Administration Policy. Ask him to veto *any* legislation that adds motors to the BWCA Wilderness (President Bill Clinton, The White House, 1600 Pennsylvania Ave., Washington, DC 20500; 202-456-1111; fax 202-456-2461; president@whitehouse.gov).

- **Write letters to the editors of your local newspapers**. Describe the threats to the Boundary Waters if the Grams and Oberstar Bills are enacted. Explain why increasing motorized uses in the nation's most heavily motorized and most heavily visited wilderness makes no sense. Describe in your own words why you want to see motors removed and protections increased for the area.



Wreckreation

Motorizing the Public Lands

by Scott Silver

A new menace is emerging from the Byzantine halls of the US Forest Service (USFS). Unbeknownst to many conservationists, the USFS is moving away from its traditional emphasis on commodity production, especially timber sales, to focus attention on recreation—and motorized recreation is where the money lurks.

Last December, speaking at the Western Summit on Tourism and Public Lands, Undersecretary of Agriculture Jim Lyons announced, “Recreation is going to be our business in the future. By the year 2000, recreation will amount for \$97.8 billion of the \$130.7 billion generated by activities in National Forests. Fish and wildlife [will] generate \$12.9 billion, minerals \$10.1 billion, timber \$3.5 billion, and grazing about \$1 billion.”

Recreation, if managed well, is a far better use of our National Forests than is logging or grazing. If managed poorly, or designed primarily as a cash-generating tool in collusion with corporate interests, a shift to “industrial recreation” is hardly an improvement over the old Forest Service ways, and also poses a grave threat to wilderness and wildlife. Unfortunately, the USFS seems determined to commercialize, privatize, and motorize recreational opportunities on federal public lands.

This shift actually began in the early eighties during the Reagan Administration, when Interior Secretary James Watt made a concerted effort to privatize public resources. Meanwhile, Congress withheld maintenance funding for all federal land management agencies in what seemed a deliberate attempt to support the privatization agenda. Without adequate funding, the “maintenance crisis” we now face became inevitable. The “rescue” of a decaying public lands recreation system by private/public joint ventures and partnerships then grew equally inevitable. Consider the following quote from Frank Murkowski (R-AK), Chairman of the Senate Natural Resources Committee:

To understand what is possible, we need only look to the Forest Service. In the first half of the 1980s, budget cutbacks forced the closure of many Forest campgrounds and reduced seasons of operation at virtually all others. Beginning in 1987, the agency initiated a program to replace its direct campground management with concessioned operations. In 1996, 70% of all camping in the Forests occurred at concessioned campgrounds....



An earlier version of this article originally appeared in *The Road-RIPorter*, newsletter of the Wildlands Center for Preventing Roads (POB 7516, Missoula, MT 59807), and is reprinted with permission.

illustration by R. Waldmire

Congressionally mandated budget cuts made this trend possible; Murkowski proudly points to this achievement.

The shift to industrial recreation is well under way. Senator Murkowski is now promoting a major, industry-sponsored set of recreation initiatives. The Recreation Fee Demonstration Program that recently began at 100 test sites around the country is the visible leading edge of this effort. USFS literature states: "The purpose of this program is to test the effectiveness of collecting fees to help maintain federal recreation facilities and to enhance visitor services and wildlife habitat."

If this were the whole story, then there might be little cause for complaint. But the same document later explains that the Forest Service's Recreation Fee Demonstration Program was developed in partnership with leading national recreation interests, and that its implementation is occurring through a Challenge Cost Share partnership with the American Recreation Coalition (ARC). ARC President Derrick Crandall explains its agenda:

As we begin to look at the future we see no alternative but to embrace and build upon a tradition of partnerships, especially within our National Parks and federal lands. Public/private partnerships can and should be built on the traditions of concession in the National Parks, ski areas in the National Forests, outfitting services on publicly managed rivers, campsite reservation services and more.... The American Recreation Coalition is a non-profit federation that provides a unified voice for recreation interests to insure full and active participation in government policy-making on issues such as public land management, energy, and liability.

Speaking before the American Recreation Coalition's Recreation Exchange last July, Secretary of Agriculture Dan Glickman reminded his audience—who likely needed no reminding—that, "Recreation is big, big business in America." Indeed it is. The American Recreation Coalition represents the interests of more than 100 industry organizations, including dozens of motorboat, jet-ski, RV, motorcycle, ORV, and snowmobile manufacturers. The coalition also includes ski area associations, sporting equipment manufacturers, tour associations, petroleum companies, and the Walt Disney Company. Hiking, backpacking, or conservation groups do not appear on the list (though there are some pretenders). ARC is an active participant in the "wise-use" movement, and is closely linked to two other anti-environmental organizations: Coalition for Vehicle Choice and the Foundation for Clean Air Progress.

Over the last 20 years, ARC has become perhaps the most influential force affecting public lands recreation policy in this country. Through its Recreation Roundtable and Recreation Exchange, ARC continues to nurture deep connections within the political system. ARC's goals are to ensure continued and increased "access" for its many motor sports members, and to promote a climate that supports new and expanded opportunities for public/private partnerships between federal land management agencies and ARC's commercial development interests; in short—privatize, commercialize, and motorize.

During a staff meeting last September, Francis Pandolfi (top aide to Forest Service Chief Michael Dombeck) said, "The next step is to use the recreation fee pilot to pull together a first class business management plan.... For the first time, we are selling a product." (Pandolfi happens to have been Chairman of ARC's Recreation Roundtable before Dombeck hand-picked him to be his Chief of Staff.)

Undersecretary Jim Lyons had voiced a similar sentiment the previous year: "As tourism grows and the public demands a wide range of goods and services, we have to put more of our forest management resources into programs that emphasize the non-timber products that come from the National Forests. Of course, recreation is one of those products...." Just weeks before this remark, Lyons had fired up executives from the tourism and commercial recreation industries with the words: "So far, recreation and tourism have been silent partners in the political environment. We need people to stand up and speak up. Policy and politics is a contact sport. We hope you'll get in and rough it up."

To everyone concerned about or opposed to increased motorization of our public lands, Lyons's words ring true: We need to get in and rough it up! Senator Murkowski and ARC's Derrick Crandall will soon introduce their much-touted and highly destructive "Recreation Super-bill," hoping to pass this legislation before the close of the 105th Congress. Wilderness defenders need to unite to give the motorheads a resounding defeat. ■

Scott Silver is the executive director of Wild Wilderness (248 NW Wilmington Ave., Bend, OR 97701; 541-385-5261; ssilver@transport.com; <http://www.wildwilderness.org>). Wild Wilderness is a six-year-old grassroots effort dedicated to maintaining and enhancing opportunities for the enjoyment of undeveloped recreation on public lands.

Silence and Quiet Use

The Quiet Use Coalition Aims to End the Aural Assault on Colorado Wildlands

by Jean C. Smith

In "The Gift of Silence" (*Wild Earth*, fall 1997), Anne LaBastille said that we need silence, for it evokes "feelings of solitude, contemplation, and creativity." Silence is a palatable presence, reminding humans of our proper place in the larger scheme of things.

She lamented the passing of silence as cars, power tools, airplanes, jet-skis, and snowmobiles propagate their noisy presence into every corner of the world. I join in her lament. After hiking seven miles in the Great Sand Dunes Wilderness this past summer, I was startled by a helicopter coming out of Medano canyon. It flew down the creek at treetop level, and the assault lingered long after it was gone. Even the Wilderness is not immune from the racket of industrial humanity.

Ms. LaBastille said, "There is no Citizens Group to Save Silence." But, I have good news for her: there is such a group! They call themselves the Quiet Use Coalition, and they promote the designation of Quiet Use Zones in the Upper Arkansas Valley of Colorado.

When the roar of motorcycles, ATVs, and snowmobiles intruded more and more into the lives of hikers, cross-country skiers, anglers, and even guests at the bed and breakfast, some valley residents banded together. They intend to establish non-motorized areas to protect the "nation's dwindling supply of wild lands, waters,

open space, and the plants and animals contained within these areas so as to pass them on for quiet multiple use to future generations as an environment undiminished by our presence in it." They chose more than a dozen motorized trails and watersheds on public land for Quiet Use Zones. Proposed management includes access to specific points by conventional four-wheel highway-licensed vehicles and only non-motorized activities in the rest of the zone. A carefully documented proposal was submitted to the Salida Ranger District, and the US Forest Service has already held one public meeting to explore the concept.

The Upper Arkansas Valley that the Quiet Use Coalition strives to protect is ringed on three sides by the Mosquito Range, the Continental Divide and the Collegiate Peaks, respec-

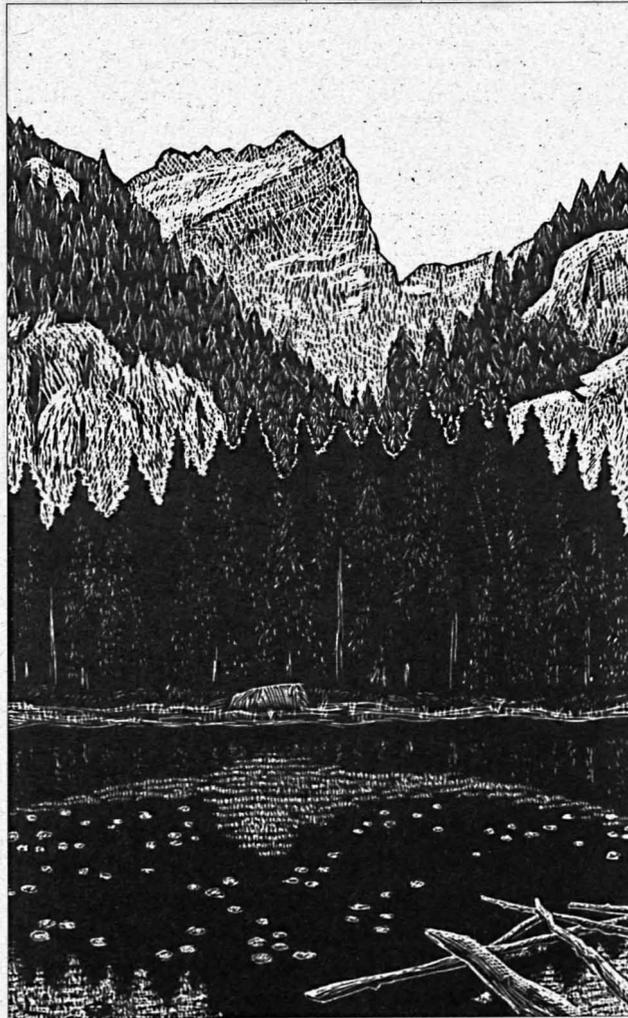


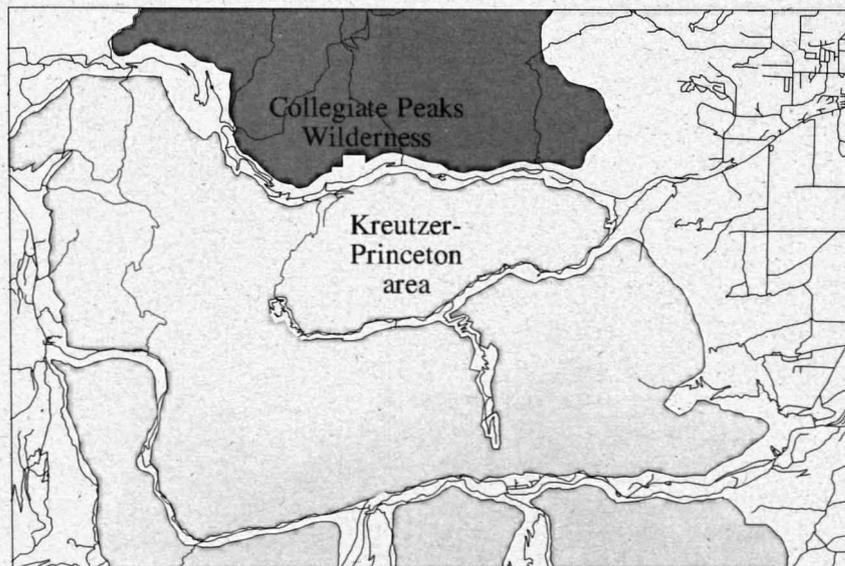
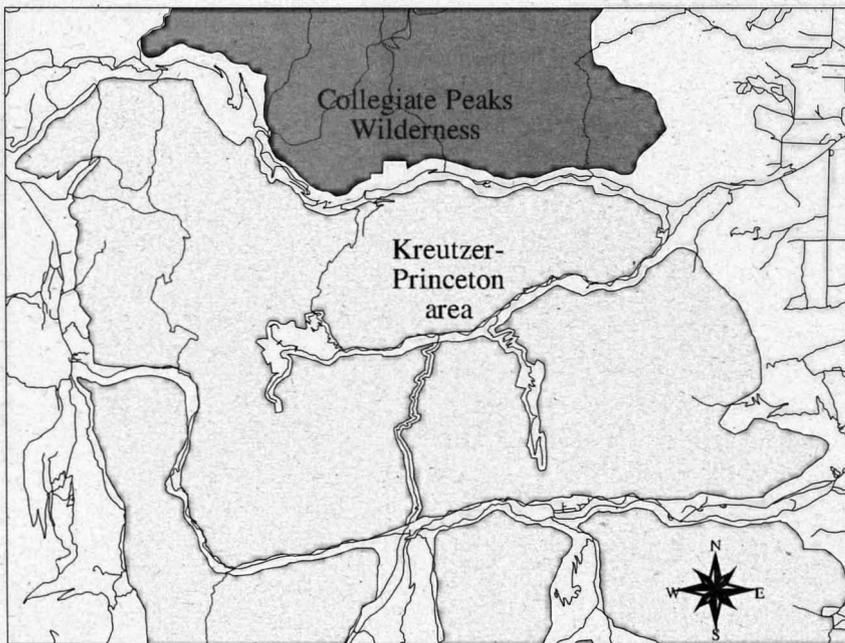
illustration by Evan Cantor

tively. It is stunning from any vantage point. There are four Wildernesses with 13-14,000 foot peaks, the ultimate bastions of silence. But the lower elevations between the Wildernesses and the valley floor are under siege. Like most of Colorado, there is a legacy of logging, mining, ranching, and recreation roads in the stream drainages and across the moderate slopes. This was tolerable, perhaps, in another era—but today motorized backcountry use penetrates every legal trail, goes around the gates of closed roads, and punches illegal tracks into the most remote areas. Motorized users request, and often demand, access to *all* public lands, and some even promote opening designated Wilderness to motorized

travel. And thus the silence, to say nothing of the land itself, is breached more often and farther into the interior than one would have imagined possible 20 years ago.

Moreover, these biologically important lower elevations are a critical component of future habitat reserves. Quiet Use Zones, even though not based on strict biological criteria, could be one method of creating the functional equivalent of buffers or compatible use zones that will protect the interior habitat of core reserves.

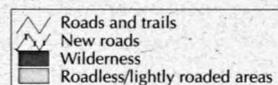
Equally important, the Quiet Use concept touches the depths of the human experience of wildness, the need for solitude, and the longing to have the silence broken only by the chickadees, water rushing over rocks, or the almost imperceptible rustle of a black bear as she fades into the ravine. ■



Jean Smith is a board member of the Southern Rockies Ecosystem Project (SREP), one of The Wildlands Project's cooperators. She coordinates mapping activities in the Upper Arkansas and South Platte watersheds. SREP (POB 1182, Nederland, CO 80466) works closely with local groups like the Quiet Use Coalition in order to build a scientifically based and locally supported network of habitat reserves for the Southern Rockies bioregion. The Quiet Use Coalition can be reached at POB 164, Buena Vista, CO 81211 or jetchalk@chafee.net.

Kreutzer-Princeton area

The Quiet Use proposals could protect large portions of Kreutzer-Princeton. Closing one 4WD road in the west recovers more than 2,000 acres for non-motorized use. Closing a second motorized trail in the south-central part of Kreutzer-Princeton would reconnect parcels of roughly 14,000 and 20,000 acres.



© SREP, 1997

EARTH

in the Balance Sheet

*An Economic Primer on
Whether Green Puts Us in
the Black or the Red*



by Mitch Friedman

David Brower quotes reformed economist Hazel Henderson as saying that “economics is a form of brain damage.” This view has held sway among environmentalists for decades. Particularly, the biocentrist movement has centered on the belief that salvation must take the form of ethical change, rather than rational (e.g., economic) change. This article reflects my doubts on that strategy.

Biocentrists have viewed with fear and loathing the heretical efforts of the Natural Resources Defense Council, Environmental Defense Fund, and others to institute pollution credits and other market-based reforms. We’ve had the good sense to opportunistically exploit bad economic policies, such as the Forest Service’s propensity to sell timber at a loss. But we’ve not had a cohesive position on the inverse side; to wit, we would not approve of most Forest Service timber sales even if they made money. After all, Dave Foreman raged (until recently) in his stock speech that we shouldn’t measure the value of something by “how many greasy dollar bills can be stacked up alongside of it.”

I used to think that the business of economists was the stacking of greasy dollar bills. Why then did 2500 members of the American Economic Association sign a January 1997 statement calling for assertive action to prevent global warming? I remember also the 1995 “consensus report” endorsed by 34 Pacific Northwest economists, *Economic Well-being and Environmental Protection in the Pacific Northwest*, which has foddered repeated salvos in our fight to protect western wildlands. Then there’s the case of the Chair of the University of Montana Economics Department stumping for the Northern Rockies Ecosystem Protection Act. And who are these academic number-crunchers who have been showing up in our conferences and newsletters? What’s up with that?

It’s time for biocentrists to pay more attention to economics. We need to consider how cozy this relationship should be. It’s easy to snuggle up with conservation biologists, but do we really want to hug the people with brain damage?

I’m not an economist. I didn’t take a single credit of it in college. But just as my failure to study political science hasn’t prevented me from engaging in policy activism, I’ve been too pragmatic to avoid poking around the edges of what economics has to offer.

Here's what I've learned:

First, many of the things we are trying to protect, including wilderness and biodiversity, benefit the economy. In some instances, they can even deliver more pork to local towns than would extraction. For example, the fastest growing counties in Montana are those in proximity to Wilderness (big W) areas. The allure and recreation value of the wild can attract people and business, providing more economic benefit than logging. There is a legitimate but separate question of whether we want all those people climbing, fishing, snowmobiling, and doing business all over sensitive wildlands. The bottom line is that protected areas and wildlife can be a cash cow, even if the cure for cancer isn't found there.

Second, a lot of environmental destruction is subsidized. End these wasteful subsidies and we make progress toward conservation goals. But, there is more to this issue. Understanding the range of subsidies can help us better understand the values people place on the environmental amenities we argue need protection. The most straightforward explanation I've seen is from Bill Clinton's own Council of Economic Advisors; its February 1997 *Economic Report of the President* finally put to rest any legitimate argument over whether the Forest Service timber program really loses money. Here's a key excerpt:

Most uses of Federal public land are currently subsidized in one of at least three possible ways. First, a subsidy can exist when the price to the user is less than the government's cost of overseeing the activity. Second, a subsidy may exist when users of Federal lands pay the government a price below that paid for the similar use of comparable privately owned lands. Finally, resource users may receive a subsidy if they pay the government less than the opportunity cost of the land's use, which is defined as the value of the highest alternative use of the resource.

Below-cost timber sales are an example of the first kind of subsidy. Here, the Forest Service sells public timber for less money than it actually costs taxpayers (in salaries to agency staff, road costs, reforestation, etc.) to execute the sale. The foresters may believe that they are doing the nation a favor by hacking down decadent old growth and sprouting young, thrifty, fast-growing trees. But taxpayers aren't likely to perceive most federal logging contracts as public service. Instead, we view it like a child's lemonade stand bringing in three dollars when the powder mix and paper cups cost mom and dad five dollars.

Cheap grazing rights are an example of the second kind of subsidy, with the young lemonade entrepreneur charging 25 cents per cup when the kid down the block is getting a buck.

It is the third kind of subsidy that has the greatest meaning to our movement, even though it's the one we tend to understand least. The trees to which the Forest Service sells logging rights are worth more than just the cost of road engineers and tree planters. If they hadn't been sold for lumber and pulp, those trees would continue to provide scenery, recreation, habitat, water filtration, evolutionary potential, and even warm fuzzy feelings that some call existence value. Would you allow your daughter to sell her 25 cent lemonade in the crystal you inherited from your great grandmother? Of course the crystal has actual monetary value exceeding 25 cents, but it also has sentimental and aesthetic value to you that isn't likely to be captured by the market. It would in fact be difficult for the market to convert that value into revenue. Therefore, you probably wouldn't sell it unless your family was destitute and hungry. It's hard for anyone to argue that America is so broke today that it needs to sell off its natural resources for a fraction of their full value.

The "alternative use value" that the White House's economists refer to is difficult to quantify. Some ecosystem services, like clean water and flood abatement, could perhaps

Contrary to common perception, economics is about value, not just revenue. Thus it is surprising that biocentrists have overlooked economics for so long.

be marketized. For instance, forests and wetlands would have higher value if the logger or developer had to pay the cost of future flood damages, or compensate state citizens for decreases in wildlife. If the shelf price at the lumber yard reflected these costs, people would be building smaller homes and seeking less costly (i.e., less damaging) alternative building materials.

Alternative use value also incorporates values that cannot realistically be marketized, like the warm fuzzy feelings mentioned before. For instance, a recent poll of Republican voters found that roughly 70% oppose drilling for oil in the Alaska National Wildlife Refuge. Obviously these people sense great value in the persistence of an unmarred Arctic Coastal Plain even though they will never visit it. People feel good when they contemplate their nation's great wilderness heritage, although it's likely that most people would sell this warm fuzzy if the price were right. But the market lacks a means to approach the right price, and the benefits we currently receive from the logging of ancient forests or damming of great rivers are far less than what most would willingly accept. It would in fact be far cheaper to the nation's economy to pay loggers to stay out of ancient forests!

Economists recognize that these difficult-to-measure factors are part of the public welfare. In other words, economics is not just the flow of dollars, but all the things that affect our behavior and give quality to our lives. Contrary to common perception, economics is about value, not just revenue. Thus it is surprising that biocentrists have overlooked economics for so long. Even

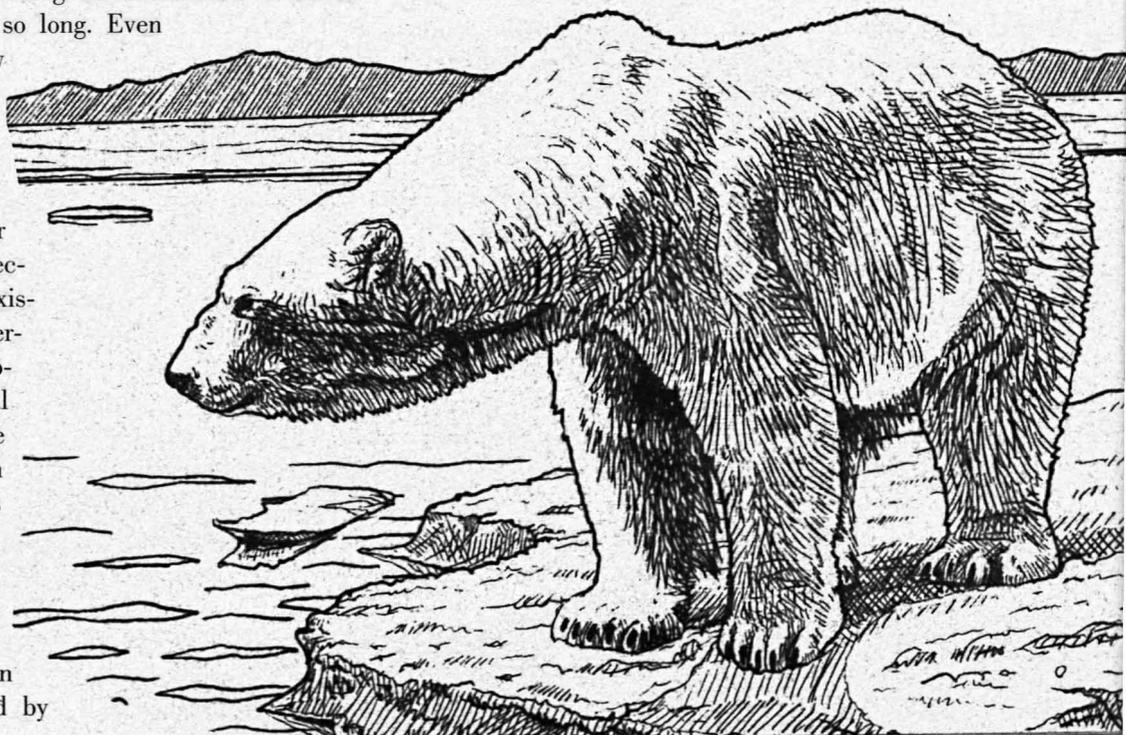
American laws view economics in this manner. For instance, new regulations implementing the Oil Pollution Act and other statutes specifically recognize liability for existence values, to be determined through a protocol called Natural Resource Damage Assessment. Within their official comments on these new regulations, Exxon noted that if it had had to compensate people affected by the Valdez spill in an amount established by

what the environment meant to their lives, not just their incomes, the mega-billion dollar price tag would have put them out of business. This is just one example of how the mainstream populace values the environment by more than just how high a stack of greasy dollar bills can be piled up next to it.

As MIT Economics Professor Paul Krugman wrote in his 17 April 1997 column about the economists' statement on climate change in the on-line *Slate Magazine*:

...pollution taxes would be more likely to reduce GDP slightly than to increase it. But so what? "Gross domestic product is not a measure of the nation's economic well-being"—so declares the textbook as soon as it introduces the concept. If getting the price of the environment right means a rise in consumption of non-market goods like clean air and leisure time at the expense of marketed consumption, so be it.

Note that this is the Achilles' heel of libertarian resource economics. These folks, including those that call themselves "free market environmentalists," tend to either disregard non-market values entirely or try to cut-and-paste over them via surrogates. One popular surrogate these days is recreation fees on public lands. The theory goes that if the government charged for access to public lands, the Forest Service and other agencies would find themselves rolling in big bucks from wilderness.



Polar Bear in the Arctic National Wildlife Refuge by Martin Ring

This would give them an incentive to protect wildlands (for backcountry recreation) instead of selling off logging rights. While charging fees for recreation may be a good idea in many cases, and has the potential in some instances to alter positively the incentives and actions of managers, there is no way these fees could represent all the ecosystem services and non-market values associated with our public lands. If they could, one would expect to see many private timberland owners selling recreation instead of timber. After all, private lands harbor all the same public benefits (water, air, wildlife, even woo-woo) as public lands.

The fact that private managers turn a profit does not mean that they are efficiently capturing the full alternative use value. It just means that the public is subsidizing private logging too, since we seldom get compensated when our public resources are damaged. Such subsidies are often referred to as "externalities." We allow private profiteers to socialize their costs. Recreation fees and other surrogates might make up some of the difference. But unless they could somehow account for existence values, the playing field still would not be level.

If we could eliminate the subsidies embedded in uncompensated existence values, we would be better able to protect ecosystems. This is what Paul Hawken gets at in his book *The Ecology of Commerce*. He envisions significant carbon taxes that would in essence cause each of us to pay the full cost associated with burning fossil fuels. Those costs include consideration of the resource's replacement value (since the supply of fossil fuels is limited) and the environmental damage caused by its extraction and conversion. Hawken extends this idea to propose a vast expansion of sin taxes (as we now have on tobacco and alcohol), such that consumption would be taxed instead of income. The basic idea is to harness the economy not only to better account for the true costs of actions and commodities, but also to create incentives for people to do the right thing (e.g., reduce consumption). These are compelling ideas that have potential to outperform so-called command and control regulation in many cases.

However, to restate, hard core fiscal conservatives (libertarians on the extreme) oppose these ideas and other ways of meddling in markets, largely because these people downplay non-market public goods.

There is a good reason why conservatives neglect non-market values: accounting for them requires a hands-on approach, namely by government. One stripe of conservatives (the diminished Barry Goldwater camp) favor a strong but individual ethical commitment to Nature. Another stripe of conservative, more common today,

argues that the private sector ought to voluntarily pay for these services. Note that this latter belief goes further than the frequently heard demand for full compensation for land values lost to regulations (a position that entirely rejects mainstream concepts of public values and public trust).

The "pay for it yourself" view is typified by Newt Gingrich, who has suggested that private charities could fund orphanages as an alternative to public-funded welfare. Similarly, these conservatives argue that people who care about Nature ought to pay for it themselves through donations to The Nature Conservancy, public lands recreation fees, and consumption of Ben and Jerry's Rainforest Crunch. The problem with this argument is that it can't work in the real world.

Does anybody think that Americans, most of whom tend to value strong national defense, would voluntarily support the Pentagon if federal taxes were abolished? Could we support quality police and fire departments if only volunteers (or victims) paid for the service? Economists call this the "free-rider" problem. If the city bus had a "pay if you want" policy, most people (my wife being one of the exceptions) would take the free ride.

We all experience this every day when we look at our mail. If my organization, Northwest Ecosystem Alliance, sent you a letter saying that we needed a million bucks to protect the habitat of the last Bigfoot, tears would rise to your eyes. But then you would think, "I hope they find the cool million, but my \$25 isn't going to make the difference." You might even realize that there is a certain probability that we will succeed in finding the money elsewhere, and that you could enjoy all the benefits of Bigfoot preservation without paying the cost. If you can escape the payment but not be excluded from the benefit, as is the case with public values like a healthy environment, it is simply rational to duck out. This is part of the so-called tragedy of the commons, and is one reason why humans have created such a mess.

Mainstream economists believe that the only way to resolve the free-rider problem is by making payment compulsory through taxes. One purpose of our democratic system is to direct our coerced tax dollars toward those uses that the public generally supports. Since we know that the American public generally supports conservation of Nature, but wouldn't voluntarily pay as much as it's actually worth to them, there lies an essential role for government, all its faults notwithstanding. If you doubt that Americans value Nature and conservation, read *The Value of Life* by Stephen Kellert.

This raises an important and nagging question: If everyone is on our side, why do we always lose? How can

it be that 70% of Republicans want the Alaska National Wildlife Refuge kept free from oil exploration, and that virtually all Americans outside of Forks, Washington support protection of old growth, yet ecosystems are being thrashed? One answer is that economists are more rational than politicians. Public agencies and politicians, while necessary, are both inefficient and tend to cater to political power rather than to public will. Consistent with Garrett Hardin's theory in "The Tragedy of the Commons," they tend to regard resources as pork for political patronage rather than as national assets. Hence our taxes pay for predator control and below-cost logging rather than wildlife and habitat protection. It's up to activists like us to persistently engage in the political conflict between local or special (short-term) interests and national (long-term) interests. Bummer of a destiny. But isn't it nice to know that we are in the right, even in strictly economic terms?

thing. But economic research indicates that even when trade-offs are clearly explained, people will support effective conservation policies. One national study found, for instance, that people are willing to incur higher lumber prices to protect spotted owls and ancient forest ecosystems.

The company at a Wal-Mart feels quite different from that at an Earth First! Rendezvous, but maybe we're not as weird as we think. Clearly there are various shades of green between people and their individual religious, ethical, aesthetic, and experiential connections to Nature. And certainly we need to encourage people to place higher value on Nature, especially biodiversity. For instance, 20 years of polling by Yale's Stephen Kellert reveals mixed signals. Americans love whales and wolves but hold invertebrates in low regard. One study found Americans overwhelmingly will support damming a river for any of a number of purposes (drinking water, irriga-



Still there is a quandary. The Americans I just described sound like noble savages, deep ecologists tried-and-true. Where are all these fevered wilderness defenders when I need them? It's easy to assume they don't really exist. Alternatively, it's easy to despair that they simply want to have their cake and eat it too, and will only support environmental protection until it costs them some-

tion, hydropower) even if it would endanger fish species. Forty percent would support endangering fish for no higher purpose than creating a lake for recreational use. But perhaps these numbers would be different if the respondents had better information about the trade-offs. We must be careful not to confuse lack of knowledge with lack of values.

cartoon by Mark Hughes

We should also count our blessings to be in a country that values wild Nature so much. People of some other nations, such as Japan, appear to put a much lower value on Nature and conservation, according to the work of Kellert and others.

Environmental solutions based on economics are predicated on people placing a high enough value on Nature to support good policy. But in contrast to the ethical transformations that biocentrists often promote, economic solutions may be possible without fundamentally changing the self-interested behavior of people. In other words, biodiversity protection may depend upon a lot of unlikely successes for our movement, but an eco-religious revival need not be one of them.

We don't necessarily need more witches and druids, but we do need people of all beliefs to better understand and value Nature. In fact, we can probably have greater success, and offend fewer potential supporters, if we

not only contrary to evidence but can be perilously self-fulfilling.

How many supporters of our message have we turned away by virtue of our appearance and behavior? I have had the horrifying experience of observing people in focus groups describe their strong environmental values, only to vigorously distance themselves from environmentalists: "I'm not one of them." Some biocentrists might respond that basic caring alone fails the litmus test. Some may even believe that what is needed is not more people who care, but fewer people overall and even the collapse of industrial civilization. A discussion of this is beyond the scope of this article, but I would at least caution that banking on such an outcome is ill-advised in the absence of a viable strategy for achieving it. If there are other alternatives for saving life on Earth that are less drastic, we ought to strongly consider them.

Opportunistic use of economics clearly can complement the effective strategies we already employ. It would be an overstatement to say that I believe economics (or science) will execute a great reversal of Earth's fortunes. Business is as business does, and the record is ugly. It is somewhat comforting to know, however, that some economists believe that large reserves, even on the scale envisioned by The Wildlands Project, are economically efficient and justifiable. Lending support to this theory is the economic report associated with the federal government's *Interior Columbia Basin Ecosystem Management Plan*. This report concluded that of the economic values associated with roadless areas in the Inland Northwest, only 11% are timber values, 41% are recreation values, and a whopping 47% are existence values.

It is possible that Americans are willing to pay the economic price associated with preventing extinctions and re-wilding large parts of the continent. I am eager to see this question researched over coming years.

If today's economists are becoming more active in support of our cause, we need to bone up on what they are saying and find ways to work together. This is a big opportunity to be on the side of both the Earth and the People, which is our strongest position. As the old saying goes, there are no jobs on a dead planet. ■



endeavor to educate people to be more biophilic within their existing belief systems. Note that even in Spielberg's vindicating dinosaur movie, *Lost World*, the heroic Earth First'er conforms to most core American values — he is on the same side as The People. The frequent contrasting assumption that the mainstream doesn't support our cause, and must in fact be confronted, is

Mitch Friedman, a biologist and a founding board member of The Wildlands Project, is executive director of Northwest Ecosystem Alliance (1421 Cornwall Ave., Suite 201, Bellingham, WA 98225).

Pittman Robertson

An Old Law Opens New Possibilities for Biodiversity Restoration

by Anne M. Woiwode

It's your money!
It's your money!
It's your money!

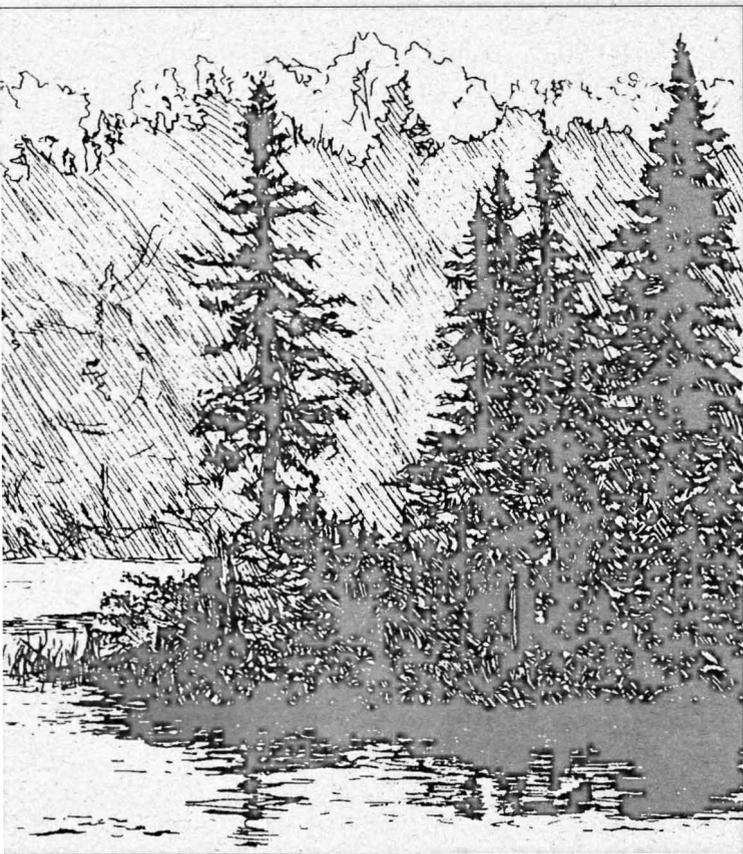
—former Senator Robert Dole

As threats to wilderness and wildlife increase, conservationists must become ever more creative as we develop strategies—legal, political, and financial—to protect biodiversity. Since 1995, biodiversity advocates in Michigan have been attempting to forge a new tool to support the application of conservation biology principles in land management decisions; if emulated, our work could have significant policy and funding ramifications around the country. Surprisingly, we are looking to a 60-year-old law to provide this opportunity. The Federal Aid in Wildlife Restoration Act of 1937, better known as the Pittman Robertson Act, is a remarkable law designed both to help fund wildlife habitat restoration and management through grants to states, and to impose specific mandates on the functioning of those programs. While implementation of Pittman Robertson in each state is unique, the efforts underway in Michigan may set precedents that will change the nature of wildlife habitat management programs nationwide.

The Pittman Robertson Act has been the centerpiece of game and wildlife programs in every state. With limited exceptions (notably, the Endangered Species Act, the Migratory Bird Treaty Act, and Native American treaty rights), states have complete jurisdiction over the management of wildlife within their boundaries. Even so, in the 1930s most states had no program for overseeing wildlife management, primarily because of a lack of funds. The Pittman Robertson Act created a dedicated fund for wildlife habitat restoration by placing an excise tax on guns, ammunition, and other hunting equipment. States must match the fund by earmarking state hunting license fees to support wildlife programs. In addition, states are required to establish and maintain an approved program for the management of wildlife in order to qualify for the funds.



While implementation of Pittman Robertson in each state is unique, the efforts underway in Michigan may set precedents that will change the nature of wildlife habitat management programs nationwide.



During the 1990s, the Pittman Robertson program has disbursed approximately \$350 million each year among the states to fund habitat management, surveys, land acquisition, hunter education, and a range of other related programs. The US Fish and Wildlife Service (USFWS) Office of Federal Aid administers the Pittman Robertson program using a formula that determines state allocations. The statute requires that states apply for these funds, submitting five-year project applications either as comprehensive programs or as smaller, more targeted projects. The projects must provide for "the restoration, conservation, management, and enhancement of wild birds and wild mammals, and the provision for public use of and benefits from these resources" [50 CFR 80.5(a)], or hunter and angler education.*

Since its inception, Pittman Robertson has been jealously guarded by the hunting community, which built the political will to found this program and agreed to see itself taxed in order to fund it. It is commonly assumed that the Act refers only to game species and that funding is limited to habitat for huntable species. In fact, the language of the law and its regulations demonstrate the deep conservation ethic that motivated wildlife restoration efforts at the beginning of this century. Pittman Robertson was written to assist in the restoration of habitat for *all native bird*

and mammal species, with significant details in the Act and its enabling regulations to that effect. When Pittman Robertson was enacted, many of the species commonly hunted today were in dire straits as a result of unregulated hunting activities and habitat destruction, and restoration of sport hunting was just one goal of the law.

In August 1995, Tim Flynn, an activist with the Sierra Club's Michigan Forest Biodiversity Program, attended a public meeting held by the Michigan Department of Natural Resources (MDNR) regarding a Pittman Robertson project. At this meeting he picked up the five-year, \$35 million Statewide Wildlife Management Project grant application. The project already had been submitted to the USFWS, and the MDNR Wildlife Division was holding the hearing on the previously unreleased document to gather public input. That year the MDNR had decided to consolidate four smaller applications into one coordinated project proposal. Since Michigan has received Pittman Robertson funds every year since the program was founded, the majority of activities proposed in the 1995 application had been previously funded through smaller grants under Pittman Robertson.

For Sierra Club activists who had spent more than a decade working to reform the management of Michigan's State Forests, the project application was a revelation. The Michigan State Forest system, at 3.8 million acres, is the largest in the country. In our reform efforts, we had long been frustrated by the absence of a state level mandate requiring public input or environmental effects analysis in managing these lands. Federal grants funding from any source automatically carries such a mandate under

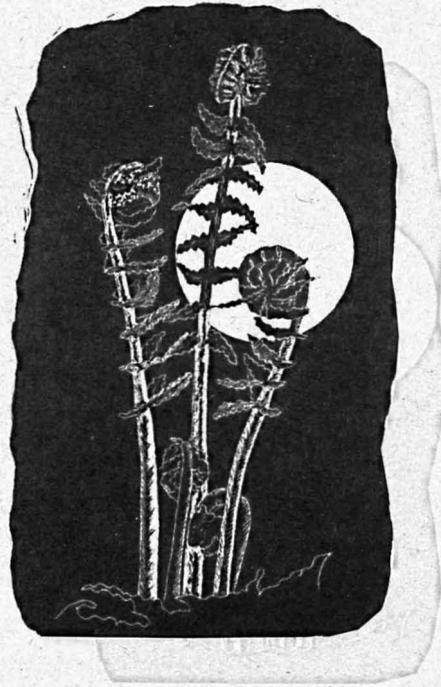
*In 1950, the Dingell-Johnson Act amended the Federal Aid in Wildlife Restoration Act to expand its application to fisheries. This article does not address those aspects of the law.

the National Environmental Policy Act (NEPA), even though it had evidently never been applied in this case.

The activists were convinced that a project of this type and size required a complete environmental impact study. First, the scope of the project was staggering, affecting tens of thousands of acres of woodlands and wetlands statewide. Proposed management actions included plans to "regenerate 40,000 acres of forest lands annually," primarily through clearcutting to provide early successional habitat for deer and other game species. Planting corn and other food crops for game, creation and maintenance of openings for additional edge, creation and manipulation of wetlands, use of herbicides and mechanical clearing, "elimination of predators," and numerous other broad categories of activities were included in the application. No details were given, however, about when or where these activities would take place, nor whether any additional public or environmental review would occur. Instead, an appendix listed all State Forests, State Wildlife Areas, and even National Forests as potential locations for the proposed actions.

An Environmental Assessment Checklist in the application, on a form evidently provided by the USFWS, raised additional concerns. The questions asked on the form parallel the criteria set by the national Council on Environmental Quality to assist agencies in determining whether a proposed federal action will require the preparation of an environmental assessment (EA) or environmental impact study (EIS). The 17 questions ranged from whether the project would affect federally listed Endangered or Threatened species, prime forestland, or ecologically critical areas, to whether the project would cause additional accumulative impacts not identified elsewhere. Under NEPA, anticipated positive or negative environmental effects are supposed to trigger environmental review. The MDNR indicated "yes" only twice: habitat alteration and use of herbicides. In each case, they noted that previously these activities had been considered categorically excluded by USFWS, and called for a similar exemption for this project.

In response, Sierra Club activists Tim Flynn, Marvin Roberson, and I drafted a comprehensive cri-



tique of MDNR's project application to submit to USFWS; the Sierra Club was joined in its comments by the Michigan Biodiversity Project and the Upper Peninsula Environmental Coalition. The three groups asked "the USFWS to conduct an Environmental Impact Study on the proposed Statewide Wildlife Management Project for Michigan," citing seven specific areas of concern with the application.

Supported by extensive documentation from MDNR files, we challenged the claim that this project qualified for categorical exclusion under NEPA, noting:

- MDNR has no system in place for on-the-ground surveys of Threatened or Endangered species on the lands where management activities are proposed or implemented.
- MDNR has systematically failed for over a decade to review or set aside "prime or unique forestland" or "ecologically critical lands" despite state mandates to do so.
- The project's scope is so large, affecting habitat management on 500,000 acres of State Forest land each year, that by its very nature requires a cumulative effects analysis, and could never properly be categorically excluded from further environmental review.
- The Pittman Robertson Act is quite clear on the level of detail required to be submitted by the states in their applications for funding, directing that the Secretary of Interior fund only "a comprehensive fish and wildlife resources management plan which shall insure the perpetuation of these resources... full and detailed statements of any wildlife-restoration project proposed for that state... [states] shall furnish to him such surveys, plans, specifications, and estimates therefore as he may require... [and he] shall approve only such comprehensive plans or projects as may be substantial in character and design and the expenditure of funds hereby authorized shall be applied only to such approved comprehensive wildlife plans or projects" [16 USC 669e(a)(1)]. The Michigan application was well short of this mandate.

illustrations by Tom Todd

- MDNR's application grossly misrepresents the condition of wildlife habitat in the state. The application asserted that "climax and late successional wildlife habitat is already prevalent in Michigan and will appear with no management. Thus vigorous action is needed to channel commercial harvest of timber to encourage intolerant timber types." We cited eight separate, published, peer reviewed scientific articles to refute this claim, as well as data taken from the USDA Forest Inventory. We pointed out that Pittman Robertson funds are intended to provide for the restoration of wildlife habitat for all birds and mammals, but that the MDNR's activities heavily emphasize management for early successional game species even though deer numbers far exceed their goals and are having a devastating effect on sensitive ecological communities throughout the state.

While highlighting the tremendous legal and environmental deficiencies of the proposed project, we re-emphasized our desire to see the MDNR continue to be funded under the Pittman Robertson Act, but *in conformance with the intent of the statute and requirements for environmental protection and review*. Once considered among the premier state resource agencies in the nation, the MDNR has been on a downward slide for the last 20 years. Declining general funds, first as a result of a severe statewide economic recession in the 1980s, and later as part of a political strategy for disinvesting in public resources, has left the MDNR increasingly subject to the whims of political and special interests. In such a setting, proper application of Pittman Robertson to native wildlife habitat restoration efforts could dramatically improve wildlife management in the state. Consideration of environmental effects in wildlife management and mandated consideration of public input, required under NEPA, could create a superior approach for managing Michigan's extensive public lands.

Shortly after we submitted our comments on 25 September 1995, MDNR asked to set up a meeting with the Sierra Club and USFWS. The state agency was primarily concerned with not losing its funding, but indicated a willingness to attempt to take appropriate steps to come into compliance with the law. USFWS officials were much less clear about their inclinations, and from this first meeting established a pattern of saying as little as possible about what they believed they were required to do.

The parties reached agreement that the MDNR would prepare an EA on the Statewide Wildlife Management Project while Pittman Robertson funding continued; a draft EA was to be produced by spring of 1996, and no more than a year would elapse without completion of proper environmental review of the five-year project. *We viewed this as a significant conservation victory because it was, as far as can be determined, the first time in history that any Pittman Robertson project was to be required to complete an EA or EIS.*

In early 1996, the USFWS quietly directed the MDNR to stop spending Pittman Robertson funds on State Forest management activities. Without publicity, the agencies agreed and shifted all Pittman Robertson funds to other activities. The USFWS had internally labeled the review of environmental effects as limited to silvicultural activities—specifically activities on State Forest lands—and ignored the broader concerns in our comments. More than a year later, we finally learned the details of this narrow interpretation and vehemently objected, feeling that the issues we raised applied to the entire project, and that the attempt to segment out a portion of the program for review while exempting the rest is at odds with NEPA.

In August 1996 the MDNR released the draft EA; comments submitted by several agencies and numerous organizations documented serious problems with it. In particular the EA fell far short of NEPA requirements for consideration of alternatives, and failed to adequately disclose expected environmental consequences of the project. However, the USFWS showed no eagerness to finalize the EA or issue a decision notice based on the draft EA. In fact, it appears USFWS never considered the document prepared by MDNR to be a true EA. In the only letter to us from USFWS during the first 18 months of discussions, the agency labeled the



document a "Program and Planning Analysis (an environmental assessment type document) to address concerns regarding National Environmental Policy Act considerations" (19 July 1996 letter to Anne Woiwode, from Marvin E. Moriarty, Acting Regional Director). The USFWS steadfastly asserted that the 1995 Statewide Wildlife Management Project was categorically excluded from further environmental review.

In April 1997, after months of stonewalling on completion of the EA by the Office of Federal Aid staff, Sierra Club activists traveled to Minneapolis to meet with USFWS Regional Director William Hartwig and to conduct a file search under the Freedom of Information Act. The search yielded tantalizing clues revealing internal USFWS discussions about our efforts. At least one memo discussed plausible rationalizations for why the Michigan project could be considered categorically excluded. In fact, those scenarios emerged in the meeting with the regional director and his aides, during which agency staff were hostile to our analysis of what the law required. However, they evidently changed their minds a week later. USFWS personnel agreed to go on a site tour with MDNR and Sierra Club; the two-day visit revealed as much about the lack of information and understanding the agencies had about each other as it did about the environmentally problematic elements of the Pittman Robertson project.

Following the field trip, the agencies decided that the MDNR would voluntarily terminate its five-year project at the end of year two (30 September 1997), although no official explanation was ever given as to why this was done. In its place, apparently by mutual agreement of the two agencies, MDNR would create four separate projects, all of which would be reviewed for NEPA compliance.

The release of the four applications for public comment in August 1997 brought mixed reviews. An Ecosystem Planning Project that would utilize Pittman Robertson funds to develop management plans based on ecological landscape principles was applauded in concept, although the details were extremely vague. However, the other three projects were different from the previous application only in the details provided, which helped highlight their severe flaws. In addition, splitting of the single project into multiple projects had the earmarks of avoiding environmental review for the bulk of the activities, which was not legal under NEPA.

After the comment period, the two agencies reportedly began a frantic behind-the-scenes attempt to agree on the content of the project applications. By early September, the USFWS had urged MDNR to create seven separate applications in place of the original one. While MDNR has complained that the USFWS is nitpicking and blocking innovation, the USFWS has contended that the MDNR has shown little concern for advancing the process by meeting its standards. At the end of 1997, only two of the now seven project applications have received public review and been approved: a hunter access program project for renting private lands, and an operations and maintenance project. The Sierra Club has submitted extensive comments insisting that the full set of projects, regardless of the final number, must be considered together under NEPA in assessing their environmental impacts.

While the final outcome of the Michigan efforts to bring Pittman Robertson funding into compliance with the National Environmental Policy Act has yet to be determined, it appears that strict compliance with the intent of NEPA has not occurred in this or any other state. Researching the application of these funds and insisting on compliance with federal requirements offers biodiver-



illustration by Tom Todd

sity activists an entirely new arena in which to leverage sound management of forest lands, wetlands, and wildlife habitat nationwide. ■

Anne M. Woiwode is program director of the Sierra Club's Michigan Forest Biodiversity Program (300 N. Washington Square, Suite 411, Lansing, MI 48933; 517-484-2372; anne.woiwode@sierraclub.org). Anne has worked on National Forest, State Forest, and private forest issues in Michigan for a dozen years. In 1994 she wrote a report published by the Sierra Club entitled "A New Way of Thinking: Biological Diversity and Forestry Policy in the Northwoods of the Great Lakes States," which is available for \$10 from the above address.

PURSuing Pittman Robertson

Because each state's Pittman Robertson funding program is unique, activists should start by reviewing the projects that have been funded in their states, as well as any pending applications, to determine if NEPA compliance is an issue. Your state wildlife agency is the appropriate place to begin; requesting a complete set of Pittman Robertson project reports and applications will be necessary to judge the full program. In addition, activists should be familiar with the details of wildlife management programs run by their state agency, with a particular focus on the direct application of these funds to on-the-ground management of wildlife habitat.

The Michigan Forest Biodiversity Program of the Sierra Club has pulled together a selection of the significant documents utilized in pressing NEPA compliance with the Pittman Robertson program in Michigan; copies are available to activists for \$5 to cover copying and postage (please make checks out to "Mackinac Chapter-Sierra Club" and send request to address above). For conservationists seriously pursuing such an effort in their own state, we are happy to provide advice based on our experience. —AW

ISLE ROYALE

*a place where the wolves are wanted,
where human beings bring our awkward blessings to
moose bone, wolf scat, loon song.
where we allow ourselves to blossom
among marsh marigold, rock harlequin,
calypso orchid, labrador tea.
where we peel back layers of
fog, moss, rock itself—
Inside there is sunlight
Inside there is wolfsong
the light step of the moose,
berries waiting to ripen
where the wind never touches—
All this light
at the heart of things.*

—Gary Lawless

Successfully Using Ballot Measures for Environmental Protection

by Sally J. Cross and Andy Kerr

The 1998 initiative season is well underway; around the country, numerous new environmental initiatives are being considered. Many will fail to get enough signatures even to qualify for the ballot. If recent history is any guide, most of those that do qualify are headed for defeat.

The 1996 election delivered a serious blow to the conservation agenda when voters in several states defeated measures that would have increased environmental protections. Most of these measures were not just narrowly defeated, but were trounced: margins of only 35-40% for the environmental side were common.

Winning a ballot measure battle is never easy, but recent pro-Nature initiative campaigns have failed to include several of the most basic components necessary to win. We believe that the environmental movement can and should break this losing streak, and reverse the trend of public rejection of measures that strengthen environmental protections at the state (or local) level.

It is possible to take on a well-financed, well-organized opposition and win. For example, in the last four elections, a coalition of animal rights activists has beaten the National Rifle Association and the trophy hunting industry, systematically winning measures to ban certain types of hunting. This coalition has been successful in seven states, winning 10 of 13 initiatives, including two attempts to repeal earlier wins. The success of their approach has been demonstrated in politically divergent states, suggesting that it provides a good model for successful initiative campaigns.

One of the main architects of this election-winning strategy is Wayne Pacelli of the Humane Society USA (HSUS). His suggestions for a winning campaign strategy are very simple, but have been ignored by environmentalists in many recent ballot measure campaigns. (Please note that our criticisms of losing initiatives are also self-directed; during our tenure, the Oregon Natural Resources Council was also guilty of not following Wayne's Rules, particularly in its failed 1994 chemical mining initiative.)



illustration by Tim Yearington

“WAYNE’S RULES”

1 *Do Your Research to Write a Winning Measure*

Polling and focus group research is the only way to know which components of a possible measure have strong voter support, and which arguments against the measure can lead to its defeat. Such research can be expensive—as much as \$25-35,000 in a relatively small state like Oregon. But it's a small cost when compared to spending hundreds of thousands, possibly millions, of dollars, and thousands of hours of staff and volunteer time to promote a measure that your opponents are sure to defeat.

Elections are not won or lost based on the votes of the small core of committed conservation voters. Winning requires gaining the support of the swing voters who support environmental protection, but are not knowledgeable about the issues or unshakable in their support. These are the key voters who are apt to be confused or misled by your opponents, and thus vote “no” on your measure. Most measures start with very high public support that begins to erode once the opposition's campaign begins. The trick is to hold that erosion of support among swing voters to a level that will allow your side to poll at least 50% plus one vote on election day.

2 *Keep it Simple*

Including highly unpopular or complicated provisions, such as those allowing for citizen suits, is the kiss of death for a ballot item. Your opponents will effectively capitalize on the public's dislike of lawyers and frivolous lawsuits; beware of handing them the means to clobber your measure.

Not every issue is a good candidate for the ballot box. The National Environmental Policy Act, for instance, wouldn't have been a good candidate for an initiative. Complicated, lengthy, legalistic language lends itself to a classic negative campaign tactic—portraying the measure as adding “red tape,” “big government bureaucracy,” and “confusing” rules that will hurt the average citizen. Two Oregon environmental initiatives, four years apart, addressing very different subjects (plastics recycling and cyanide heap leach mining regulation) were hit by their opponents with essentially identical ads of this nature.

A dilemma often arises at this point: what proponents believe is necessary for environmental protection

goes beyond, or is more complicated, than what the voters will accept. While gut wrenching, the only winning response is to figure out a different tactic to achieve your goals.

3 *Run an All-Volunteer Signature Drive*

Qualifying a measure for the ballot is hard work; proponents need at least 4000 hours of volunteer time to gather the required signatures. Putting that into perspective, a person working 40 hours per week for 50 weeks (a standard work year) works 2000 hours. Recent environmental measures have followed the national trend of paying signature gatherers. That's an expense of tens or even hundreds of thousands of scarce campaign dollars better saved for TV and radio ads in the final weeks. A chronic syndrome of failed environmental ballot measures has been the ability of sponsors to raise enough money to get on the ballot, but not enough to mount an effective (winning) campaign. Completing the signature drive with volunteers saves money for paid media. If the required signatures cannot be collected with volunteers, it is strong evidence that the broad grassroots support necessary to help win an election is missing.

Of course, an all-volunteer effort isn't free. It takes the work of full-time organizers to recruit, train, and motivate volunteers to go out and collect signatures.

4 *Match Opponents' Paid Media*

Grassroots support is very important in a ballot measure campaign, but in itself is not enough to win. As a rule, the side that spends the most money wins. Few, if any, campaigns win if they're outspent by more than a ratio of 3-to-1. Environmental measure supporters typically have been outspent by their opponents by margins of 7 or 8 to as much as 100-to-1. If the opponents will spend millions of dollars to defeat the measure, proponents must raise and spend a similar amount or, at the very least, one-third of it.

Most voters get their information from TV and radio, not earned (“free”) media like news stories. The campaign that dominates the airwaves in the three weeks before the election sets the debate—and usually wins. In Oregon, where citizens are beginning to vote by mail, the critical window of voter attention is longer—and more expensive—than ever.

An adequate purchase of radio and television ads for

**OREGON INITIATIVES IN 1996:
DID THEY PLAY BY WAYNE'S RULES?**

The 1996 election delivered a serious blow to the environmental agenda in Oregon when voters defeated two measures that would have increased Oregon's environmental protections. The Clean Streams Initiative was soundly defeated by a 36%-64% margin. The Bottle Bill Expansion measure was defeated 40%-60%. Both measures lost in 35 of 36 counties, winning only the most urban core of the state, Portland.

How closely did these two ballot measures, endorsed by much of Oregon's environmental community, follow "Wayne's Rules?" Predictably, they broke almost every one.

1. Do Your Research to Write a Winning Measure

Clean Streams: Did limited polling, ignored research that indicated significant weaknesses in response to opponents' arguments.

Bottle Bill Expansion: Did no polling, assuming the Bottle Bill's widespread acceptance would carry an expansion measure.

2. Keep it Simple

Clean Streams: No. Measure was lengthy, full of legalistic language.

Bottle Bill Expansion: Yes. Measure only changed a few words in existing bottle bill.

3. Run an All-Volunteer Signature Drive

Clean Streams: No. Sponsors spent \$129,000 to help gather the approximately 90,000 signatures needed.

Bottle Bill Expansion: No. Backers spent more than \$50,000 on signature gathering efforts.

4. Match Opponents' Paid Media (or, at least stay within a 3:1 spending ratio)

Clean Streams: No. Clean Streams opposition spent \$668,000 to support their \$102,000 (7-1).

Bottle Bill Expansion: No. Bottle Bill opponents spent \$3.3 million, while supporters spent \$286,000 (12-1).

5. Beat the Opponents at the Grassroots

Clean Streams and Bottle Bill Expansion: Some. Both used free media, speakers bureaus, and letters-to-the-editor. Targeted voter identification, contact, and get-out-the-vote efforts were limited or missing. Oregon State Public Interest Research Group (OSPIRG), the Bottle Bill measure's leading sponsor, relied heavily on its fundraising canvass to contact voters; in the final weeks, it turned to blind literature dropping (going to every door, not just those homes with registered voters) and calling lists of all registered voters. The Clean Streams voter contact campaign was, if anything, more limited.

6. Losing is Not a Win

Clean Streams and Bottle Bill Expansion: No. Both sides touted the public education value of their campaigns, and promised action by the legislature on their issue. Predictably, that has not come to pass. Governor Kitzhaber did convince the legislature to pass a major salmon restoration package, but his office and legislative leadership made it clear that it was the threat of an Endangered Species Act listing of coho salmon and federal Clean Water Act requirements that drove these reforms. The issue of bottle bill expansion was never on the legislature's agenda.

a state campaign often costs hundreds of thousands, or even millions, of dollars to correctly position the ballot item and convince voters to support it. Again, if the opponents are spending more, so must the proponents.

5 *Beat the Opponents at the Grassroots*

Increasingly, slick direct mail and phone campaigns are used to supplement paid media. This is where a strong grassroots campaign can match paid resources for significantly less money. Targeted phoning and door-to-door canvassing can identify and recruit supporters, and turn out targeted voters. Volunteers are also crucial for organizing speakers bureaus, writing letters-to-the-editor, and developing an earned media campaign. After weaving the grassroots into a tight green tapestry during the signature-gathering phase, the base is organized and ready to be tapped for an effective grassroots electoral campaign.

6 *Losing is Not a Win*

At the risk of stating the obvious, using the ballot box to improve environmental protection requires winning the election. The public education value of a losing initiative is minimal, and is generally negative. Planning to lose (or accepting defeat as a likely outcome) sets back the larger agenda to protect Nature.

The so-called educational benefit often cited by losing proponents—"even though it lost, a lot of voters were educated"—doesn't hold up to examination. To argue that losing expands public knowledge requires believing that the campaign onslaught waged by your opponents represents a fair and reasonable airing of the issues. In reality, losing means that the opposition set the terms of the public debate, and a majority of the voters agreed with them and decided to vote against the environment. A majority of voters were "educated" that no such environmental problem exists, and/or the environmentalists' proposed solution to the problem was too extreme, costly, or bureaucratic. This is not likely to make elected officials or policymakers believe in a public mandate to expand environmental protection.

History has also consistently shown that the losers' rationalization, "at least we scared the other side and now the legislature and/or governor has to do something," is similarly poor. Elected officials are generally reluctant to ignore the will of the voters, who, after all, have just spoken loud and clear by overwhelmingly defeating your measure.

A DIFFERENT APPROACH: INITIATIVES AS A MOVEMENT PRIORITY

Making "Wayne's Rules" a mandatory checklist for successful initiatives implies a far different approach for the future. Conservationists will need to revise our strategy as we:

- develop the message and draft the ballot item (focusing not on what we want, but what the voters can be persuaded to support);
- build a much broader grassroots base;
- raise a much larger campaign budget, and spend it where it matters—on paid media and building an effective, volunteer grassroots campaign organization.

This argues for more up-front coalition-building; sponsors must be assured that allies consider the initiative a high priority. Before the ballot measure is filed or even drafted is the time to determine that potential partners are willing to commit substantial amounts of organizational resources to make the campaign an environmental movement priority. This is easier said than done. When anti-environment forces overreached in Arizona and Washington on the so-called takings measures, environmentalists—on the defensive—responded with force, determination, and coordination. These measures were handily defeated, after a massive effort. The environmental movement is always more cooperative on defense than on offense.

More problematic is determining when and with what issue(s) a ballot offensive makes sense. The environmental movement is quite broad, with many groups having staked out their niche on an issue. But few state, local, or regional groups have deep enough pockets to carry an initiative campaign alone. Packaging a measure to attract the diverse interests with overlapping agendas is difficult—not unlike herding cats! The challenge is to craft a measure (and a strategy to win) that gains adequate support from enough groups to pull together a winning campaign. "Adequate support" is not mere endorsement; enough groups must divert from their current efforts enough staff time, volunteer time, and money to provide for a winning effort.

And what about those issues that just can't raise a million or more dollars or generate the broad base of grassroots support to run a successful campaign? Proponents should either determine another way to meet their goals with the available resources, or look for another way to obtain the resources necessary to properly do an initiative petition. This would likely mean that environmentalists would file fewer, and possibly different, initiatives. But winning is sweet—and a victorious ballot initiative is worth the cost in time and money because it demonstrates to policymakers the broad public support for protecting the environment. ■

Sally J. Cross (6334 N. Atlantic Ave., Portland, OR 97217; CrossS@eas.pdx.edu) was formerly the political director for the Oregon Natural Resources Council. She has over 15 years of political experience working for and against referenda, candidates, and legislation (on the inside as legislative staff and the outside as a lobbyist).

Andy Kerr (The Larch Company, Box 55, Joseph, OR 97846; andykerr@oregontrail.net) retired after 20 years with the Oregon Natural Resources Council in 1996, the last two as its executive director. He was instrumental in forest protection efforts in the administrative, judicial, and legislative arenas. He is now a consultant, writer, and gadfly living in the Wallowa Valley.

Cross and Kerr began collaborating when they both worked on the winning 1988 Oregon Rivers Initiative. That time, they were lucky that their opponents were more naive than they.

Citizen initiatives are one of the most under-used tools conservationists employ in defense of Nature. Initiatives are new laws placed on the ballot by citizen petition and enacted directly by popular vote. The process is the closest thing we have to direct democracy in this country. Unfortunately, only 29 states, primarily in the West, have a variation of the initiative process.

As the first state to allow citizens to make law, Oregon has been at the forefront of this experiment in democracy. Oregon is also well known for its use of the initiative process to address environmental issues, including creation of a landmark land use planning program, the nation's first state scenic waterway system, and the nation's first bottle bill.

We have also had our share of defeats. In 1928, voters turned down a measure that would have required "the maintenance, so far as is still possible, in the natural condition and free of encroachments by commercial interests" of most of the Rogue, McKenzie, Umpqua and Deschutes basins; voters rejected in three elections measures that would have closed Oregon's only nuclear power plant, and voters twice have refused to pass measures expanding Oregon's popular bottle recycling law.

Nationally, environmental measures have about a 60% chance of success. Unfortunately, there is no pat formula for victory. Take for example the recent measure to expand Oregon's bottle recycling law. The campaign began with a solid 80% approval rating, was organized by Oregon State Public Interest Research Group (a group experienced in running referendum campaigns), and had as its figurehead the wife of Oregon's very popular governor Tom McCall. We thought it was a slam dunk. In fact, we filed our measure—the Oregon Clean Stream Initiative—to follow the recycling measure on the ballot, hoping to ride its coat-tails. Both measures failed by over a 60%-40% margin.

Poll after poll suggest that the majority of the public is sympathetic to conservation issues. However, this wide margin of support evaporates quickly when sympathetic but vulnerable swing voters are exposed to the opposition's attack. The lesson is not to delude ourselves: public support for conservation is wide but shallow. The same money that elects brown legislators will find its way into our opposition's media war chest targeted at those swing voters. Polling and focus group research will help refine a measure and identify vulnerabilities, but regardless of how well the measure is written or how popular an issue may seem, the opposition will find a weak spot—or they will make one up.

While there is no sure-fire recipe for success, experience is a good teacher. Hereafter follow several observations about citizen initiative campaigns:

There is no substitute for committed activists, common sense, good staff, and a plan. Because grassroots groups do not have a lot of money, organization is critical. At least one non-profit sponsor must commit to back the campaign and provide immediate financial and administrative support, ready volunteers, and public profile. Be honest—if you don't have the horsepower, don't do it.

Direct Democracy in Defense of Nature *by Bill Marlett*



The opposition will have more money than you. Lack of money to reach swing voters is the number one failing of most, if not all, ballot measure campaigns. The good news is that federal tax law allows 501c(3) organizations to spend up to 20% of their annual expenses lobbying in support of an initiative campaign. Further, c(3)'s can spend unlimited amounts on public education associated with a campaign. Unfortunately, many groups are still unaware of this opportunity. And until grassroots organizations get more financial support from national groups and foundations, we will continue to run our campaigns on a shoestring with the expected consequence—likely defeat.

This is not to suggest that because conservationists do not have access to deep pockets, we shouldn't try to

initiate ballot campaigns. At the same time, we shouldn't kid ourselves into thinking we can organize volunteers or mount a public education campaign without money.

Expect the unexpected. One month before the election on our Clean Stream Campaign we enjoyed a ten percent lead in the polls. Two weeks later, one of our chief supporters, a family doctor from the heart of ranching country, shot 11 of his neighbor's cows that had trespassed on his property. *The Oregonian* ran a front page story with a banner headline. Our opposition had a field day, and the incident contributed to our defeat, but not as much as did inadequate funding for a solid media campaign.

Sometimes, however, the unexpected turns in your favor. Midway into our 1988 measure campaign to

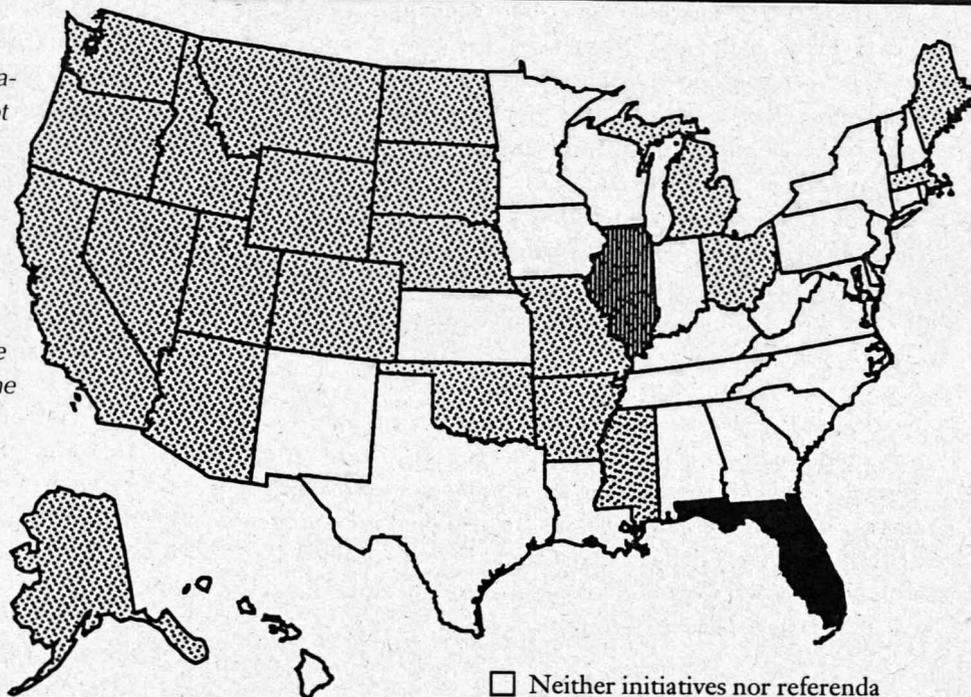
INITIATIVE AND REFERENDA STATES

Several types of ballot mechanisms, known collectively as ballot propositions, are available to conservationists. Although the terms "initiative" and "referendum" are often used interchangeably, there are technical differences between the two processes. Ballot propositions are defined variously by state and local governments, but some general definitions can be stated:

An **initiative** is a measure placed on the ballot as the result of a popular effort (such as a petition drive among registered voters) for the purpose of proposing a new law or resolution to be voted on by the electorate during an election.

A **referendum** may be placed on the ballot by the state legislature, or because of a constitutional requirement, or in some instances by a citizen petition. The term referendum broadly refers to a measure on an election ballot, allowing voters to approve or reject an act of the legislature.

A **constitutional amendment** can be originated by the legislature and placed on the ballot. In some states the electorate may propose through petition an initiative to amend the constitution by ballot vote; the amendment must then be ratified by a requisite number of voters.



- Neither initiatives nor referenda
- ▨ Initiatives and referenda
- Initiative constitutional amendments only
- ▤ Initiative constitutional amendments and initiative statutes (Advisory only)

Map reprinted with permission of Americans for the Environment.

expand Oregon's Scenic Waterway System, former Senator Hatfield, seeing an opportunity to capitalize on our public outreach efforts, introduced a bill in Congress designating 2000 miles of wild and scenic rivers in Oregon (four times as many miles as we were attempting to add to the state scenic waterway system through our ballot measure). His bill passed in Congress just before the election and we won our measure handily, even though we spent virtually nothing on media.

Ballot measures are battles, not wars. Win or lose, ballot measures must be viewed as part of a long-term, strategic effort. To illustrate this dictum, we need only look at several examples from Oregon:

- In 1986, 1990, and 1992, measures to close Oregon's only nuclear power plant lost by wide margins at the ballot box. In 1993, the plant's owner shut it down.
- In 1994, conservationists lost by a wide margin on a measure to restrict heap leach gold mining in Oregon. In 1995, the mining company that had precipitated the initiative pulled out of Oregon.
- In 1996, the Clean Stream Initiative which would have helped keep livestock from polluting waterways lost by a wide margin. In 1997, the legislature approved 30 million dollars for stream clean-up as part of the governor's alternative to the Clean Stream measure.

These three examples demonstrate something we often fail to appreciate: regardless of victory or defeat, ballot measures make things happen and put the opposition on the defense. Some actions don't translate into numbers at the ballot box and can only be viewed in hindsight. Many ranchers in Oregon, fearing the return of another Clean Stream Initiative, are currently fencing their livestock out of streams. If your only measure of success is whether you win at the ballot box, you're not thinking strategically.

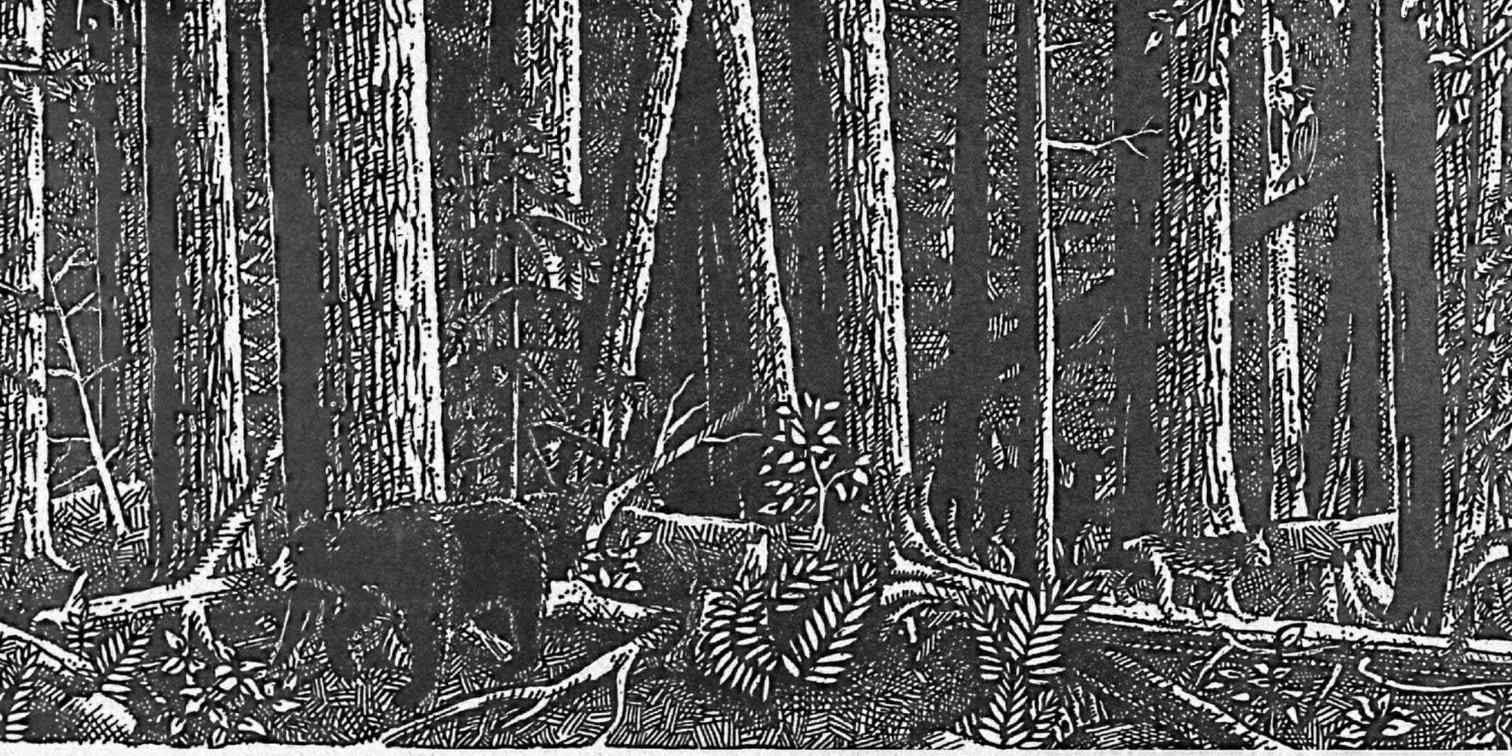
Never forget that the opposition (and most likely much of the public) knows that if it weren't for their well-funded efforts to confuse voters, anti-environment forces would likely lose most, if not all, conservation measures. Just because the bottle bill expansion failed in Oregon, does that mean voters don't support recycling? And does the Clean Stream measure's loss really mean that Oregonians want cows cavorting in their streams? Losing these battles was painful, but they were not the last word.

Increasing the use and success of citizen initiatives can best be achieved by national conservation groups becoming more engaged with measure campaigns. The best example is the Humane Society's successful campaign placing animal protection measures on state ballots around the country. We could be extremely effective if national groups teamed up with grassroots groups on cooperative, strategic national campaigns in defense of Nature. ■

Bill Marlett is executive director of the Oregon Natural Desert Association (ONDA, 16 NW Kansas, Bend, OR 97701), a grassroots group that uses litigation and advocacy to protect and restore desert wildlands. He helped orchestrate two ballot measure campaigns: a successful measure expanding Oregon's Scenic Waterway System in 1988 and more recently, a failed 1996 measure to prohibit livestock from polluting waterways.

Referenda Resources

- For more information about non-profit strategies when working on ballot measure campaigns, request a copy of "Seize the Initiative," published by The Alliance for Justice, 2000 P Street NW, Suite 712, Washington, DC 20036; 202-822-6070; HN5866@handset.org.
- Americans for the Environment, a national non-profit that tracks conservation measures, is a wealth of knowledge: 1400 16th Street NW, Box 24, Washington, DC 20036; 202-797-6665; afedc@igc.apc.org.
- The Initiative Resource Center is a clearing-house on initiative/referenda campaigns nationwide: 235 Douglas St., San Francisco, CA 94114; 415-647-1462.



Ballot Measures as a “Political Spike”

Referenda and Reform in the Great North Woods

by Jonathan Carter

There are those who naively believe that to “win” means simply to obtain more votes at the ballot box. It has become abundantly clear in recent years, however, that the result of an issue or candidate election has little or nothing to do with “truth,” but is largely controlled by the power of big corporate money and special interests. Corporate perpetrators of environmental destruction realized long ago that sophisticated public relations campaigns can convince even a well-intentioned public that what is “square” is really “round.” Does this mean that David should not take on Goliath? Absolutely not! On the contrary—win or lose—the ballot measure is a powerful political “spike” whereby citizens have an opportunity to expose the despoilers of wild Nature and to challenge their influence over democratic institutions.

For the last two years the people of Maine have been engaged in a historic fight over the fate of Maine’s great North Woods. Conservationists have sought to focus the public’s attention on the ecological destruction

of the roughly 10.4 million acres of corporate and foreign-owned industrial timberlands in northern Maine.

In 1995, after years of attempting (and failing) to persuade our state legislature to enact meaningful forestry reforms, a small group of dedicated activists decided the only way to stop the massive clearcutting, herbiciding, and overcutting was to take the issue before the people. Despite extensive polling data from the last ten years indicating that Mainers overwhelmingly wished the destruction to stop, we knew the odds were against us. With little money and a cadre of volunteers, we amassed in one day the 58,000 signatures required to put the clearcutting issue on the ballot. The Ban Clearcutting campaign was born.

The forest products industry, in conjunction with key politicians, hastily drafted a competing ballot measure—a supposed compromise measure dubbed the Forest Compact, which would have legalized and institutionalized the industrial abuses of Maine’s forests. Despite outspending us by 15 to 1, the coalition of cor-

porate interests, a popular governor, and some "environmental" groups failed to win a majority of votes for their Compact in the November 1996 election. The results: Ban Clearcutting 29%; Compact 48%; No on Both 23%.

We interpreted the vote not as a defeat of our ballot measure but as a gift of another year to make our case before the electorate. The Vote No on 1 campaign that emerged as a vehicle to defeat the Compact in 1997 was far better organized and funded. We were able to raise \$1 million to compete with the paper companies' \$3-4 million war chest. Even though every major daily newspaper in the state, the governor, and the full Congressional delegation supported the Compact, we were able to gain ground. The final tally: No on 1 53%; Compact 47%.

While there are no clear "electoral winners" resulting from the two-year ballot measure fight in Maine, it is apparent that the political debate on forest issues has changed dramatically. We can't claim total victory, but we have sent the timber corporations a wake-up call. We have cost them millions of dollars. We have shown them that until they respond to the will of the people, they will be engaged in a costly protracted fight. They can no longer simply use pollsters and media specialists to concoct consent. We have emboldened previously politically disenfranchised citizens to become activists. These successes are helping to swing the pendulum farther in our direction as we continue the struggle to protect and restore Maine's forests.

The Ban Clearcutting campaign has not yet won an outright numerical victory, but has strategically strengthened the position of forest reform advocates. After all, the powers we are fighting have been entrenched for a long time. They are not going to become "good green citizens" overnight. It will take aggressive and creative tactics and a high level of perseverance to effect change. We aim to show the forest products industry that we will not go away, that we will not back down, and that their dollars will not match the power of our grassroots in the long run.

The last 40 years have brought forth the ascendancy of global corporate power with a concomitant rapid decline in Earth's life-support systems. Unless we reverse this process, ecological and social decay will continue. The ballot measure allows people to challenge globalization and take back the democratic process. The increasing use of green referenda across the country reflects the failure of our elected officials. Many of them no longer are led by the desires of their constituents, but by the power of special interests. Ballot initiatives can

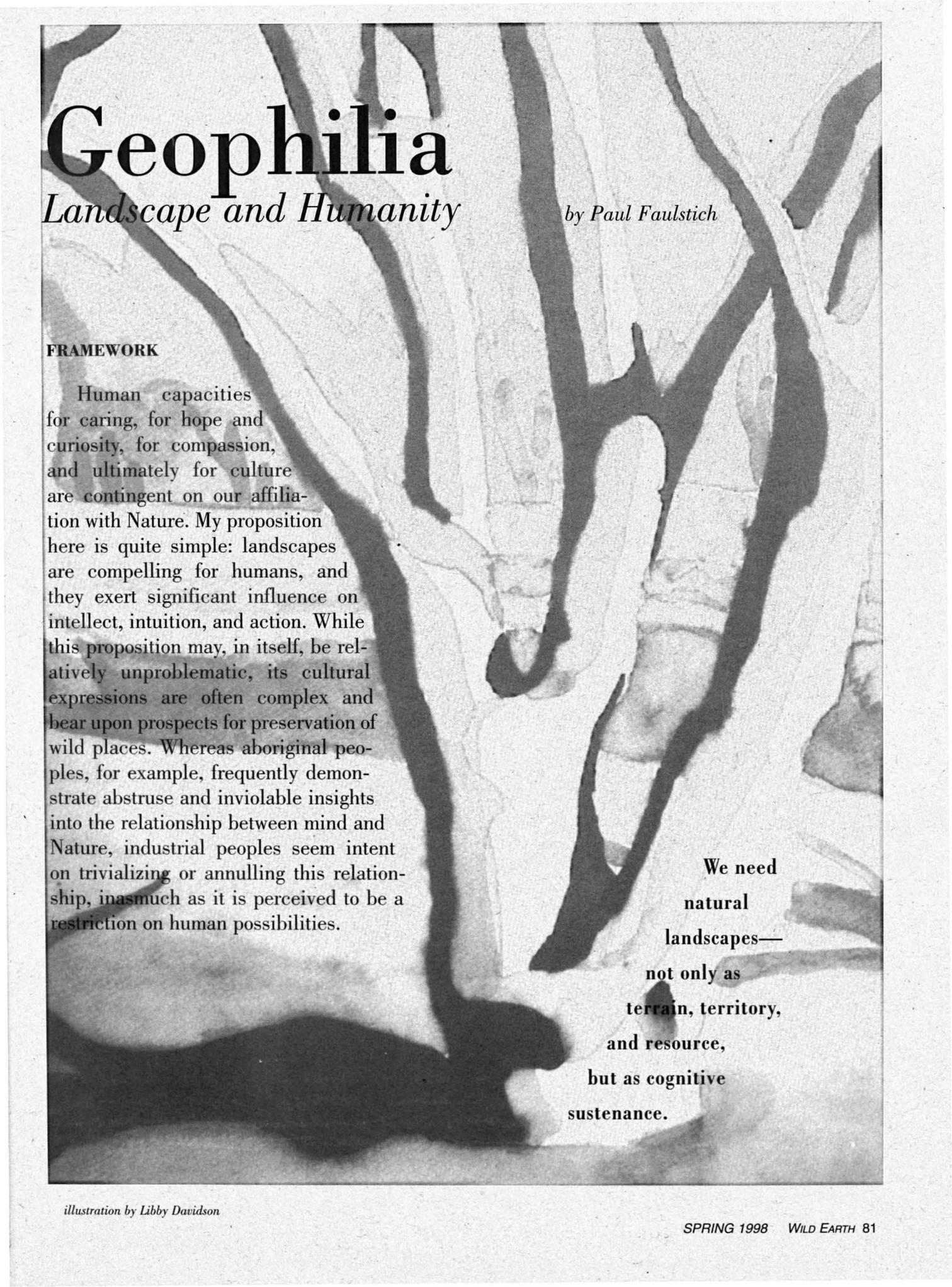
reconfigure the political landscape and serve as a reminder that in a democracy an elected official is the "servant" of the people, not the salesperson of special interests.

Ballot measures are an effective tool—win, lose, or draw. Certainly they should not be used indiscriminately, but given the right set of circumstances, they can serve to jolt the public out of complacency into action. They can focus attention on important issues. They can catalyze and foment controversy, which is often the first step in the staircase of education and subsequent reform. In the world of electoral politics, if we play by the inside rules, we will lose more often than we'll win. Strategically initiated ballot measures can destabilize the insider game and force the opposition to play by different rules.

The paper corporations have long known that forestry reform advocates have strong convictions, but as a result of the initiative process, they now know we also have the strength of a well-organized grassroots network. While forest activists will never match their bottomless wallets, we have built a solid financial support system that will allow us to educate large numbers of people and counter corporate disinformation campaigns. We have become a credible force, and for the first time industry realizes it is going to have to listen. None of this would have happened if we had not used the ballot measure "spike." Hopefully, our successful use of this tool as part of a long-term campaign to protect Maine's North Woods will be an inspirational model for activists around the country. ■



Jonathan Carter, a former Maine gubernatorial candidate on the Green Party ticket, helped found and lead the Ban Clearcutting campaign. He now serves as executive director of the Forest Ecology Network (FEN, Box 2218, Augusta, ME 04338; 207-623-7140), which works to end the abuses of industrial forestry in Maine.



Geophilia

Landscape and Humanity

by Paul Faulstich

FRAMEWORK

Human capacities for caring, for hope and curiosity, for compassion, and ultimately for culture are contingent on our affiliation with Nature. My proposition here is quite simple: landscapes are compelling for humans, and they exert significant influence on intellect, intuition, and action. While this proposition may, in itself, be relatively unproblematic, its cultural expressions are often complex and bear upon prospects for preservation of wild places. Whereas aboriginal peoples, for example, frequently demonstrate abstruse and inviolable insights into the relationship between mind and Nature, industrial peoples seem intent on trivializing or annulling this relationship, inasmuch as it is perceived to be a restriction on human possibilities.

We need
natural
landscapes—
not only as
terrain, territory,
and resource,
but as cognitive
sustenance.

The central question guiding my inquiry is "What does it mean to be human in place?" In answer to this question I offer the concept of *geophilia*, and assert that humans have an organic propensity to find wildlands emotionally compelling. Extrapolating from E.O. Wilson's concept of biophilia,¹ I explore whether geophilia might exist as a human tendency to emotionally connect with landscape. This inherent inclination to affiliate with a landscape is, perhaps, part of our evolutionary heritage, associated with genetic fitness, and related to the human capacity for symbolic reasoning.

While the biophilia hypothesis proposes that humans have a propensity to focus on life and lifelike processes, geophilia relates to our larger tendency to find compelling the landscape and its component features, both organic and inorganic. Geography includes the distribution of life on Earth; thus biophilia is, in a sense, a subset of geophilia.

We need natural landscapes—not only as terrain, territory, and resource, but as cognitive sustenance. If geophilia exists as part of our species' evolutionary heritage, then it is probable that there is evolutionary advantage to emotional and intellectual affiliation with land. Territorial establishment and management are closely related to social commitment and other socializing processes; love of one another is linked to love of place.² Just as we need love of one another to enhance commitment to our partners and children, we need love of land to enhance commitment to sustainability and conservation.

Research in this area is young, and findings have yet to appear that irrefutably support the proposition that positive response to Nature has a partly genetic basis. The most convincing findings are the decisive patterns across diverse cultures, which reveal a preference for natural scenes over urban scenes, as well as the remarkable predilection for biogeophysical settings that (presumably) offered survival-related advantages for earlier humans.

Geophobia, the corollary of geophilia, is the fearful response to landscapes. In some cases, geophobic responses sharpen perceptions and make us physically and emotionally more agile; fear of heights, spiders, or carnivorous predators has some adaptive value. Geophobia has a purpose, but only to a point. Essentially, in our contemporary world, geophobia competes with geophilia, and finds its prolific expression in modern resource extraction and development projects. Suburban landscapes, golf courses, and even Las Vegas are examples of geophilia gone awry.

Las Vegas tugs at us because it represents the oasis (albeit pathetic and utterly denaturalized); or to put it in terms apropos to human evolution, Las Vegas is the metaphorical waterhole in the parched savanna. But even in this dysfunctional and ecologically degrading expression, we see some measure of philia among the phobia. The point being that, whatever motivates us to affiliate with land, its cultural manifestations are often complex and elusive.

GEOPHILIA AND CONSERVATION

Part of our humanness derives from the unique ways we affiliate with the land, and landscape is a critical element of human meaning and fulfillment. A geophilic association with place allows for the comprehension of ecological processes, and facilitates human communication and societal distinctiveness. Geophilia enhances commitment, promotes ecologically based perception, and encourages ethical behavior and responsible action. Our affinity for wildlands is innate and integral to our development as individuals and as a species. Geophilia provides us a geography of hope.³

Whereas *topophilia*, as coined by Yi-Fu Tuan, relates to our affective and acquired ties with our *material surroundings*, geophilia can be described as our innate affiliation with *natural environments*. Topophilia is a learned response; geophilia is an inherent, direct response.

Bioregionalism offers another framework for understanding and improving human relationships with landscapes. It is the purposeful movement to reinhabit specific places in a meaningful way—to learn the geology, climate, flora and fauna of particular biotic communities and to live with sensitivity to a place. Bioregionalism is a conscious and ethical practice driven by geophilia. Geophilia is somewhat different and more fundamental than bioregionalism; it expresses tens of thousands of years of evolutionary encounters with landscape. While geophilia is related to both topophilia and bioregionalism, it departs from these concepts in that it just might be inscribed in our DNA. It is part of our deep psychology, and is rooted in the essential patterns of human life on Earth. Indeed, geophilia may *drive* both bioregionalism and topophilia.⁴ As part of the ecological history of our species, geophilia exists today as a sort of collective memory of experience related to the natural environment.

As a universal quality, geophilia provides a potent argument for conservation and signifies the importance

of a land ethic. Geophilia suggests that humans are *of* the landscape, and that as a species *Homo sapiens* belongs to the land in profound ways. Geophilia reminds us that it is our nature to be resourceful and attentive to the world in which we live.

Our current environmental crisis is symptomatic of our fractured relationship with the natural world; not only with living Nature, but with all Nature, including the topographical ground of existence.⁵ On some level—perhaps deeply subconscious—geophilia is the motivating force behind the establishment of wildlife refuges, national parks, and other conservation lands.

Wilderness is important for satisfying our physical and emotional needs for uncompromised, revered space. This is especially, but not exclusively, true in this time of convoluted interests and degenerate values. As with all wild animals, our psychological and biological heritage lies in wilderness. “Although we may define ourselves in terms of culture, language, and so on,” said Paul Shepard, “it is evident that the context of our being now, as in the past, is wilderness—an environment lacking domestic plants and animals entirely and to which, one might say, our genes look expectantly for those circumstances which are their optimal ambience.”⁶

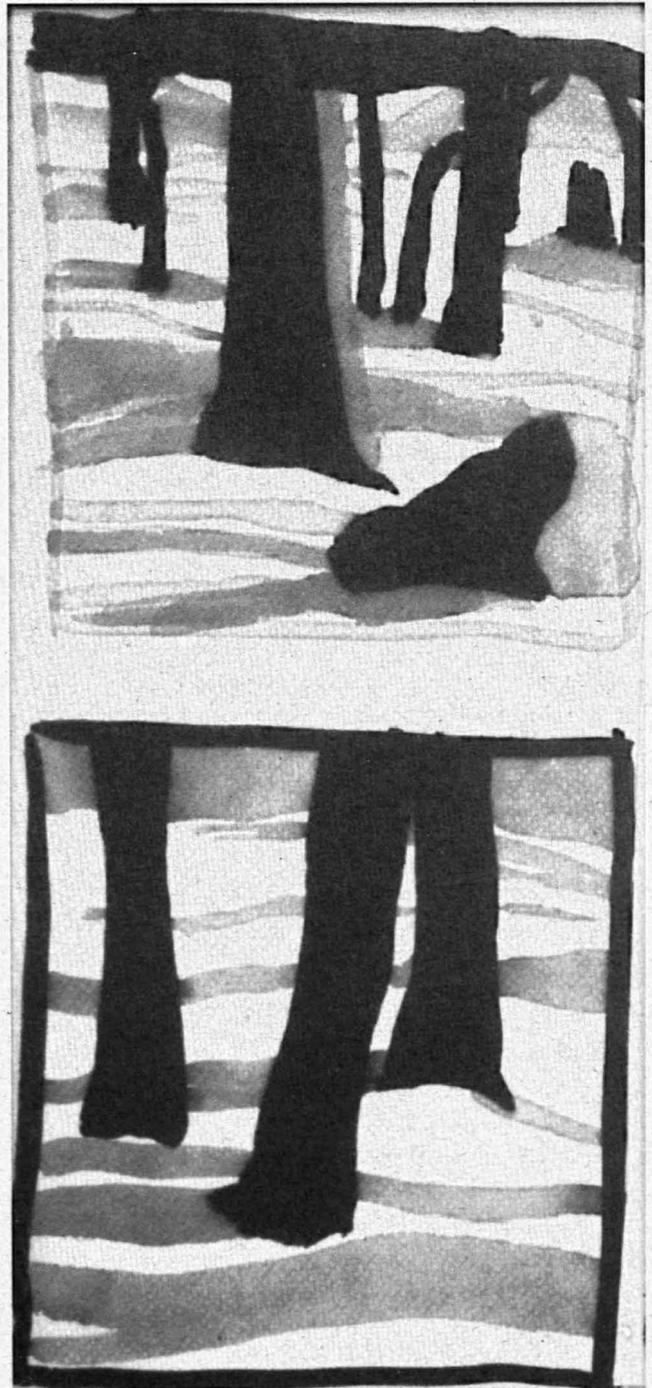
All cultures of which I am aware have separate, dedicated, hallowed spaces. In contemporary industrialized cultures, wilderness as sacred space can be understood partly as expression of a land ethic informed by a deferred geophilic response to Nature. Aldo Leopold’s insight is useful here:

*An ethic may be regarded as a mode of guidance for meeting ecological situations so new or intricate, or involving such deferred reactions, that the path of social expediency is not discernible to the average individual. Animal instincts are modes of guidance for the individual in meeting such situations. Ethics are possibly a kind of community instinct in-the-making.*⁷

Thus, a land ethic involves a renewed commitment to an ancient discourse with land; it involves the rediscovery of geophilia. A land ethic is not only “an ecological necessity,” but an “evolutionary possibility.”⁸

Geophilia may provide the basis for the ethics of both radical ecology and mainstream environmentalism. Radical ecology purports to be largely altruistic, concerned with preserving the intrinsic integrity of Nature. Mainstream environmentalism, on the other hand, is most concerned with preserving the *utilitarian value* of Nature. Combining the strands of these two perspectives,

What does it mean to be human in place?



an ethic based on our affinity for landscape can be understood partly as an ethic of altruistic selfishness.⁹

According to J. Baird Callicott, we are moral beings, and a land ethic is a natural phenomenon. He argues: "To the extent that nature has produced at least one ethical species, *Homo sapiens*, nature is not amoral."¹⁰ In a contrasting argument, Eugene Hargrove takes an ethological position, arguing that our interest in landscape comes particularly out of landscape painting, but also poetry, gardening, and natural history science. The basis, he argues, is cultural.¹¹

But neither of these positions is complete; culture and biology are not mutually exclusive. Geophilia, if it indeed exists as a biological component of our species, is certainly not free from the influence of sentiment and reason. The extent to which geophilia is anthropocentric or anthropogenic is not my immediate concern; indeed, in geophilia both forces are at play. While my concern is not so much the *philosophy* of an ethic as its *biology*, we need not shy away from conjoining the cultural and ecological foundations of a land ethic. According to Leopold, "this extension of ethics...is actually a process in ecological evolution"; we may, therefore, understand the history of ethics in biological as well as philosophical terms.¹²

Leopold maintains that we can be ethical only in relation to something we can see, feel, understand, love, or otherwise have faith in. "It is inconceivable to me," he states, "that an ethical relation to land can exist without love, respect, and admiration for land, and a high regard for its value."¹³ By value, Leopold means, I'm sure, not economic worth, but emotional and philosophic sustenance. A land ethic, in the Leopold sense, is infused with emotion and is an intellectual expression of our geophilic constitution.

Leopold understands land to be a stream of energy flowing through a circuit of soils, plants, and animals. A landscape, then, is comprised not only of components, but of an organizational pattern linking those components. Just as land is more than mere dirt, geophilia refers to more than an innate response to landscape; it is a response to the *systems that sustain* landscapes. Though we observe specific landscape features—flora and fauna, geological patterns, streams and lakes—the land is none of these individual *things*; it consists of their interdependent relationships. Land is the common denominator of the natural world; intrinsic in all its multifarious manifestations but directly visible in none.¹⁵ Land, in its most ecological sense, is not about topography or terrain. It is about relationships.

INTUITING THE LAND

Various research projects have documented humankind's strong preference for natural settings, and the literature in environmental perception is rich with examples.¹⁶ People give aesthetic preference to landscapes in which they can function effectively. People tend to prefer, for example, landscapes with water features, trees with broad canopies, and both panoramic views and sheltered refuges. Aesthetic reactions, then, are not trivial; indeed, they form a template for human behavior that is both ancient and far-reaching.¹⁷

While our regard for wilderness may be predicated on aesthetics, our need for wilderness is biological. If we have an inherent inclination for certain types of landscapes, then the basis would be a common human ecology. People in both Western and Eastern societies consistently dislike spatially restricted environments, and respond positively to landscapes with moderate-to-high visual depth. This preference can perhaps be related to our common evolutionary heritage in which our hominid ancestors found abundant plant and animal food on the savanna, and faced a lower risk because of visual openness and escape opportunities.¹⁸ Modern humans prefer landscapes with savanna-like properties such as openness, scattered trees, and grassy ground cover, and this may be a partly genetic predisposition.¹⁹ We realize our human potential less in concocted landscapes than we do in places formed more directly by the terms of our evolutionary heritage.²⁰



illustrations by Libby Davidson



It is certainly adaptive to be able to perceive danger and discern inhospitable environments, but this is not enough for evolutionary survival; suitable habitats must not only be perceived but selected.²¹ Habitat selection reflects the inclination to prefer environments that make successful adaptation more likely. Biology tells us that nonhuman vertebrates show a widespread preference for the kinds of environments in which their species prospers. Humans, too, express aesthetic preference for habitats conducive to survival, which suggests that geophilia is a characteristic of our species.

Additionally, we respond positively to landscapes in which there are suggestions of human influence, such as paths, hamlets, or even picnic tables. Such scenes bespeak socialization, companionship, and an integration of human systems with natural systems. However, where human influence is perceived to be intrusive or dominant, an unfavorable response is elicited.²²

Geophilia is a persistently retained response to certain landform stimuli that presumably constituted risks or advantages during human evolution.²³ Cultural and biological advantage is conferred on those who experience a sense of identity, reliance, and knowledge produced by the security of living in community and in place. Extrapolating from Levi-Strauss, places are good to think.²⁴

Perhaps industrial peoples are suffering from a kind of collective amnesia, wherein we have forgotten, or are

repressing, certain attitudes, perceptions, and ways of knowing.²⁵ The challenge is to expand our understanding of how human existence derives sustenance and spirit from its connection with the diversity of natural landscapes.

SYMBOLIZING GEOPHILIA

My position may seem to challenge any deference to extreme relativism and postmodernism, and I will admit to my eroding devotion to deconstructive posturing. If some readers find this problematic, do not disappear just yet, for culture *is* real phenomena, and adds dimensions of variability to human expressions of how, biologically, we fit into ecosystems. However, the world is not constructed solely within our imaginations. In acknowledging the mediating role of culture in our transhuman world, we need not abandon our belief that bulrushes, gnatcatchers, and Precambrian sandstones are *real*.

But symbolism, too, is real, and offers rich examples of how human intellect and intuition work in relation to the land. Diverse cultures have diverse perceptions of the lands they inhabit. Understanding the core of at least some of these varying perspectives is imperative for our understanding of the human condition. Geographical places become sacred or symbolic when they conjoin human social facts with those of Nature.²⁶ Landscape, consequently, is a biocultural artifact necessary to the human ordering of life.

Part of our cultural diversity and, indeed, our very humanity, derives from the unique ways we affiliate with the land. Land is the organic, emotional, and aspirational core of culture. Aboriginal peoples from Australia, and elsewhere, express geophilia (or something close to it) through myths and rituals, through totemism, and in elaborate systems of land tenure. They tend to relate to the world in personal ways, often in terms of kinship.

For Warlpiri Aborigines, this shared identity is sagaciously articulated through the Dreaming, wherein people, spirit-beings, natural species, and localities are viewed as interconnected. This extension of self onto landscape enables the articulation of personal traits in terms of graspable phenomena. Not only is landscape understood as the material manifestation of the highest values and ideals, but it is also understood as a psychological and physiological continuance of the individual. For example, some Warlpiri have shown me distinct features of their bodies, and explained to me how these replicate features of the terrain; landscape and anatomy are mirrors of each other.

The Warlpiri landscape is ontologically significant; people are components in the continuation of the land. An individual exists not only in relation to other individuals, but in concert with the landscape. Initiated in the Dreaming, identity transcends the individual, and develops through his or her direct experiences with the world. Through landscape, self-and-other exists as a continuous and extended entity in Warlpiri worldview.

To suggest that diverse native peoples express intimate relations with land is not to deny that there are ecologically dysfunctional elements of indigenous cultures; there are, and occasionally they are profound. Nonetheless, examples from peoples who exhibit different ecological relations can provide some hope and guidance for our own efforts. The impulse to become more ecological exists within industrial culture, too, but the expression is warped. Millions of people, for example, make pilgrimages each year to US National Parks. Nature tourism—however dysfunctional—has evolved as a means to reconnect with the sacred landscapes of our heritage. While we might dismiss the tourist experience of parks as trivial, it reveals the power of American landscapes to reflect our myths of who we are, and where we belong.

DISJOINED VALUES

People construct mythologies to fit the land; to affirm and express their place in the world. In the industrialized world, the substitution of these earth-based mythologies by materialism parallels the loss of fundamental contact with the land, and it relates to a host of problems that are becoming increasingly apparent and dangerous. Often, our solutions are inadequate to solve the ecological problems facing us—the very directions of our thoughts and policies repeatedly lead us deeper into trouble. Any solution derived from the same paradigm as the problem seems only to worsen things. Moreover, our emotions are no longer structured to make us *want* to deal adequately with those problems. We seem unable to stop desiring the very things that are destroying the world we long to treat with respect.

To understand our contemporary industrialist thoughts and values (many of them ecologically dysfunctional), we have to recognize their roots—roots that inevitably have earth clinging to them. We must strive to understand the thoughts and values of others who live in a very different relationship with the land. Such recognition enables us to appreciate and critique our views, and to comprehend more fully our own relationship with Nature.

REDISCOVERING GEOPHILIA

At the heart of this geophilia supposition lies a troubling paradox: most of us accept the significance of the crisis we call environmental, yet we are participants in trajectories that bode enormous ill. We have become, for example, obsessed with information technology at the expense of more subtle and sensual relationships with

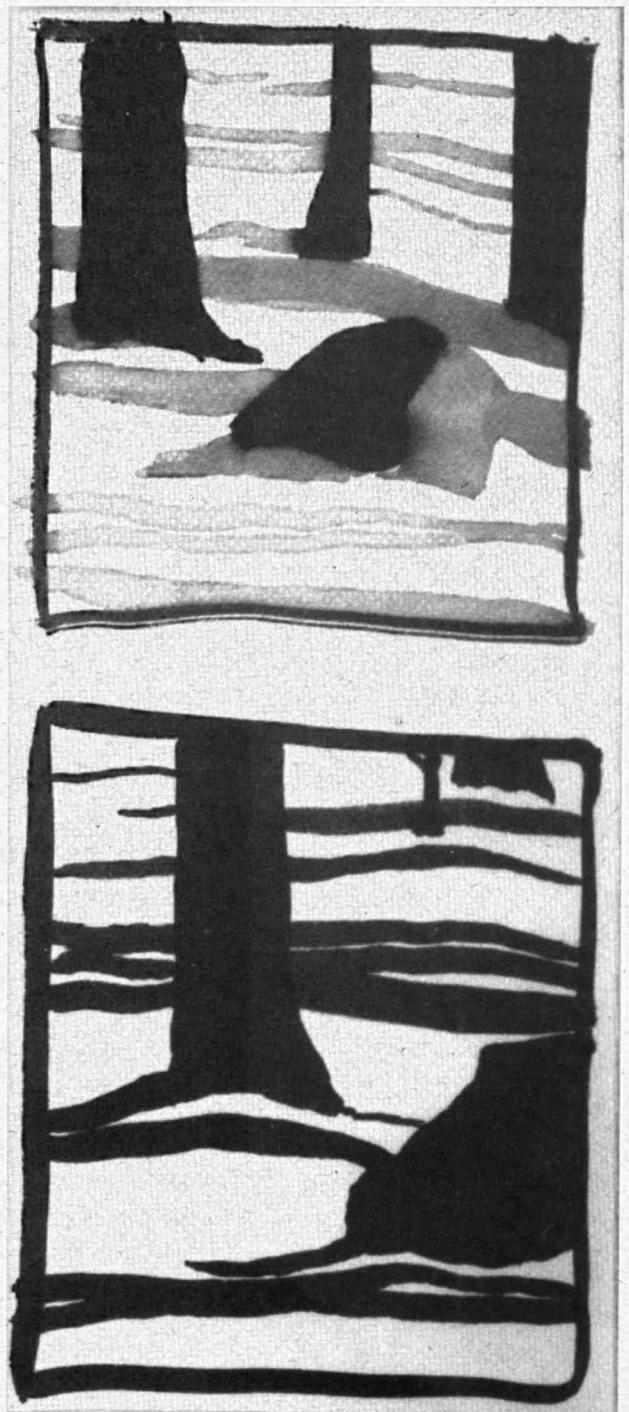


illustration by Libby Davidson

Earth, and with each other. Technophilia, unlike geophilia, is not dependent upon a structure of caring relationships, but on a structure of control. Many of the megatechnologies we have developed function antithetically to the prospect of recovering a meaningful relationship with the land. Technology has the potential to justify the fallacy we are so eager to believe—that Nature is irrelevant to us.

Many of us celebrate the benefits of modern technologies: an improved standard of living, and greater speed, choice, leisure, and luxury. These “improvements” are all arguable, of course; but even if they are true, we must ask ourselves at what expense they come. As Jerry Mander has noted, none of these benefits informs us about human satisfaction, happiness, security, or the ability to sustain life on Earth.²⁷

Cyberspace, the hyperreal, and even Disney's antiquated autoanimatronics are *simulacra*, a term used by Jean Baudrillard in discussing our inclination to believe that the abstractions of post-literate cultures and the indirect discourse of the media are more real than lived experience.²⁸ Nature on TV is better and more authentic (we come to believe) than the real thing. From genetic engineering to the “forests” of modern tree farms, we have redefined reality to be that which is reproducible and simulated. The danger in this, of course, is self-deception, the ultimate purpose and meaning of which is to feign human control over otherness.

Let us ask ourselves how to restore a biocultural alliance. Geophilia is moral, human, and relational. It is essential that we regain a notion of ourselves as extensions of the land before we can hope for substantial ecological recovery. As Gary Snyder has noted, “recollecting that we once lived in places is part of our contemporary self-rediscovery.”²⁹

Our present experience of human/Nature relations is based upon suppressing innate responses in favor of intellectual abstraction about the “global village” and other such anti-ecological notions.³⁰ According to Neil Evernden, revolts against these abstractions, from Romanticism to early environmentalism, have been attempts to reassert the experience of the Earth as a mosaic of places, and of subjects as place-limited participants on the planet.³¹ The extreme relativism of our paradigm *du jour* disfavors any notion of limits on human potentials.

In *The Natural Alien*, Evernden suggests that an animal is not only anatomy, but also a functionary of place in the biosphere. The body is thus an expression of place. “One might say,” argues Evernden, “that the place

is the species, for the place is more real and enduring than flesh.”³² By way of example, he provides the paradox of endangered species protection:

...if, to save the California condor, it is necessary to imprison every extant example of that being, what have we saved? A singular bird, certainly, but one which can be regarded as saved only by accepting a limited, biological definition of a bird as the physical manifestation of coded genetic information. Were we to regard it as the manifestation of embodied limits and therefore the functionary of a particular “place,” the fact that we have expertly exterminated that place makes nonsense of any claims that the bird has been saved.³³

If being connected with place is critical to the healthful and meaningful existence of all animals, then a central concern is how to recover human affiliation with the land. Outlined here are a few of the many paths that cultivate geophilic values and lead toward restoration of our fractured relationships:

Take pleasure in the land: In natural places there is self-discovery. Learn about the social and ecological communities of your bioregion, for we cannot love that which we do not know. Through reinhabitation we can begin to dwell in ways that respect ecological limits, and engender social justice.

Imprint Nature: Imprinting is irreversible learning at a critical stage of an individual's development, wherein an individual attaches consequential meaning to an “external” object. It is part of the development of all young animals. By facilitating early environmental education, we can imprint Nature, thereby awarding our youth a strong and lasting kinship with Earth.

Restore: Ecological restoration is work to restore the health of the land. By engaging in restoration we accept a forsaken responsibility, and we participate in a partnership ethic with the land.³⁴ Human systems also need restoration. We must honor diversity, and ecological diversity may well be correlated with human diversity.

Explore: Mapping and exploring are ways of learning about the land.³⁵ They enable us to begin to re-envision the world and the human place within it in more socially and ecologically creative ways. Moreover, mapping and exploring our *values* enables us to deconstruct dysfunctional patterns of behavior and reconstruct healthy ones.

Engage in symboling: Arts, rituals, and metaphors arouse emotions; they heighten awareness, bring fresh insight, and enable us to become conscious of connections between ourselves and the world. But I would caution us about the kinds of symbols we use. The metaphor of "Mother Earth," for example, is disturbingly deceptive. Earth as mother has a long and honorable history, but as Joni Seager argues, it is a disingenuous metaphor for a spiritually hollow, industrial, patriarchal society, and has been used to deflect accountability.³⁶

Garden: When practiced ecologically, gardening can help preserve biological diversity and nurture the human spirit. Ecological gardening is a form of restoration that helps transform the way we think and act.

Defend wild places and practice ecology: Defense of wildness is defense of self. Reintegrate knowledge and action; live as a relational and connected being. Collectively, we have come to think of Nature as something other than ourselves, and we live with the terrible delusion that we are no longer subject to the ecological design that governs life. Living ecologically and defending wildness enables us to renew an ancient covenant with the land.

Geophilia, even though it may have an evolutionary basis, is not some universal hereditary program hardwired into our genes. If it were, we wouldn't be in our environmental mess. I do not purport that people are necessarily aware of their needs or that environmental preferences are ubiquitous. What is suggested by geophilia—and this is controversial enough—is that our innate responses and learned reactions to landscape are biased in particular directions by our evolutionary heritage.

The ultimate raw material for our humanness is rooted in natural processes. Part of what it means to be human derives from careful reflection on the natural history of place. I am now compelled to revisit my initial question: "What does it mean to be human in place?" The answer is at once simple and complex: We are integral parts of the integrity of this Earth; we are derivative, and Earth is primary. We are, each of us, conscious, breathing chunks of earth. ■

Paul Faulstich teaches human ecology at Pitzer College, and makes his home on the alluvium of the Thompson Creek watershed, Claremont, California.

End Notes

- ¹ The concept of biophilia was first articulated in an article written by E.O. Wilson that appeared in the *New York Times Book Review*, January 14, 1979, p. 43. It was more fully developed in Wilson's *Biophilia* (Cambridge: Harvard University Press, 1984), and subsequently explored in Stephen R. Kellert and E.O. Wilson (eds.) *The Biophilia Hypothesis* (Washington, DC: Island Press, 1993).
- ² Paul Shepard, *Man in the Landscape: A Historic View of the Esthetics of Nature* (College Station: Texas A&M, 1991 [1967]), p. 33.
- ³ The marvelous phrase "geography of hope" was borrowed from the title of one of the Sierra Club's early exhibit format books, *Baja California and the Geography of Hope* by Joseph Wood Krutch and Eliot Porter (San Francisco: Sierra Club Books, 1967). The phrase was first used, as far as I know, by Wallace Stegner in a 1960 letter in which he defends the wilderness idea. He sums up his argument in the final line of his letter: "For it can be a means of reassuring ourselves of our sanity as creatures, a part of the geography of hope." Stegner's letter is reprinted in *The Desert Reader* (pp. 187-91), edited by Peter Wild (Salt Lake City: University of Utah Press, 1991).
- ⁴ Topophilia is proposed and discussed in *Topophilia* by Yi-Fu Tuan (New York: Columbia University Press, 1974). Aspects of bioregionalism are associated with the deep ecology movement; an overview of its various manifestations is presented in *Home! A Bioregional Reader*, edited by Van Andruss, Christopher Plant, Judith Plant, and Eleanor Wright (Philadelphia: New Society Publishers, 1990).
- ⁵ In *The Others: How Animals Made us Human* (Washington, DC: Island Press, 1995), Paul Shepard tells us that in the broadest sense, evolution extends our kinship to the emotionally distant atoms and stars, yet such things, he suggests, are "too remote for much fellow-feeling" (p. 8).
- ⁶ Paul Shepard, "Wilderness is Where my Genome Lives," manuscript of a paper delivered at the 5th World Wilderness Congress, Tromsø, Norway, 1993, p. 2. This essay was subsequently published in *Whole Terrain*, 1995/96(4): 12-6 and in Paul Shepard, *Traces of an Omnivore* (Washington, DC: Island Press, 1996), pp. 215-221.
- ⁷ Aldo Leopold, *A Sand County Almanac* (New York: Ballantine Books [first published by Oxford University Press, 1949]), p. 239.
- ⁸ *Ibid.*, p. 239.
- ⁹ For further discussion on "selfish genes" and how they relate to biophilia and ethics, see Richard Dawkins *The Selfish Gene* (New York: Oxford University Press, 1975), Holmes Ralston III, "Biophilia, Selfish Genes, Shared Values," in *The Biophilia Hypothesis* (see note 1), pp. 382-414, Edward O. Wilson, *Biophilia* (see note 1) and *Sociobiology: The New Synthesis* (Cambridge: Harvard University Press, 1975).
- ¹⁰ J. Baird Callicott, "The Conceptual Foundations of the Land Ethic," originally published in *Companion to A Sand County Almanac: Interpretive and Critical Essays*, edited by J. Baird Callicott (Madison: University of Wisconsin Press, 1987), pp. 186-214. Quoted from a reprinting in *The Environmental Ethics and Policy Book*, edited by Donald VanDeVeer and Christine Pierce (Belmont, CA: Wadsworth), p. 158.
- ¹¹ Eugene C. Hargrove, *The Foundations of Environmental Ethics* (Englewood Cliffs, NJ: Prentice Hall, 1989).
- ¹² Quoted from J. Baird Callicott, "The Conceptual Foundations of the Land Ethic," (see note 10), p. 148.
- ¹³ Aldo Leopold, *A Sand County Almanac* (see note 7), p. 261.
- ¹⁴ *Ibid.*, p. 253.
- ¹⁵ Tim Ingold, *The Appropriation of Nature* (Iowa City: University of Iowa Press, 1987), pp. 153-4.
- ¹⁶ For a thorough discussion of the pervasive impact of natural environments on diverse ages and cultures, see Rachel Kaplan and Stephen Kaplan, *The Experience of Nature: A Psychological Perspective* (Cambridge: Cambridge University Press, 1989).
- ¹⁷ *Ibid.*, p.10.

- ¹⁸ Roger S. Ulrich, "Biophilia, Biophobia, and Natural Landscapes," in Stephen R. Kellert and E.O. Wilson (eds.) *The Biophilia Hypothesis* (Washington, DC: Island Press, 1993), pp. 73-137.
- ¹⁹ Ulrich (ibid., p.89) cites J. Appleton, *The Experience of Landscape* (London: Wiley, 1975) and G.H. Orians "Habitat Selection: General Theory and Applications to Human Behavior," in J.S. Lockard (ed.) *The Evolution of Human Social Behavior* (New York: Elsevier North-Holland, 1980).
- ²⁰ Paul Shepard, "Wilderness is Where my Genome Lives," (see note 6), p. 13.
- ²¹ Rachel Kaplan and Stephen Kaplan, *The Experience of Nature: A Psychological Perspective* (Cambridge: Cambridge University Press, 1989), p. 41.
- ²² See Judith H. Heerwagen and Gordon H. Orians, "Humans, Habitats, and Aesthetics," in *The Biophilia Hypothesis* (see note 1).
- ²³ Ulrich, "Biophilia, Biophobia, and Natural Landscapes," (see note 18), p. 122.
- ²⁴ Levi-Strauss, *Totemism* (London: Merlin, 1964) and *The Savage Mind* (London: Weidenfeld and Nicolson, 1966).
- ²⁵ For a fuller treatment of the amnesia analogy, see Ralph Metzner, "The Psychopathology of the Human-Nature Relationship," in Max Oelschaeger (ed.), *The Company of Others: Essays in Celebration of Paul Shepard* (Durango, CO: Kivakí Press, 1995), pp. 197-211.
- ²⁶ For further discussion see Yi-Fu Tuan, *Passing Strange and Wonderful: Aesthetics, Nature, and Culture* (Washington DC: Island Press, 1993), pp. 171-2, and Robert David Sack, *Conceptions of Space in Social Thought: A Geographic Perspective* (London: Macmillan, 1980).
- ²⁷ Jerry Mander, *In The Absence of the Sacred* (San Francisco: Sierra Club Books, 1991), p.26.
- ²⁸ Jean Baudrillard, "The Precision of Simulacra," in *Art After Modernism*, edited by Brian Wallis and Marcia Tucker (Boston: David R. Godine, 1988).
- ²⁹ Gary Snyder, *The Practice of the Wild* (San Francisco: North Point Press, 1990), p. 28.
- ³⁰ For a marvelous discussion on how the dominance of the global perspective marks the triumph of technology over cosmology, see Tim Ingold, "Globes and Spheres: The Topology of Environmentalism," in *Environmentalism: The View from Anthropology*, edited by Kay Milton (New York: Routledge, 1993), pp. 31-42. Ingold argues that the notion of the global environment, far from marking humanity's reintegration into the world, signals the culmination of a process of separation.
- ³¹ Neil Evernden, *The Natural Alien* (Toronto: University of Toronto Press, 1985), p. 152.
- ³² Ibid., p. 152.
- ³³ Ibid., p. 151.
- ³⁴ For an introduction to the emotional, ethical, and practical aspects of environmental restoration, see *Helping Nature Heal*, edited by Richard Nilsen (Berkeley: Ten Speed Press, 1991).
- ³⁵ A wonderfully empowering collection of essays on mapping is *Boundaries of Home* edited by Doug Aberley (Philadelphia: New Society Publishers, 1993).
- ³⁶ Joni Seager, *Earth Follies: Coming to Feminist Terms with the Global Environmental Crisis* (New York: Routledge, 1993), p. 219.

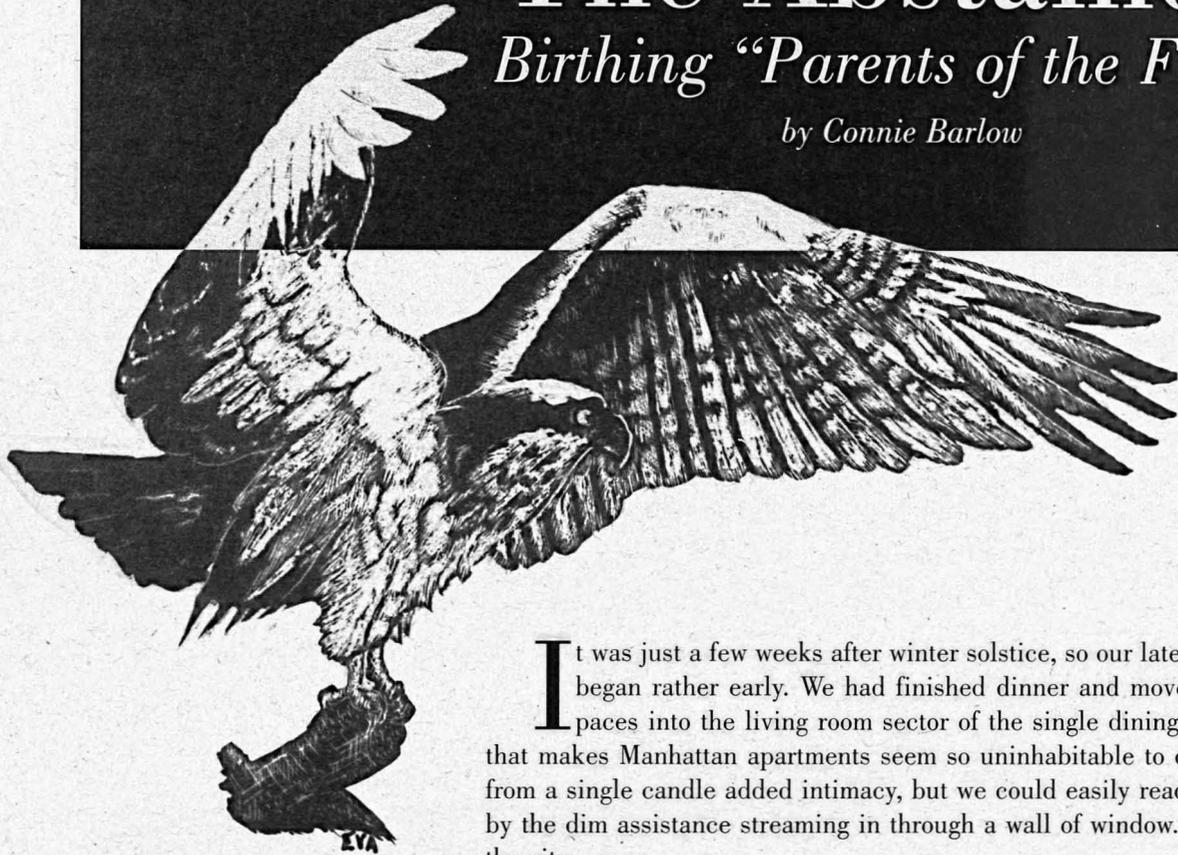


illustration by Libby Davidson

The Abstainers

Birthing "Parents of the Future"

by *Connie Barlow*



It was just a few weeks after winter solstice, so our late-night conversation began rather early. We had finished dinner and moved the two or three paces into the living room sector of the single dining-living-office space that makes Manhattan apartments seem so uninhabitable to outsiders. The light from a single candle added intimacy, but we could easily read each other's faces by the dim assistance streaming in through a wall of window. It is never dark in the city.

Tyler Volk (my mate) and I were reconnecting that evening with Ed Dobb, a writer friend who had moved back to Montana. The conversation meandered into environmental values, the state of the planet, and finally the big conundrum: overpopulation. Ever the optimist, I offered the hopeful comment, "All it takes is one generation." Ed interpreted that to mean one generation of dictatorial constraints on childbearing. "No, no," I protested. "One generation that voluntarily abstains from childbearing. Centuries hence they would be regarded as heroes, gods," I mused. "Monuments would be erected in their memory."

"Yeah, something like the Vietnam Memorial in Washington," offered Tyler. "A wall of names."

"The abstainers," declared Ed. "Sounds like a great title for a novel."

After midnight I drifted off to bed, with the buzz of a fine discussion delaying sleep. At dawn I half awoke, and started on a roll of fantasy.

Why wait for a future generation to take the plunge? Let it begin with us—the substantial subset of boomers who have signed off (or stalled off) parenthood, and that inscrutable generation nipping at our heels. Let us celebrate our choices and commitment today. Why wait a hundred years for our collective good deed to be honored in a wall of names erected by our nondescendents? And, anyway, how would those grateful future generations even know who we are if today's personal decisions of such consequence remain just that—personal? Rather, let's announce to the world our community commitment, our heroic vow, and take pride in ourselves. We are not childless reprobates; we are dedicated abstainers who take personal action for a better world to come. In the eyes of some, we are making the penultimate sacrifice.

illustration by Eva Thompson

A monument would symbolize and sanction our commitment, perhaps drawing a growing stream of initiates for years to come. Whatever its design, this monument would record the names of those among us who profess a commitment to refraining from reproduction. We would be the Abstainers.

But the word *abstainer*, especially linked to *childless* or *childfree*, seems harsh, negative—like those strange, celibate (and virtually extinct) creatures, the Shakers. I recalled another late-night, depth-of-solstice conversation the previous year. “We’re not childless,” Richard Moore, a biologist, pronounced. “We’re parents of the future. That’s where we devote our creative energies.”

Two years have passed since that winter evening when I learned there was something real and solid and attractive to call myself—to proudly call myself—rather than childless. No monument bears my name, as yet, but I have indeed become a proud Parent of the Future.

“So do you have children?” I am asked by a new acquaintance. “Yes!” I say with conviction. “I have many. My newborn is *Green Space, Green Time*, and before that....” You get the picture. If the listener were willing, I would happily continue the way to the letters-to-the-editor I have written, and on to the cottonwood saplings I am nurturing along a river in New Mexico.

When I eventually join the rank of elder, I hope I may be able to include a few humans in that list as well. I know of a “childless” woman—Celia Hunter, conservationist par excellence from the Yukon bioregion—who has many such children. I am one of them, and so is the publisher of this journal.

How is a movement made out of an idea? What attractant could bring together those of us who are serving one-by-one as parents of the future into a recognized Parents of the Future, or some such named and known association? Perhaps we need something as solid and eternal as stone to give us identity and community. Perhaps we need to think on a monumental scale. Actually, I envision not one massive monument but many home-spun varieties of as many materials and styles as there are imaginations. Parents of the Future stones, sculptures, plaques, paintings, and weavings might spring up in every bioregion. Perhaps by the turn of the millennium all bioregions would be represented, if only by a modest stone somewhere in the watershed inscribed with just one name. As the decades pass, the first monument would be joined by others—perhaps a sculpture for each new class of initiates. Centuries hence, these monuments would become the focus of religious pilgrimages. Stonehenge sans mystery.

The monuments might record more than just names and dates. The inscriptions could allow some passion and individuality to spring forth, and thus provide clues for future anthropologists assessing the motives and moods of this pivotal era. Unlike epitaphs, these inscriptions could fill the named with pride. Unlike lonesome tombstones, these monuments would not soon be forgotten. Mine would likely read: “In memory of giant ground sloth; in celebration of cottonwood trees.” Others, too, might choose to honor a totem organism or landform. But, one need not be biocentric to become an Abstainer. The inscription could equally well read, “In celebration of human freedom / human potential / country music.” Or, “Cheers to the seventh generation.” In the

Let’s announce to the world our community commitment, our heroic vow, and take pride in ourselves. We are not childless reprobates; we are dedicated abstainers who take personal action for a better world to come.



true spirit of self-organizing community, there should be no constraints. Anything goes, including, "This world sucks." The monuments would represent a pageant of humanity, the best and the worst we have to offer, unexpurgated.

One of the beauties of such a project is that it need not wait for cultures and countries to collectively affirm that we have indeed reached that feared threshold of "overpopulation." And we need not collectively decide what subtle or draconian measures ought to be adopted to deal with it. Rather, those who believe the threshold has been crossed can take individual action right now. Those who disagree can proceed as usual.

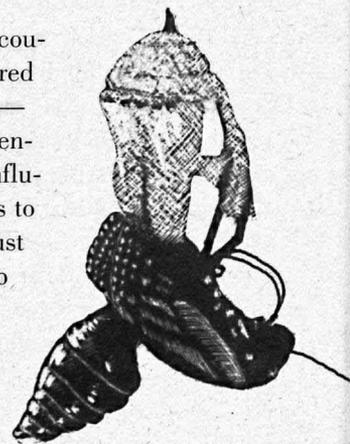
Parents of the Future would be entirely self-organizing, regionally diverse, and free of government association. It would rise from the hearts of the people. Those of us who do not procreate for whatever reason—infertility, self-interest, or lack of opportunity, as well as noble ethical commitment—could thereby view that step not as an absence but as a full-bodied presence. We would proclaim to the world the pride we share in our species' perhaps unique capacity to care and act for the future. Through the names and inscriptions, each of us would obtain a measure of immortality.

Well, let's make our own immortality and revel in it, as Parents of the Future! Let's make an annual or biennial initiation ceremony something to be savored. Initiates could be honored at one of the solstices. New monuments and inscriptions would then be unveiled, making the site more and more a place of reverence with each passing year. Rituals would develop, bioregion by bioregion. Some rituals might take hold and sweep the world. Who can tell? Initiates would be royalty for a day. Members would organize the celebrations, design the rites, and conduct the revelry.

Newsletters, education programs, all sorts of accoutrements that Abstainers might develop could be geared toward helping individuals find their niche for nurturing—how to truly become Parents of the Future not only by abstinence, but by love and care and action. Abstainers could influence the future after death, as well, by willing their assets to worthy causes, bequeathing their land to a conservation trust or for wildlands recovery. There would be no progeny to protest.

History, of course, teaches that even a philosophy that preaches love of one's enemies can drive believers into a frenzy of unloving action. It is therefore crucial that profligate procreators be regarded not as moral miscreants, but as those whose values are still shaped by ancient cultural traditions made anachronistic by modern medicine, or as those who simply lack other ways to express their creativity and hunger for nurturing. Likewise, there should be no stigma for apostates. Should Abstainers later choose to have children, their names would simply be removed from the monument.

In addition to initiation rites, perhaps a ceremony could be held for women and men who have abstained fully to their year of "croning," thus honoring elders—winter solstice for the elders, summer solstice for fresh initiates. Perhaps there could be marriage ceremonies for Abstainers. (Think of all the couples who marry today while leaving the Big Question undecided or ambiguous.) The monuments themselves might become favored sites for weddings and memorial services.



If this is starting to sound like a religion, so be it. The depth of worldview changes necessary to turn about the human condition may indeed require a penetration to our very souls. As deep ecologist Arne Naess has enjoined, we must be drawn to perform not just dutiful acts out of concern for the environment, other species, and future generations of humans: We must be drawn to perform *beautiful* acts that spring from the heart. Becoming a Parent of the Future would be a beautiful, joyful act. The recognition of its crucial role and implicit "sacrifice" would merit the stark nickname of Abstainer. Because the only creed would be the vow to refrain from reproducing, branches of Abstainers who primarily identify with one of the traditional religions might emerge. These branches might choose to conduct their own, highly religious rituals of initiation as an alternative or supplement to the overarching event. For the pagans, Earth ecstasies, evolutionary epicists, and religious naturalists among us, a Parents of the Future affiliation could become a core expression of our strivings to birth or rebirth biocentric religious sentiments essential for these times.

If we begin soon, we have the chance to usher in the millennium in a far from trivial fashion. With celebrations and initiatory events in a multitude of bioregions, we can launch one of the greatest human endeavors of all time—an attitudinal shift that could put an end to this mass extinction of life forms, and the land and resource scarcities that flash into conflicts. Above all, we would be bequeathing to future generations the opportunity to be truly human once again—that is, less than perfect. Our kind could try out new ideas and stumble without suffering horrendous ecological consequences and the accompanying guilt. In a less populous future world, the humans in debt to our own self-willed abstinence would be free once again to indulge in sheer sloppiness and consumptive extravagance every now and then. Eventually, those who felt the urge could be given a chance to run with the ancestors once again, in wilderness areas restored to a vastness big enough to accommodate undesignated campsites, pine-bough beds, and the ritual of the hunt of root and berry and beast.

I remember in my college years deliberately spending each summer ever farther north, pursuing freedom and adventure, as the over-loved National Parks in which I cleaned toilets and guided tourists acquired more rules and regulations. First Yellowstone, then Glacier, then the ultimate: Mount McKinley (now Denali National Park), which was at that time the northernmost outpost of America's treasure of protected lands. Backpacking permits finally came to McKinley in 1974—my third and final year there. On days off I could no longer ride the park bus with all my maps, deciding by weather and whim where to disembark. Yes, this is perhaps a petty and privileged example of the loss of freedom as our numbers swell, but the losses come in many forms. I dare say we all have felt them. Little losses pile up, and we begin to forget, we cease to yearn. Those who cherish and remember human freedom, those who hunger for a world less burdened by famine and war, and those who hope to hold onto biodiversity and wildness can all join for a venture that promises a millennial shift that is more than calendrical. We can give birth to a movement that celebrates the choice to parent not more flesh—but a brighter future for all.

Childless no more, I am a Parent of the Future. Are you? ■

Author and editor Connie Barlow lives in New York and New Mexico. She contributed "Because It Is My Religion" and "Re-Storying Biodiversity" to recent issues of Wild Earth. Her latest book is Green Space, Green Time: The Way of Science, published by Copernicus Books in 1997.

illustrations by Eva Thompson



Book Reviews



REVIEWED IN THIS ISSUE:

*The Forgotten Nature of
New England*

Reading the Forested Landscape

The Story of B

THE FORGOTTEN NATURE OF NEW ENGLAND: A Search for Traces of the Original Wilderness

by Dean B. Bennett; Down East Books (POB 679, Camden, ME 04843); 1996; \$17.95 paper; 369 pp.

READING THE FORESTED LANDSCAPE: A Natural History of New England

by Tom Wessels, etchings and illustrations by Brian D. Cohen; The Countryman Press (POB 748, Woodstock, VT 05091); 1997; \$24.95; 199 pp.

Forest ecologists Dean Bennett and Tom Wessels have both recently published books that will immensely increase readers' understanding and appreciation of the New England landscape. These complementary works emphasize changing land use and natural history. Dean Bennett, a professor at the University of Maine-Farmington, takes the entire region of New England as his area of study; Tom Wessels, associate chair of the Environmental Studies Department at Antioch New England Graduate School, focuses on the forests of central New England.

Bennett's book is the result of his search to rediscover the nature of New England by locating intact remnants of the landscape seen by explorers and early settlers. During more than two years of reading, interviewing, and traveling, he found more than one hundred notable pockets of wild Nature, about half in Maine.

The Forgotten Nature of New England begins with an overview of the region's wilderness, and its exploration, settlement, and ensuing destruction; Bennett concludes this chapter by describing remaining patches of wilderness. He then addresses in turn "the isles, bays, and coastal lands"; the "country and its stones"; "the waters"; "the woods and herbs"; and New England wildlife.

Bennett prefaces his descriptions of particular sites with general remarks about the type of landscape they represent. Thus, within the chapter on stones, he describes the effects of glaciation across New England, then uses specific sites to illustrate the landscape features created by glaciers—horsebacks (eskers), for example, including the Swamp Esker in Rhode Island and the Pine River Esker in New Hampshire. In each site description he combines an account of his own visit with the history of the area and quotations from people who visited it long ago. We see Pulpit Rock in Maine through his eyes and through those of Charles T. Jackson who viewed it in 1837; Rowland E. Robinson's 1894 description of Little Otter Creek Marsh helps readers visualize the 19th century landscape in Vermont's Champlain Valley.



Etching by Brian D. Cohen, from *Reading the Forested Landscape* by Tom Wessels. Copyright © 1997. Reprinted with permission of the publisher, The Countryman Press/W.W. Norton & Company, Inc.

Commendably, Bennett wishes to lead us to an appreciation of the fragile places he describes, not to the places themselves. He wants readers to "experience satisfaction from merely knowing, vicariously, about the unspoiled examples of nature documented" in his pages. He is intentionally vague about specific geographic locations and even changes place names on occasion.

Still, the book is specific enough to delight a reader who suddenly comes across enlightening information about a familiar place. I learned, for example, that when our family lived in western Massachusetts, unbeknownst to us, we were within a few miles of quarries where the prints of dinosaurs have been found; and that Mount Monadnock, up which we led our children, was climbed by early geologists "fascinated by its glacially embossed and scarred ledges."

Small images—photographs, reproductions of early illustrations, and maps of New England in the style of early cartographers—enliven the text, and end notes increase the book's credibility and usefulness.



In *Reading the Forested Landscape*, Tom Wessels sets out to teach readers to decipher "the varied forest patterns of central New England." Within this and other phytogeographic regions, he points out that three factors determine the composition of plant communities: disturbance history, topography, and substrate. In each of his first six chapters he takes up one specific type of disturbance. In the seventh, he discusses various types of topography and substrate in relation to the plants that indicate their presence.

Each chapter is a lesson in how to interpret the landscape, with "A Look Back" directly discussing historical context. The chapter on effects of wind storms, for instance, tells us how to read such clues as the existence of pits and mounds (indicators of a blowdown) and the direction in which dead trees lie (indications of the type of storm) and presents a vivid account of the circumstances surrounding the Great Hurricane of 1938.

In addition to windstorms, the major disturbance agents are fire, logging, beavers, forest blights, and agricultural conversion—not, I noted, ice storms. Although Wessels, like Bennett, discusses the effects of glaciation, neither treats ice as having had a significant impact on New England forests in recent centuries—an indication perhaps that the weather is changing.

A handsome etching of a forest scene prefaces each chapter. Wessels uses these etchings, as he would an actu-

al forest, to teach. By asking questions and noting clues in the illustrations, he helps readers work out for themselves the history of the landscape depicted. Small details of the etchings reproduced in the margins help to illustrate his points. Wessels shows himself to be a master teacher; his instruction in reading the signs of disturbance can be applied to North American forests outside central New England.

In a final chapter, "Forests of the Future," Wessels speaks briefly on the likely outcome of the opposing trends of fragmentation and conservation, then discusses at some length regional forest health—in particular, the likely effects of global warming and atmospheric deposition. The latter, Wessels notes, is not just a matter of acid rain but includes heavy metals, ozone, and organochlorines. Canopy decline is already evident in sugar maple, white ash, red oak, and butternut; for at least the first three of these species, deposition of atmospheric pollutants is a likely cause, among other factors.

A series of helpful appendices, among them a list of site conditions for common woody species and a summary of the evidence of former disturbances, a selected bibliography, and an index increase the text's usefulness. *Reading the Forested Landscape* should be read in its entirety, but can subsequently serve as a reference tool in the library and afield. And herein lies a small problem. With its lovely etchings, hard cover, and elegant dust jacket, the book typifies the high artistic quality traditionally associated with small presses. It is beautiful as well as instructional, and most readers will likely feel uncomfortable cramming it into a backpack for consultation on a hike. Publication of a paperback edition, which is scheduled for November of this year, will be helpful.



Bennett, in his last chapter entitled "Of Values and Hope," speculates that "the very remnants of wilderness we are in danger of losing" may be "one of our best hopes of regaining our sense of connection to the planet." He desires that those who visit or simply learn about the remnants of Nature he describes "will be more caring of this planet and the future of all species." Wessels regards his book as "an invitation, an opening, to a deeper relationship with the land, a relationship that, as it grows, will, I hope, foster environmental advocacy."

If environmental education can inspire action, these books will certainly lead to increased protection for the New England landscape. ♦

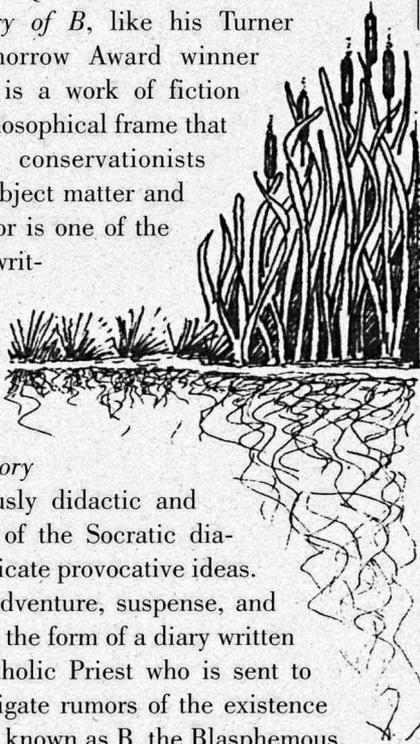
— Reviewed by Mary Byrd Davis, coordinator of the Eastern Old-Growth Clearinghouse.

THE STORY OF B: An Adventure of the Mind and Spirit

by Daniel Quinn; Bantam Books (1540 Broadway, New York, NY 10036); 1996; \$22.95; 325 pp.

Daniel Quinn's second novel, *The Story of B*, like his Turner Tomorrow Award winner *Ishmael* (1992), is a work of fiction couched in a philosophical frame that will interest conservationists because of its subject matter and because its author is one of the only ecocentric writers who reaches a large audience of mainstream Americans. Like *Ishmael*, *The Story of B* is consciously didactic and uses the device of the Socratic dialogue to communicate provocative ideas. It is a story of adventure, suspense, and espionage told in the form of a diary written by a Roman Catholic Priest who is sent to Europe to investigate rumors of the existence of the Antichrist, known as B, the Blasphemous.

Quinn elaborates on a number of ideas introduced in *Ishmael*, including his division of humanity into Takers and Leavers—that is, into people who see the world as belonging to them, and people who see themselves as belonging to the world. Quinn believes the Taker way of life has its roots in the Neolithic Revolution, beginning about 10,000 years ago when the adoption of a particular style of agriculture swept aside earlier economies based on hunting and gathering, and on other types of agricultural practices. Quinn calls the new invention “Totalitarian Agriculture,” because “it subordinates all life-forms to the relentless, single-minded production of human food” (247). He shows that this transition marks the beginning of a new vision of the world and our place in it that has largely eclipsed healthier views of humanity's relationship with the rest of Nature. This eclipse he calls The Great Forgetting, “a forgetting of the fact that we are exactly as much a part of the processes and phenomena of the world as any other creature” (180).



One of the most urgent subjects the book explores is human overpopulation and its negative effects on cultural and biological diversity. Quinn traces the rate of population growth from the appearance of *Homo sapiens* to the present and argues that there is a positive feedback relationship between food production and population growth. Thus, limiting food production would act as birth control, and, by extension, would help prevent calamities such as famine.

Since I cannot here adequately summarize all of *The Story of B*'s controversial ideas, I'll mention only one more: the challenge to the notion that East and West, and their worldviews, constitute different cultures. Quinn, through B's teachings, groups together all monotheistic, revealed religions of conversion based on a Book, questioning the foundations of Christianity, Judaism, and Islam, but also critiques Buddhism—for its salvational, transcendental aspect (and this may be a problem for many deep ecologists reading Quinn, who would otherwise agree with much of his thinking). To these religions of transcendence, Quinn opposes animism, which he then discusses extensively. Here, however, Quinn commits some grave errors of analogy and semantics: first, by comparing the notion of a monotheistic God “writing” in words to that of the animistic gods of the universe “writing” in galaxies, oceans, trees; and second, by stating that animism and science are “perfectly at home” with each other because they both “read the universe” looking for truth (136). It is this notion of ourselves as “readers” of the “Book of Nature” that has led to our increasing “authoring” of the world, I would argue. If animism and science both seek truth in the universe, they do so out of utterly different motivations and with completely different effects.

These are minor criticisms, though, and by no means disqualify Quinn's book as an important tool of meditation on our culture's lethal impact on the natural world. Indeed, it offers hope since the problems identified in *The Story of B* are not intrinsic to humanity as a whole, but are the fruits of one particular culture—albeit one that has become practically universal. ♦

—Reviewed by Paula Willoquet-Maricondi, lecturer in literature, film, and interdisciplinary studies at Butler University in Indiana.

illustration by Gary Bentrup

Nature Lover's Library

RECENTLY PUBLISHED OR CLASSIC TITLES THAT
MAY BE OF INTEREST TO CONSERVATIONISTS

Last Oasis: Facing Water Scarcity by Sandra Postel, with a new introduction. 1997 (1992). Worldwatch Institute, W.W. Norton & Company, New York & London. 239 pp. \$10.95.

Harvesting Wild Species: Implications for Biodiversity Conservation edited by Curtis H. Freese. 1997. The Johns Hopkins University Press, Baltimore, MD & London. 703 pp.

Lives of North American Birds by Kenn Kaufman, part of the Peterson Natural History Companions. 1996. Houghton Mifflin Company, Boston. 675 pp. \$35.

Principles of Conservation Biology, Second Edition by Gary K. Meffe and C. Ronald Carroll et al. Sinauer Associates, Sunderland, MA. 729 pp. \$54.95.

Kinship To Mastery: Biophilia in Human Evolution and Development by Stephen R. Kellert. 1997. Island Press/Shearwater Books, Washington, DC & Covelo, CA. 272 pp. \$25 hardcover.

Creating A Forestry for the 21st Century: The Science of Ecosystem Management edited by Kathryn A. Kohm and Jerry F. Franklin, foreword by Jack Ward Thomas. 1997. Island Press, Washington, DC & Covelo, CA. 475 pp. \$50 hardcover, \$30 paper.

Primitives in the Wilderness: Deep Ecology and the Missing Human Subject by Peter C. van Wyck. 1997. State University of New York Press, Albany, NY. 186 pp. \$17.95.

Balancing Nature and Commerce in Gateway Communities by Jim Howe, Ed McMahon, and Luther Propst. 1997. Island Press, Washington, DC & Covelo, CA. 165 pp. \$21.95.

The Heat Is On: The High Stakes Battle over Earth's Threatened Climate by Ross Gelbspan. 1997. Addison-Wesley Publishing Co., Inc. 278 pp. \$23 hardcover.

Wilderness and the Changing American West by Gundars Rudzitis. 1996. John Wiley & Sons, Inc., New York, NY. 220 pp.

Let's Eat Stars, poems by Nanao Sakaki. 1997. Blackberry Books, Nobleboro, ME. 142 pp. \$11.95.

Announcements

National Wilderness Conference

The future of Wilderness in America will be the focus of the National Wilderness Conference 1998, May 29-31, in Seattle, Washington. The conference aims to inspire and equip participants to help secure lasting protection for our remaining wilderness. Over 50 organizations including *Wild Earth* and The Wildlands Project are co-sponsoring this event. For more information or to place your name on the conference mailing list, contact NWC 1998, 12730 9th Ave. NW, Seattle, WA 98177-4306; wildcon@twsw.org.

Central Appalachian Ecological Integrity Conference

The 2nd Central Appalachian Ecological Integrity Conference, "Defining Problems and Solutions for Appalachian Restoration," will be held on 26-28 June 1998 at Davis and Elkins College in Elkins, West Virginia. The conference will include keynote presentations by Dr. Orié Loucks of Miami University and Dr. John Cairns of Virginia Polytechnic Institute; field trips; and workshop sessions on topics such as forest mortality, urban sprawl issues, ecoforestry, reserve design, and soil nutrients and forest health. For registration information, contact the Appalachian Restoration Campaign, a project of Heartwood, POB 5541, Athens, OH 45701; 740-592-3968; arc@frognet.net.

Hike for Wolves and Wilderness

The Red Wolf Education and Research Coordinator for the Southern Appalachian Biodiversity Project, Marcas Marx, will trek the Appalachian Trail to raise awareness about wolves and wilderness from Georgia to Maine. The hike will begin at Springer Mountain, Georgia on 31 March 1998 with a three-day trek-a-thon. Wolf and Wilderness Awareness Days are being organized in each state along the trail. SABP is asking for sponsors to pledge 1¢, 2¢, or more per mile (1¢ per mile is \$21). To join a trek-a-thon, help organize an awareness day, or receive more information about sponsorship and events, contact the Southern Appalachian Biodiversity Project, POB 3141, Asheville, NC 28802; 704-258-2667; fax 704-254-2286; sabp@main.nc.us.

World Wilderness Conference Rescheduled

The 6th World Wilderness Congress that was delayed due to changes in the Indian government will now take place in Bangalore, India, October 24-30, 1998. A pre-Congress proceedings will be available prior to the conference. To receive a call for papers, the proceedings, or more information, contact Alan Watson or Janet Sproull, Leopold Institute, POB 8089, Missoula, MT 59807; 406-542-4197; fax 406-542-4196; awatson/rmrs_missoula@fs.fed.us.

Society for Ecological Restoration Conference

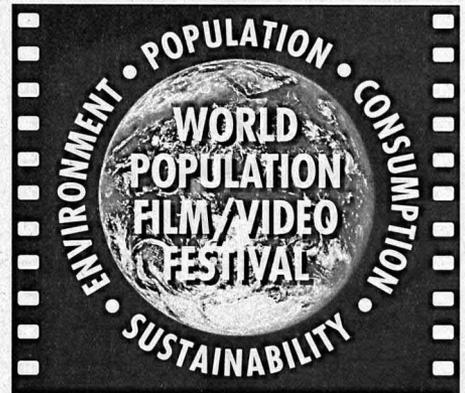
The 1998 International SER Conference will be held from September 28-30 in Austin, Texas. SER recognizes that it is increasingly necessary to form partnerships to achieve ecological goals; thus, the theme of the conference is "making connections." Keynote speakers will address the topics of rangeland restoration, restoration education, and cross-border cooperation. Request a copy of the registration brochure from the Society for Ecological Restoration, 1207 Seminole Hwy., Suite B, Madison, WI 53711; 608-262-9547; fax 608-265-8557; ser@vms2.macc.wisc.edu.

Chicago Wilderness Magazine Debuts

Chicago Wilderness is a new quarterly publication dedicated to providing news and information about the native ecosystems of the Chicago region, which includes 200,000 acres of protected lands in northeastern Illinois, southeast Wisconsin, and northwest Indiana. The magazine is a response to the growing number of people who enjoy and want to know more about the nearly forgotten nature of the tallgrass prairie landscape. Subscriptions are \$12, with subsequent gift subscriptions available for a limited time at \$10 each. Send your check payable to *Chicago Wilderness Magazine*, POB 268, Downers Grove, IL 60515-0268.

Republicans for Environmental Protection

REP AMERICA is a national grassroots organization of Republicans who share a deep concern for the environment. The organization was formed in 1995 to resurrect and restore the GOP's conservation tradition. The non-profit group works to educate the public and elected officials about the need to protect our environment and conserve our wildlands and natural resources, and advocates legislation to accomplish those goals. To join, send \$25 for an individual/family membership, \$10 for full-time student member, or \$50 or more as a contributing member to REP AMERICA, POB 7073, Deerfield, IL 60015; phone/fax 847-940-0320; MarREP@aol.com; www.rep.org.



STUDENTS: CALL FOR ENTRIES

How is **POPULATION GROWTH** affecting **CONSUMPTION • ENVIRONMENT • SUSTAINABILITY**

\$10,000 IN PRIZES

ENTRIES DUE JUNE 15 • NO ENTRY FEE

TV EXPOSURE • NATIONAL TOUR

For more information, a resource guide and a copy of the video *Best of Festival*, contact:

WPFVF • 46 Fox Hill Road, Bernardston, MA 01337 • TL: 800 638-9464 • FX: 413 648-9204
eM: info@wpvf.com • www.wpvf.com

Sponsored by **Sopris Foundation, Searchlight Films & Population Communications International**



Wild Garden is the first national gardening magazine to demystify the process of using native plants to create a beautiful, care-free landscape that enhances urban and rural property, provides bird and wildlife habitat, and supports a more functional ecosystem. *Wild Garden* is about feeding the soul while giving something back to the earth!

Wild GARDEN

YES! Please reserve my subscription to *Wild Garden* magazine. That's 6 quarterly issues for **\$23.95** (a savings of \$3.05 off the newsstand price).

NAME _____ (PLEASE PRINT)

ADDRESS _____

CITY/STATE/ZIP _____

I would like to give a gift subscription to *Wild Garden* to:

NAME _____ (PLEASE PRINT)

ADDRESS _____

CITY/STATE/ZIP _____

NUMBER OF SUBSCRIPTIONS @ \$23.95: _____ TOTAL \$ _____

PAYMENT ENCLOSED.

PLEASE CHARGE MY: VISA MC AMEX DISCOVER

CARD NUMBER _____ EXP. DATE _____

SIGNATURE _____ DATE _____

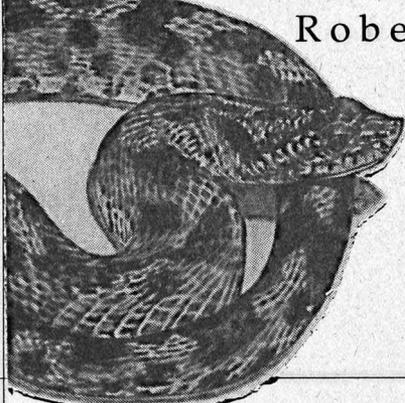
Mail your subscription form to: *Wild Garden*, P.O. Box 70570, Eugene, OR 97401. For faster service, fax it to us at 541/726-8548 or call toll free 1-888-WILD-949.

IN CANADA \$35.95 IN U.S. FUNDS. ALL OTHER FOREIGN ORDERS \$47.95 IN U.S. FUNDS. (WILD EARTH, SPRING 1998)



Lezle Williams
Artist

PO Box 1298
Mission, SD 57555
605-856-4086
lezlewilliams@gwtc.net
Laughing Crow Studio



Robert M. Smith
brushed charcoal
watercolours
acrylics

Box 39, Site 1
Callander, Ont.
Canada POH 1HO
705-752-4432

**The
CARTOON
FACTORY**
CARTOON ILLUSTRATING • CARICATURES
MARK S. HUGHES
P.O. BOX 5327
BURLINGTON, VT 05402
(802) 863-5374




DAVIS TE SELLE
Printmaker, Illustrator
Drawings of the Natural World

Artist in Residence
5835 Dry Creek Road, Napa, CA 94558
(707) 944-0248



TODD TELANDER
Wildlife Artist

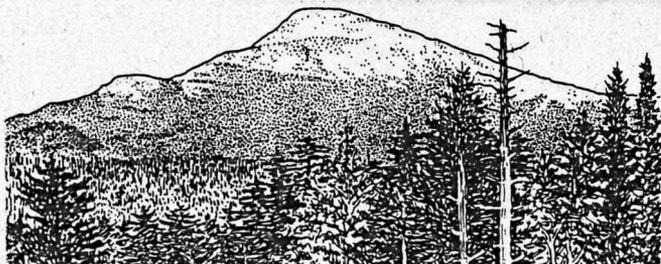
2316 23rd St
Boulder CO 80304
303 545 2699

Kingfisher ©1995 Todd Telander



Evan Cantor
910 Miami Way
Boulder, Colorado 80303
303-499-1829
cantor@spot.colorado.edu

scratchboard, pen & ink
illustration



LIBBY WALKER DAVIDSON
(802) 655-4534
• P.O. Box 1843 • Burlington, Vermont 05402 •

DOUGLAS W. MOORE

science illustration
wildlife art
biology
design



6840 N. Featherstone Tr.
Tucson, AZ 85743 • (602) 682-0459



(206)378-5186

Interspecies Communication Inc.

Jim Nollman
273 Hidden Meadow
Friday Harbor, WA 98250



Natural History
Posters, Prints, Postcards,
Notecards and Bookmarks
by D.D. Tyler

pricelist:
Tyler Publishing
P.O. Box 243
Augusta, ME 04332
phone: 207-622-7379
fax: 207-623-8781

STAND UP
FOR
YOURSELF,
YOUR FAMILY,
YOUR
COMMUNITY
AND
OUR WORLD

*Earn a Master's
of Environmental
Advocacy,
M.E.A. degree.*

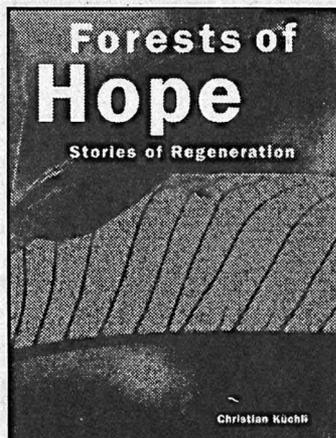
- Learn to defend yourself, your family, your community and our world against environmental degradation
- Advance your cause and your career
- All courses through home study
- Learn to apply the principles and mechanisms of environmental law

For a free catalog
call 1-888-496-0488



Douglas University
SCHOOL OF ENVIRONMENTAL LAW

BOOKS TO BUILD
A NEW SOCIETY



**FORESTS
OF HOPE**
Stories of
Regeneration
Christian Küchli

Filled with quality photos, *Forests of Hope* takes the reader on a captivating journey as author-photographer-forester Christian Küchli seeks out tales of hope for the world's forests in 12 different countries including Tanzania where the Chagga tribespeople build multistorey tree gardens; China, where the residents of Hu Zhai wage a battle against wind erosion with their contribution to the Great Green Wall; the US where the LA TreePeople have planted 1.5 million saplings to overcome pollution, and many more. This unique approach to the value of forests will appeal equally to planners, forest managers and general readers.

8.5" x 11" 256 pages
175 colour photos
Pb \$29.95 0-86571-378-2

Available at all good bookstores.
Credit card orders: 800-567-6772



**NEW SOCIETY
PUBLISHERS**
www.newsociety.com



**WILD DUCK
REVIEW**

GARY SNYDER • PHILIP LEVINE • JANE HIRSHFIELD • ANNE & PAUL EHRLICH • DAVID BROWER • JERRY MANDER • WENDELL BERRY • JOANNA MACY • GEORGE KEITHLEY • TOM HAYDEN • JACK TURNER • DAVID ABRAM • ANNICK SMITH • JIM HARRISON • BARBARA RAS • ED McCLANAHAN • MARC REISNER • DAVE FOREMAN • PATTIANN ROGERS • C.L. RAWLINS • GALWAY KINNELL • DOUG PEACOCK • MICHAEL SOULE • C.A. BOWERS • TERRY TEMPEST WILLIAMS •

"In *Wild Duck Review* the literary arts, ecological consciousness and activism are communicating, informing each other. If *Wild Duck Review* isn't cultural politics, I don't know what is. Subscribe. Read it."

—GARY SNYDER

CASEY WALKER, EDITOR & PUBLISHER
419 SPRING ST., D • NEVADA CITY, CA 95959
530.478.0134 • QUARTERLY • SAMPLE \$4.



how do you keep
old growth
from being cut?

"the single greatest way
(and easiest) to do this is to
increase wastepaper utilization"

Tim Keating, Rainforest Relief

Support the Northern Rockies
Ecosystem Protection Act
see our website for info!

We Don't Send Junk Mail!

If you would like to know about our
environmentally benign products
write, call, or visit our website.

TREECYCLE

RECYCLED PAPER *the other half of recycling*

P.O. Box 5086 Bozeman, MT 59717
(406) 586-5287 info@treecycle.com

Now on the web: www.treecycle.com

WITHOUT MOVING FROM YOUR HOME COMMUNITY ...

EARN YOUR MASTER'S DEGREE THROUGH OUR PROGRAM ON

Environment & Community.



fostering environmental stewardship and accountability in government, industry, our economy, and our communities

Antioch University has long been a pioneer in offering degree programs for people interested in careers dedicated to progressive social and environmental change. This **limited-residency** program is designed to help professionals, educators, and advocates play leadership roles in responding to the environmental problems and challenges confronting our communities, organizations, and businesses.

- Attend three 2-week academic sessions during the 2-year program.
- Study social and environmental change theory; social problem solving; applied philosophy; and economic, policy and regulatory analysis.
- Develop your own area of specialization through individualized case study analyses, research and field projects, and independent studies.

Individualized M.A. Program



ANTIOCH SEATTLE

2326 Sixth Ave., Seattle WA 98121

The next class enrolls **January 1999**. Please contact us for more information and an application.

(206) 441-5352 ext. 5702

Antioch University is accredited by the Commission on Institutions of Higher Education of the North Central Association of Colleges and Schools.



Poems For The Wild Earth

A new collection, edited by Gary Lawless \$8.95

Slow Rising Smoke by Art Goodtimes \$3
First Sight of Land by Gary Lawless \$7.50
Sitka Spring by Gary Lawless \$5

Available from:
Blackberry Books

RR1, Box 228

Nobleboro, ME 04555

***** Save the Date for Wilderness

Are you passionate about wild areas and ready to join others in campaigns to protect the last American Wilderness?

Join us for the National Wilderness Conference
May 29-31, 1998
in Seattle, Washington

For more information and to place your name on the conference mailing list, send your name, mailing address, phone number, and e-mail address to:

National Wilderness Conference 1998
12730 9th Avenue NW
Seattle, Washington 98177 - 4306

wildcon@twsnw.org

SAV*TH* *NVIRONM*NT



* It's just not the same without **E**, the independent, award-winning environmental magazine, written for people just like YOU who have concerns about

the planet and want to know **what you can do** to help bring about improvements.

Every issue of **E** is jam-packed with solid, up-to-date news and feature stories on key environmental issues and trends—PLUS loads of resources and lifestyle tips to help you on your way to being part of the solution.

Whether you want to simply learn to live more lightly on the Earth—or join in the battles to protect rainforests, fight dangerous pesticides or save wildlife—**E** will inform and inspire you six times per year with information not found anywhere else.

"Where have I been to miss such an outstanding publication, one that so inspires and enables personal action and involvement?"

— Dean Whitehead
West Hollywood, CA

SEND FOR A FREE ISSUE TODAY! ↴

YES! Send me my FREE issue of **E**/The Environmental Magazine and enter my trial subscription. If I like it, I'll pay your bill for just \$20 for a one-year subscription (6 issues total). If **E** fails to meet my expectations, I'll write "cancel" on the bill and return it with no further obligation.

BONUS! (I want to make an impact now. By subscribing and including my \$20 check today, **E** will give me an EXTRA ISSUE FREE (7 in all). It's **E**'s way of saying "Thank you" for saving the paper used for billing.)

Name _____

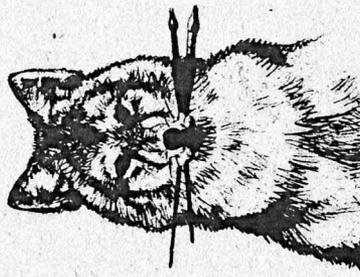
Address _____

City _____ State _____ Zip _____

AS97WE

I'm already a subscriber.
Extend my current subscription.

Mail to: **E** Magazine,
P.O. Box 2047, Marion, OH 43305



BRUSH WOLF
Natural History Illustration

Martin J. Ring
P.O. Box 216
El Dorado Springs
Colorado 80025

CALL OF THE WILD, Inc.
Nature Store & Natural History Tours

- Featuring:
- field guides
 - environmental books
 - loupes/hand lenses
 - binoculars
 - USGS quads
 - waterproof notebooks
 - compasses
 - nature gifts
 - natural history tours



For further information call 508-548-0521
141 Main Street, Falmouth, MA 02540

Back Issues

We list here only the major articles of each issue, by partial title or subject. For a more complete listing, request a comprehensive Back Issues List (see form on reverse).

1 Spring 1991 Ecological Foundations for Big Wilderness, Howie Wolke on The Impoverished Landscape, Reed Noss on Florida Ecosystem Restoration, Biodiversity & Corridors in Klamath Mtns., Earth First! Wilderness Preserve System, GYE Marshall Plan, Dolores LaChapelle on Wild Humans, and Bill McCormick's Is Population Control Genocide?

2 Summer 1991 Dave Foreman on the New Conservation Movement, Ancient Forests: The Perpetual Crisis, Wolke on The Wild Rockies, Grizzly Hunting in Montana, Noss on What Wilderness Can Do for Biodiversity, Mendocino NF Reserve Proposal, Christopher Manes on the Cenozoic Era, and Part 2 of McCormick's Is Population Control Genocide?

3 Fall 1991 SOLD OUT (but photocopies of articles are available). The New Conservation Movement continued. Farley Mowat on James Bay, George Washington National Forest, the Red Wolf, George Wuerthner on the Yellowstone Elk Controversy, The Problems of Of Post Modern Wilderness by Michael P. Cohen and Part 3 of McCormick's Is Population Control Genocide?

4 Winter 1991/92 Devastation in the North, Rod Nash on Island Civilization, North American Wilderness Recovery Strategy, Wilderness in Canada, Canadian National Parks, Hidden Costs of Natural Gas Development, A View of James Bay from Quebec, Noss on Biologists and Biophiles, BLM Wilderness in AZ, Wilderness Around the Finger Lakes: A Vision, National ORV Task Force

5 Spring 1992 Foreman on ranching, Ecological Costs of Livestock, Wuerthner on Gunning Down Bison, Mollie Matteson on Devotion to Trout and Habitat, Walden, The Northeast Kingdom, Southern Rockies Ecosystem Protection, Conservation is Good Work by Wendell Berry, Representing the Lives of Plants and Animals by Gary Paul Nabhan, and The Reinvention of the American Frontier by Frank and Deborah Popper

6 Summer 1992 The Need for Politically Active Biologists, U.S. Endangered Species Crisis Primer, Wuerthner on Forest Health, Ancient Forest Legislation Dialogue, Toward Realistic Appeals and Lawsuits, Naomi Rachel on Civil Disobedience, Victor Rozek on The Cost of Compromise, The Practical Relevance of Deep Ecology, and An Ecofeminist's Quandary

7 Fall 1992 How to Save the Nationals, The Backlash Against the ESA, Saving Grandfather Mountain, Conserving Diversity in the 20th Century, Southern California Biodiversity, Old Growth in the Adirondacks, Practicing Bioregionalism, Biodiversity Conservation Areas in AZ and NM, Big Bend Ecosystem Proposal, George Sessions on Radical Environmentalism in the 90s, Max Oelschlaeger on Mountains that Walk, and Mollie Matteson on The Dignity of Wild Things

8 Winter 1992/93 Critique of Patriarchal Management, Mary O'Brien's Risk Assessment in the Northern Rockies, Is it Un-Biocentric to Manage?, Reef Ecosystems and Resources, Grassroots Resistance in

Developing Nations, Wuerthner's Greater Desert Wildlands Proposal, Wolke on Bad Science, Homo Carcinomicus, Natural Law and Human Population Growth, Excerpts from *Tracking & the Art of Seeing* and *Ghost Bears*

Wildlands Project Special Issue #1 TWP (North American Wilderness Recovery Strategy) Mission Statement, Noss's Wildlands Conservation Strategy, Foreman on Developing A Regional Wilderness Recovery Plan, Primeval Adirondack Proposal, National Roadless Area Map, Preliminary Wildlands Proposals for Southern Appalachians & Northern Rockies, Gary Snyder's Coming into the Watershed, Regenerating Scotland's Caledonian Forest, Geographic Information Systems

9 Spring 1993 The Unpredictable As A Source of Hope, Why Glenn Parton is a Primitivist, Hydro-Quebec Construction Continues, RESTORE: The North Woods, Temperate Forest Networks, The Mitigation Scam, Bill McKibben's Proposal for a Park Without Fences, Arne Naess on the Breadth and Limits of the Deep Ecology Movement, Mary de La Valette says Malthus Was Right, Noss's Preliminary Biodiversity Plan for the Oregon Coast, Eco-Porn and the Manipulation of Desire

10 Summer 1993 Greg McNamee questions Arizona's Floating Desert, Foreman on Eastern Forest Recovery, Is Ozone Affecting our Forests?, Wolke on the Greater Salmon/Selway Project, Deep Ecology in the Former Soviet Union, Topophilia, Ray

Vaughan and Nedd Mudd advocate Alabama Wildlands, Incorporating Bear, The Presence of the Absence of Nature, Facing the Immigration Issue

11 Fall 1993 Crawling by Gary Snyder, Dave Willis challenges handicapped access developments, Biodiversity in the Selkirk Mtns., Monocultures Worth Preserving, Partial Solutions to Road Impacts, Kittatinny Raptor Corridor, Changing State Forestry Laws, Wild & Scenic Rivers Act, Wuerthner Envisions Wildland Restoration, Toward [Population] Policy That Does Least Harm, Dolores LaChappelle's Rhizome Connection

12 Winter 1993/94 A Plea for Biological Honesty, A Plea for Political Honesty, Endangered Invertebrates and How to Worry About Them, Faith Thompson Campbell on Exotic Pests of American Forests, Mitch Lansky on The Northern Forest, Human Fear Diminishes Diversity in Rocky Mtn. Forests, Gonzo Law #2: The Freedom of Information Act, Foreman on NREPA and the Evolving Wilderness Area Model, Rocky Mtn. Nat. Park Reserve Proposal, Harvey Locke on Yellowstone to Yukon campaign

13 Spring 1994 Ed Abbey posthumously decries The Enemy, David Clarke Burks's Place of the Wild, Ecosystem Mismanagement in Southern Appalachia, Mohawk Park Proposal, RESTORE vs. Whole-Tree Logging, Noss & Cooperrider on Saving Aquatic Biodiversity, Atlantic Canada Regional Report, Paul Watson on Neptune's Navy, The Restoration Alternative, Intercontinental Forest Defense, Chris McGrory-Klyza outlines Lessons from Vermont Wilderness

14 Summer 1994 Bil Alverson's Habitat Island of Dr. Moreau, Bob Leverett's Eastern Old Growth Definitional Dilemma, Wolke against Butchering the Big Wild, FWS Experiments on Endangered Species, Serpentine Biodiversity, Andy Kerr promotes Hemp to Save the Forests, Mapping the Terrain of Hope, A Walk Down Camp Branch by Wendell Berry, Carrying Capacity and the Death of a Culture by William Catton Jr., Industrial Culture vs. Trout

15 Fall 1994 BC Raincoast Wilderness, Algoma Highlands, Helping Protect Cana-

da's Forests, Central Appalachian Forests Activist Guide, Reconsidering Fish Stocking of High Wilderness Lakes, Using General Land Office Survey Notes in Ecosystem Mapping, Gonzo Law #4: Finding Your Own Lawyer, The Role of Radio in Spreading the Biodiversity Message, Jamie Sayen and Rudy Engholm's Thoreau Wilderness Proposal

16 Winter 1994/95 Ecosystem Management Cannot Work, Great Lakes Biodiversity, Peregrine Falcons in Urban Environments, State Complicity in Wildlife Losses, How to Burn Your Favorite Forest, ROAD-RIPort #2, Recovery of the Common Lands, A Critique and Defenses of the Wilderness Idea by J. Baird Callicott, Dave Foreman, and Reed Noss

17 Spring 1995 Christopher Manes pits Free Marketeers vs. Traditional Environmentalists, Last Chance for the Prairie Dog, interview with tracker Susan Morse, Befriending a Central Hardwood Forest part 1, Economics for the Community of Life: Part 1, Minnesota Biosphere Recovery, Michael Frome insists Wilderness Does Work, Wilderness or Biosphere Reserve: Is That a Question?, Deep Grammar by J. Baird Callicott

18 Summer 1995 Wolke on Loss of Place, Dick Carter on Utah Wilderness: The First Decade, WE Reader Survey Results, Ecological Differences Between Logging and Wildfire, Bernd Heinrich on Bumblebee Ecology, Michael Soulé on the Health Implications of Global Warming, Peter Brussard on Nevada Biodiversity Initiative, Preliminary Columbia Mtns. Conservation Plan, Environmental Consequences of Having a Baby in the US

19 Fall 1995 SOLD OUT (but photocopies of articles are available). Wendell Berry on Private Property and the Common Wealth, Eastside Forest Restoration, Global Warming and The Wildlands Project, Paul J. Kalisz on Sustainable Silviculture in Eastern Hardwood Forests, Old Growth in the Catskills and Adirondacks, Threatened Eastern Old Growth, Andy Kerr on Cow Cops, Fending of SLAPPS, Using Conservation Easements to save wildlands, David Orton on Wilderness and First Nations

20 Winter 1995/96: TWP Special Issue #2 Testimony from Terry Tempest Williams,

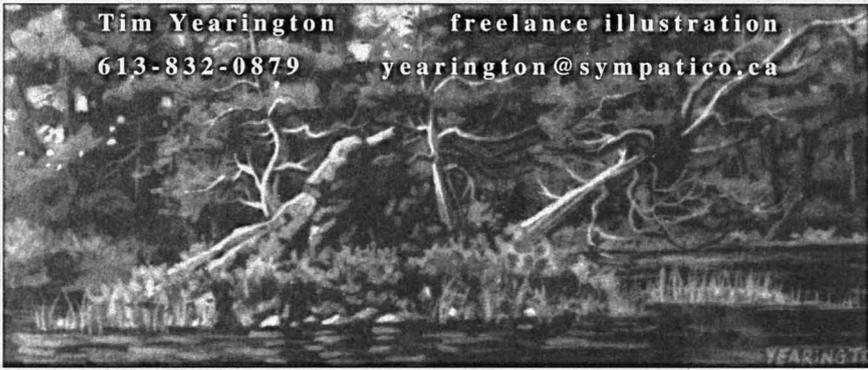
Foreman's Wilderness: From Scenery to Strategy, Noss on Science Grounding Strategy and The Role of Endangered Ecosystems in TWP, Roz McClellan explains how Mapping Reserves Wins Commitments, Second Chance for the Northern Forest: Headwaters Proposal, Klamath/Siskiyou Biodiversity Conservation Plan, Wilderness Areas and National Parks in Wildland Proposal, ROAD-RIP and TWP, Steve Trombulak, Jim Strittholt, and Reed Noss confront Obstacles to Implementing TWP Vision

21 Spring 1996 Bill McKibben on Finding Common Ground with Conservatives, Public Naturalization Projects, Curt Steger on Ecological Condition of Adirondack Lakes, Acid Rain in the Adirondacks, Bob Mueller on Central Appalachian Plant Distribution, Brian Tokar on Biotechnology vs. Biodiversity, Stephanie Mills on Leopold's Shack, Soulé asks Are Ecosystem Processes Enough?, Poems for the Wild Earth, Limitations of Conservation Easements, Kerr on Environmental Groups and Political Organization

22 Summer 1996 McKibben on Text, Civility, Conservation and Community, Eastside Forest Restoration Forum, Grazing and Forest Health, debut of Landscape Stories department, Friends of the Boundary Waters Wilderness, Private Lands in Ecological Reserves, Public Institutions Twisting the Ear of Congress, Laura Westra's Ecosystem Integrity and the Fish Wars, Caribou Commons Wilderness Proposal for Manitoba

24 Winter 1996/97 SOLD OUT (but photocopies of articles are available.) Opposing Wilderness Deconstruction: Gary Snyder, Dave Foreman, George Sessions, Don Waller, Michael McCloskey respond to attacks on wilderness. The Aldo Leopold Foundation, Grand Fir Mosaic, eastern old-growth report, environmental leadership. Andy Robinson on grassroots fundraising, Edward Grumbine on Using Biodiversity as a Justification for Nature Protection, Rick Bass on the Yaak Valley, Bill McCormick on Reproductive Sanity, and portrait of a Blunt-nosed Leopard Lizard

25 Spring 1997 Perceiving the Diversity of Life: David Abram's Returning to Our Ani-



Tim Yearington
613-832-0879

freelance illustration
yearington@sympatico.ca

mal Senses, Stephanie Kaza on Shedding Stereotypes, Jerry Mander on Technologies of Globalization, Christopher Manes's Contact and the Solid Earth, Connie Barlow Re-Stories Biodiversity by Way of Science. Imperiled Freshwater Clams, WildWaters Project, eastern old-growth report, American Sycamore, Kathleen Dean Moore's Traveling the Logging Road, Mollie Matteson's Wolf Re-story-ation, Maxine McCloskey on Protected Areas on the High Seas

26 Summer 1997 Doug Peacock on the Yellowstone Bison Slaughter, Reed Noss on Endangered Major Ecosystems of the United States, Dave Foreman challenges biologists, Hugh Iltis challenges abiologists, Virginia Abernethy explains How Population Growth Discourages Environmentally Sound Behavior. Gaian Ecology and Environmentalism, The Bottom Line on Option Nine, Eastern Old Growth Report, How Government Tax Subsidies Destroy

Habitat, Geology in Reserve Design, part two of NPS Prescribed Fires in the Post-Yellowstone Era

27 Fall 1997 SOLD OUT (but photocopies of articles are available). Bill McKibben discusses Job and Wilderness, Anne LaBastille values Silence, Allen Cooperrider and David Johnston discuss Changes in the Desert, Donald Worster on The Wilderness of History, Nancy Smith on Forever Wild Easements in New England, George Wuerthner on Subdivisions and Extractive Industries, More Threatened Eastern Old Growth, part 2, the Precautionary Principle, North and South Carolina's Jocassee Gorges, Effects of Climate Change on Butterflies, the Northern Right Whale, Integrating Conservation and Community in the San Juan Mtns., Las Vegas Leopard Frog

28 Winter 1997/98 Overpopulation Issue explores the factors of the I=PAT model: Gretchen Daily & Paul Ehrlich on Population Extinction and the Biodiversity Crisis, Stephanie Mills revisits nulliparity, Alexandra Morton on the impacts of salmon farming, Sandy Irvine punctures pro-natalist myths, William Catton Jr. on carrying capacity, Virginia Abernethy considers premodern population planning, Stephanie Kaza on affluence and the costs of consumption, Kirkpatrick Sale criticizes the Technological Imperative, McKibben addresses overpopulation One (Child) Family at a Time, Interview with Stuart Pimm, Resources for Population Publications & Overpopulation Action, Spotlight on Ebola Virus

Additional Wild Earth Publications

Old Growth in the East: A Survey by Mary Byrd Davis

Special Paper #1: *How to Design an Ecological Reserve System* by Stephen C. Trombulak

Special Paper #2: *While Mapping Wildlands, Don't Forget the Aliens* by Faith T. Campbell

Back Issues Order Form

- complete form and return with payment in enclosed envelope
- denotes issue is sold out

	1991	1992	1993	1994	1995	1996	1997
Spring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Summer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fall	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Winter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- Wild Earth's first special issue on The Wildlands Project (1992)
- comprehensive Back Issues List (free)

Back issues are \$8/each for WE subscribers, \$10/each for non-members, postpaid in US.

_____ back issues (@ \$8 or \$10) \$ _____

_____ photocopied articles (\$5/each) \$ _____

photocopied articles: TOTAL \$ _____

issue #	title

Species Spotlight

Pacific Water Shrew

illustration by Robert M. Smith

Incredible Insectivore that Walks on

WATER

Shrews are a dandy and diverse lot, with over 260 known species in 20 genera. Thought to have emerged roughly 30-40 million years ago, shrews now enjoy a near worldwide distribution. Small, mouse-like creatures with impressively protruding proboscises—long pointy snouts—they are frenetic foragers; a shrew's voracious appetite must be satiated every few hours to fuel its hyperactive metabolism.

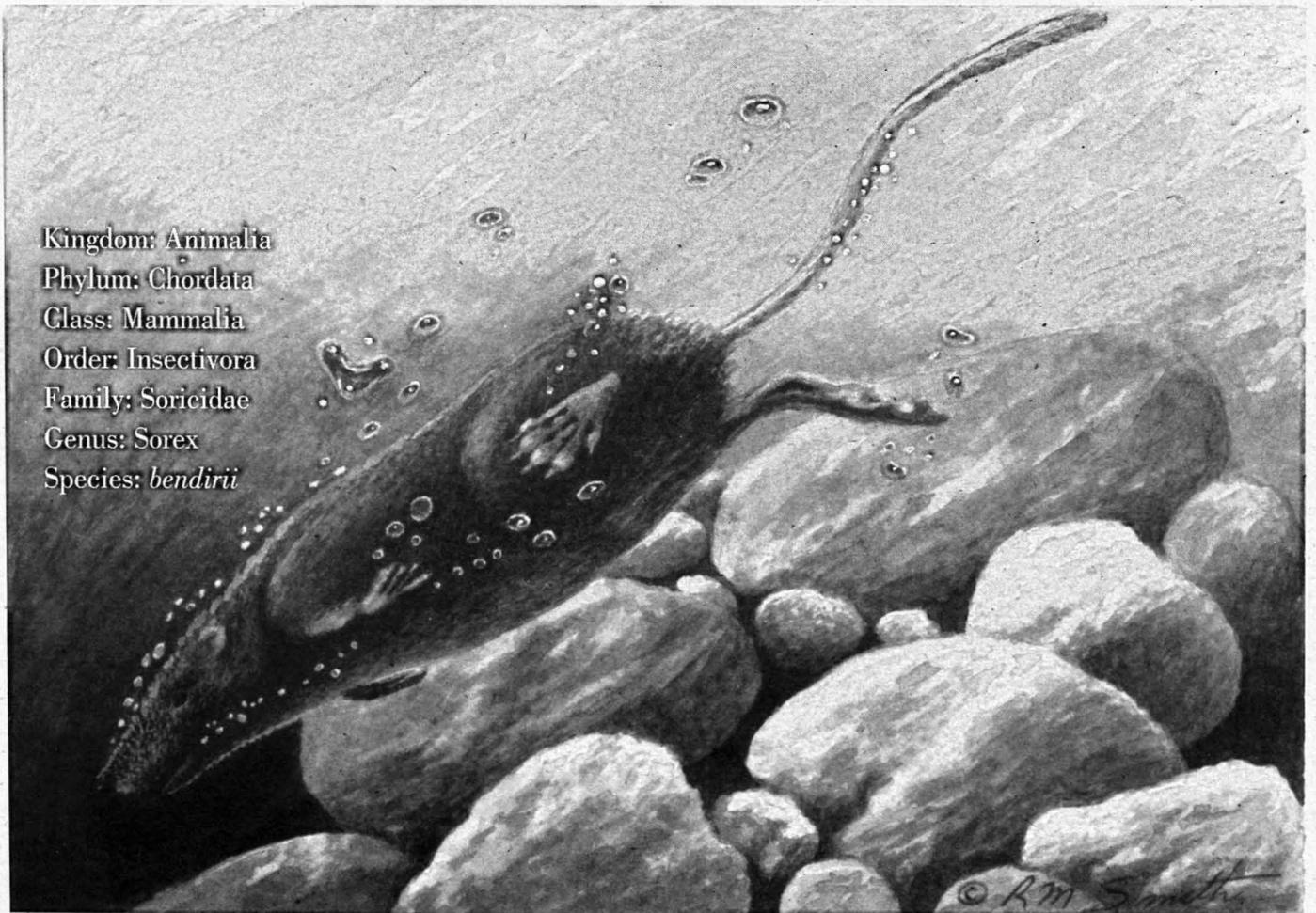
Oft described as fierce or ferocious, these petite predators well deserve their pugnacious reputation: They have been known to attack and kill animals several times their size, though as omnivores, shrews will also happily feast on assorted invertebrates, plant material, and even carrion.

Ranging from coastal northern California to extreme southwest British Columbia, the Pacific water shrew is well

suited for life in its favored habitat of marshes, streams, and moist forests. A capable swimmer, and with useful adaptations that allow it to run across the water's surface for several seconds, the Pacific water shrew is as comfortable stalking aquatic arthropods (which comprise a significant portion of its diet) as earthworms.

Population densities of the Pacific water shrew are now quite low, and it has been designated a Threatened species in Canada. Actions that diminish habitat quality—forest fragmentation, clearcutting, development that introduces domestic cats, water pollution—will further imperil the species. Conservationists can help assure that this splendid shrew continues to survive and thrive by working to protect wild habitat, especially riparian corridors, in its native range. —Tom Butler

Kingdom: Animalia
Phylum: Chordata
Class: Mammalia
Order: Insectivora
Family: Soricidae
Genus: *Sorex*
Species: *bendirii*



Canadian artist Robert M. Smith (Box 39, Site 1, Callander, Ont. POH 1H0, Canada) is a painter who works in watercolor, acrylic, and a technique he calls "brushed charcoal." His extraordinary wildlife artwork appears often in various periodicals including Wild Earth, Wildflower, Nature Canada, and others.

