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# WILDEARTH

Winter 1994/95

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## A CRITIQUE AND DEFENSE OF THE WILDERNESS IDEA

*J. Baird Callicott • Dave Foreman • Reed Noss*





# Around the Campfire



## Back to the Basics

This September, Patagonia hosted a remarkable and long-overdue working conference at Chico Hot Springs in Montana. Some 80 representatives of small grassroots groups were invited. Experts on grant writing, fundraising, strategy, advertising, public relations, investigative reporting, marketing, and other nuts-and-bolts skills gave workshops. It was the most productive (and harmonious!) conservation conference I've attended in many a year. Participants were so enthusiastic that Patagonia is talking about hosting another next year. (The conservation movement owes much thanks to Yvon Chouinard and Libby Ellis and their cohorts at Patagonia for envisioning and putting together the conference!)

While riding from the Bozeman airport to Chico Hot Springs, Susan Alexander of Public Media Center (formerly with The Wilderness Society) and I talked about the problems in the movement and particularly why we're getting our butt kicked by the enemies of conservation (the falsely-named "wise use" movement). Sure, they're well-funded by the mining and timber industries and by Japanese dirt bike manufacturers. Yes, they have clever strategists and spokespersons, and they're using public relations whizzes to figure out how to package their message and control the debate.

But Susan and I decided that the major reason for our drubbing is that they are out-organizing us. Once the conservation movement could mobilize supporters like nobody's business. That's why, back in the 1970s, Western Republicans like Pete Domenici, Bob Packwood, and Manuel Lujan introduced Wilderness bills for us, supported some of our amendments to the Alaska Lands Act, and were generally friendly to conservationists.

This ability to turn out our troops dated back to the fight against Echo Park Dam in the 1950s and to the long campaign for the Wilderness Act from 1956 to 1964. It was honed by The Wilderness Society during the study and designation process of the Wilderness Act after 1964 and by the Sierra Club in its battle against dams in the Grand Canyon. It culminated in the late 1970s with RARE II\* and the Alaska Lands Act.\*\*

But around 1980, the conservation movement abandoned its traditional reliance on organizing, and our enemies picked it up. They adopted and refined our techniques (and used them to play to the paranoia and gullibility of those on the dark side of populism). This is why today Domenici and Packwood ignore us, and why Western Democrats elected with conservationist support like Jeff Bingaman and Pat Williams carry water for the grazing and timber industries. This is why weakening amendments were forced down our throat on the California desert bill.

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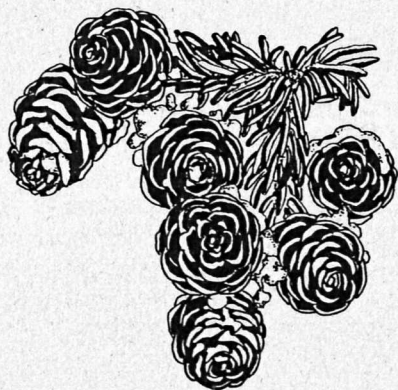
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Cover art: Lake Helene in Rocky Mountain National Park *by Evan Cantor*



continued from inside front cover

*I don't dispute the value of litigation or of experts. But when Mollie Beattie, Director of the U.S. Fish & Wildlife Service, tells me that the only time she hears from conservationists is when she gets a 60 day notice of intent to sue to list an endangered species, I know we are not doing our job.*



Conservation groups moved away from organizing for a host of reasons. By the late 1970s litigation was becoming an important tool, and lawyers came to predominate in the movement. After RARE II, Wilderness designation issues became more technical (release language and sufficiency), and the conservation movement, following the lead of the environmental movement (which had been fixated on technical questions like parts per million for years), felt that policy wonks in DC needed to deal with these questions instead of involving volunteer activists in the field. Also, as conservation groups came to rely more on foundation grants, they found it easier to get money for high-profile professional staff like lawyers and economists than for dirtball organizers. And, let's face it, after 1980, conservation groups became more competitive for money and members, and thus for credit for accomplishments. Organizing is basically a cooperative effort. (Clif Merritt used to tell us Wilderness Society reps to never take public credit—give it to the citizen activists.)

Now, there are several kinds of organizing. There is community organizing where you try to build support for conservation in other movements and among the general public. There is also organizing hikers and conservationists into Sierra Club groups or independent grassroots groups (Save the Diablo Wilderness! Friends of the Alabama Sturgeon!). These are important. But there is an even more fundamental kind of organizing: *mobilizing people who are already members of conservation groups* to express their support in public or to politicians. It is this last type of organizing—mobilizing—where the conservation movement has recently fallen flat on its face.

I talked about this problem to the Environmental Grantmakers' Association this October and found a receptive audience. Sally Ranney, another Wilderness Society veteran, was there, and we talked about the problem late one night in the bar. We agreed that the conserva-

tion movement today could not begin to pull off the kind of public campaigns we once organized for the Alaska Lands Act or for RARE II. Today's movement does not emphasize organizing, and very few organizers work for us now (Roger Featherstone of the Endangered Species Coalition is a rare exception). Even old organizers like Sally and me have to think hard to remember all the neat little tricks we used after learning them from Clif Merritt and other old-time conservationists.

The Alaska and RARE II campaigns were built on a base of experienced activists who knew how to mobilize support and who were linked in a supportive and cooperative network. We do not have that network of experienced people today. That network of the late 1970s took a decade or more to build. How do we even begin to mobilize our people for, say, reauthorization of the Endangered Species Act?

I don't dispute the value of litigation or of experts. But when Mollie Beattie, Director of the U.S. Fish & Wildlife Service, tells me that the only time she hears from conservationists is when she gets a 60 day notice of intent to sue to list an endangered species, I know we are not doing our job. When I talk to grassroots leaders who think that the way to get people to write a letter is to send out an alert, I fear that the oral tradition of how to mobilize support has disappeared. When I hear that only 200 people showed up this May in Phoenix for a major public lands rally featuring David Brower, I worry that we've forgotten how to turn out the troops.

It's time to get back to the basics:

**Letter-writing.** Hand-written, personal letters are far more effective than printed postcards or petition signatures. You don't generate these effective letters merely by cranking out mass alerts. Yeah, you do a good alert (we also need to relearn how to write good alerts!), but you also run letter-writing tables on college campuses. (In spring of 1972, we turned out hundreds of letters supporting RARE I Wilderness at the University of New Mexico.) You find people

\*second roadless area review and evaluation

\*\*Alaska National Interest Lands Conservation Act



## Around the Campfire

who will host letter-writing parties in their homes. Every Sierra Club, Audubon, and other conservation group meeting should devote fifteen minutes to letter writing on current hot issues. (I have other swell techniques but they'll come at the next Patagonia workshop.)

**Hearings.** Back in the 1970s conservationists always outnumbered opponents. Again, you don't turn out folks by simply sending an alert or by publishing a notice in your group newsletter, though alerts are necessary. Between eight and four weeks before the hearing, you do a road show to every conservation group and college in the region. You round up someone in each group, community, and college who will coordinate a carpool to the hearing. You follow-up with phone calls. You cajole the experts into showing up. You bring in eco-troubadours like Bill Oliver, Glen Waldeck, or Dana Lyons to warm up the polite but energetic demonstration outside before the hearing and to entertain at the party afterwards. *ALWAYS, ALWAYS DOMINATE HEARINGS.*

**Rallies.** Use the same kind of techniques as for hearings. It should be even easier to get people to attend rallies.

**Face-to-face With Politicians.** It's not enough for LCV or SCOPE to endorse a candidate; and you should not leave all of the lobbying to paid staff or to a couple of volunteer leaders. Every time a member of Congress shows up back home, and at every possible venue (town meeting, Rotary, touring a school or hospital), someone should buttonhole him or her urging support for a conservation issue. (I'm sure that Senator Bingaman helped lynch Babbitt on grazing reform because everywhere he showed his face in New Mexico some cowboy came up and started whining.) Try to find personal friends of the politician to help. Seek people who don't fit the standard mold of an "environmentalist" or backpacker. Ask your representatives in Congress to meet with your group. Don't bore them, but show them a concise slide show. Bring in some experts. Regularly send people back to Washington (not the same people every

time!). Do something really clever and visual at big events the politicians attend. (While Pete Domenici was judging a hugely-attended outdoor chile cook-off, a Grizzly Bear parachuted down beside him and presented a petition signed by thousands of New Mexicans supporting the Alaska Lands Act.)

**Letters to the Editor.** Politicians, bureaucrats, the media, and the public gauge public opinion by letters to the editor. Organize a corps of letter writers for each community. Respond to every bit of hogwash from the other side. More important, seize the initiative and write proactively to support our issues and educate the public.

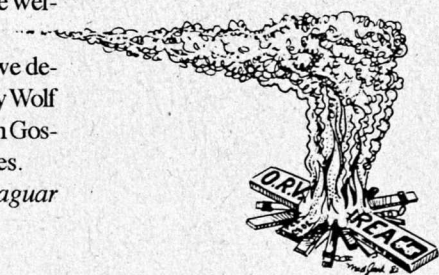
These are just a few tried-and-true techniques from a couple of lifetimes ago. There are more, and we can certainly develop new ones.

The loggers, the miners, the ranchers, the dirt bikers, the fast-buck land developers, the Christian Identity gun-nuts, and the rest of that dangerous, greedy crowd do not have public opinion on their side, even in the West and in rural America. It only seems that way because they are so effective at grassroots mobilizing, and because we have abandoned grassroots mobilizing.

If we are to have any hope of winning, the entire conservation movement must emphasize mobilizing our supporters. Conservation groups like The Wilderness Society and Sierra Club need to hire organizers. Volunteers must be trained in the techniques discussed above. Local groups need to focus on mobilizing support. (As Mat Jacobsen said after the Patagonia Conference, "I used to think 'grassroots' just meant 'poor,' but now I know it means a lot more.") And finally, foundations need to put their money into organizers, into training activists in mobilization techniques, and into building a cooperative network of real grassroots activists who can go toe to toe with the welfare abuse movement.

If we don't do all that and more, we deserve to get our butt kicked. But the Gray Wolf and the Loachminnow and the Northern Goshawk don't deserve the consequences.

—Dave Foreman, Cuixmala Jaguar Reserve, Mexico





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# The Wildlands Project

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## Update

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*October 15, 1994*

By the time you read this The Wildlands Project will have had its third birthday. Birthdays prod us to think about where we've been and where we are going.

The birth of The Wildlands Project was the result of numerous intersecting threads: ecocentric activism, island biogeography, conservation biology, regional wilderness advocacy, and their recognition of the human-caused extinction crisis. The strength and dynamic of the project lies in this symbiosis. But it is important to keep in focus what moves us: a fierce love for the wild, our co-voyagers, planet Earth, the pulsing flow of evolution itself. Science can help us turn around the slide into ecological degradation, but it cannot give us the values or motivation. We need to remember that science wedded to alienated psyches, along with cultures "rooted" in the ether of distant heavens or fleshless and bloodless ideas, has brought much catastrophe to our planet. Science is a powerful tool, but it is only ultimately as good as what it serves. We must see that it serves the life we love.

As we reach out to the people of North America with our message about what it will take to protect wild lands and waters, we need to remember the why of protecting these lands and waters. We must touch the soul of North America and reawaken the attenuated but intrinsically powerful bonds to the earth. We must organize that energy in defense of the wild, of place, of the web that nurtures us and millions of other species. We must transcend the narrow meanness that grows like a dreary monoculture where alienation—loss of place, disconnectedness from the wild—temporarily rules.

At the risk of sounding simplistic, we must wed the science of life with the love of life in all its spontaneity and unpredictability: In such a wedding is a power than can reverse the terrible damage wrought by the wedding of science with the drive to conquer, control, and dominate.

As cultural animals we recreate the world in our minds and emotions, and our behavior is mediated through these patterns. In creating a different vision of North America, one that embraces the centrality of the wild, we begin to reshape the way people think and feel. We begin to change behavior, individual and social.

The Wildlands Project in helping to shape a new vision of North America will not by itself create a new reality. But without such a vision, without a new framework for thinking and decision-making, we will continue to lose our heritage.

A few weeks ago I was in northern British Columbia. For two hours one night I listened to three wolves howl from across the lake as they moved through the night. They live in one of the largest unspoiled watersheds remaining in North America. Only a few drainages away the boreal forest is being logged for chopsticks. Blanks are punched out, enormous waste is created, the chopsticks are sent to Taiwan for finishing, then shipped back to North American restaurants to be used once and sent to a landfill. Oil and gas exploration roads also threaten the region. We must have a framework for thinking and judging that prevents us from either deliberately or in ignorance destroying these remaining living systems.





## The Wildlands Project

We now have available a short brochure introducing people to the project. The first special issue of *Wild Earth* devoted to the project remains available, but it can be intimidating to people not yet familiar with wildland reserve design. The new brochure should fill the gap. Other materials will soon be available, including a narrated slide show and videotape on the project and a talk by Dave Foreman on the history of conservation. Contact the McMinnville office for all materials except the special issue, which is available through the Tucson office.

It is a great honor to welcome two new board members to The Wildlands Project. Dr. Mario Boza of Costa Rica is a central figure in biodiversity protection in Costa Rica and throughout Central America. Paseo Pantera was one of the earliest region-wide applications of the core, corridor and buffer strategy. Mario Boza recently left his position as a Vice-Minister with the Costa Rican government to devote himself more fully to conservation advocacy in the region. Not content with having been instrumental in establishing numerous parks, he is now focusing on gaining recognition and legal protection for a system of cores from Panama to Guatemala and Belize. He has taught, written and spoken widely, and has over two decades of experience in the protection of wildlands as advocate, planner, administrator and scientist.

Biologist Milagro de Harrouch of El Salvador is Communications Director for the El Salvador Audubon Society. El Salvador Audubon is a grassroots organization that has worked successfully despite political instability and conflict to protect threatened habitat. In particular she has worked for the protection of birds and lizards in the face of habitat fragmentation, commercial exploitation, and neglect. She has also taught and lectured about the need for conservation in Central America.

We are also pleased to welcome Pam Frost to The Wildlands Project. Pam's training is in Geographic Information Systems and she will be working to develop continental mapping standards in conjunction with regional groups and agencies. Pam is more than a computer mapping expert, however. Her experience representing in map format the sort of biological analysis we must undertake in each region makes her an important source of information for both regional groups and the continent-wide effort. Pam can be reached through our McMinnville office where the science staff is also based.

I should note here, while we are on the subject of mapping, that elements of the U.S. "wise use" movement have not been content to wait for us to issue maps. They have taken it upon themselves to produce maps they claim are based on principles of conservation biology and guidelines of The Wildlands Project. Needless to say, lacking any real understanding of the subject, what they produce is not good science. It's not meant to be. If you see maps that purport to be Wildlands Project maps, or purport to be the product of cooperating groups, check the fine print. And please send us copies. Our attorneys have a file.

Paul Winter, an enthusiastic supporter of The Wildlands Project, will be bringing his *Prayer for the Wild Things* to the West. Recorded in Glacier, Yellowstone, and Gates of the

### PAUL WINTER CONCERTS & RECORDINGS

Low cost quantity orders of *Prayer for the Wild Things* CDs and cassettes are available to wildlife and conservation organizations to benefit their cause. For information on recordings or concert bookings for Paul Winter's 1995 Tour for the Wild Things, contact Living Music, Box 68, Litchfield, CT 06759, Fax: 203-567-4276.

Mountains, this tribute includes 27 animals beautifully interwoven with his and the Earth Band's powerful music. If anything human-made can capture the spirit of the Rockies, this music does it. If there is no way you can hear a wolf tonight, listen to *Prayer for the Wild Things*. Paul Winter's concerts, still being scheduled, will be raising money for regional groups as well as bringing his message to the public.

Initial meetings were held late this summer and early fall for Coastal/Sierra California and the Alaska/Yukon region. Activists, scientists and others met to discuss the steps needed to develop reserve proposals over the next few years, to assess the status of biodiversity and the status of wildlands protection in the region, and what immediate steps need to be taken to counter near-term threats. As has been the case in other meetings, the occasion offered much needed opportunities for communication and coordination. The Wildlands Project will be helping maintain that momentum in the regions.

Additional meetings are scheduled for this fall and into the early next year: the Plains, the Canadian Arctic and Canadian Boreal Forest, the U.S. Gulf and East Coastal Plain, the Southern Appalachians, Northern Mexico, Southern Mexico and Central America.

As always, the project is deeply grateful for the support of contributors. The Foundation for Deep Ecology, Patagonia, and many others have contributed over the past quarter. Please join them; and if you know of someone you think should hear about the project, tell us.

—David Johns

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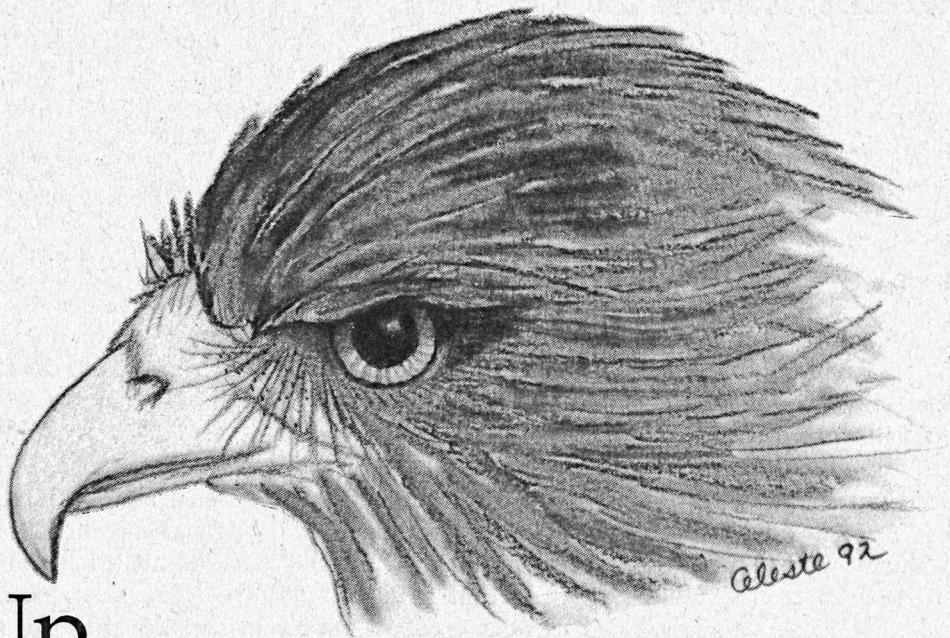
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# Lock It Up

by Mike Matz

*Conservation biology is  
the basis for  
understanding—but not  
the means by which we  
achieve—sustainable  
natural systems.*

*Wilderness...is the most  
practical means available  
today to protect  
significant acreage.*

Conservation of biological diversity is certainly one of the reasons for designating Wilderness. Yet many environmentalists seem to have forgotten this, and instead have come to think that conservation biology supplants the need for Wilderness. Wilderness is passé to them.

But the passion for places, the fervor for things wild and free, the reveling in the sound of a wolf howl—these are the things that inspire us to fight to protect the land and the critters that depend upon it. Wilderness is important as a concept: the wilderness *idea*, as Stegner wrote, “has helped form our character and...shaped our history as a people.” Wilderness is not only a reservoir of genetic diversity; it is still a sanctuary to which we can retreat, and an inspiration for us to hope for a better future.

Conservation biology is a boon for Wilderness advocates, increasing their knowledge of what habitat is most important to protect. A systematic analysis of natural systems and their various states of functioning ability is key to helping us make the case that this area or that needs protection as Wilderness, that corridors connecting the cores need to be preserved or restored, and that buffer zones need to encircle these cores.

We need to acknowledge its limits, though. Conservation biology is the basis for understanding—but not the means by which we achieve—sustainable natural systems. It tells us what must be done to preserve representative samples of habitats and a diversity of species. Conservation biology is a scientific discipline, not an arena where decisions that determine the fate of natural systems are made.

We find out whether the principles of conservation biology win or lose by playing the game of politics, not by pondering in the ivory towers of academe. While we ponder, government agencies co-opt “ecosystem management”—just as they have “multiple use”—to carry out the agenda of commodity interests. The Forest Service will still get out the cut. The Bureau of Land Management will still let cows chew up native flora and crap it out on public lands. The Fish and Wildlife Service will still let oil rigs onto National Wildlife Refuges as a “compatible” use.



All of this will be done in the name of ecosystem management, and its cousin, community sustainability. "Ecosystem management" upholds the anthropocentric belief that no matter how badly we foul things, we can always figure out a way to fix them. "Community sustainability" suggests we somehow owe it to rural America to keep every Podunk on subsidies and assistance funds.

Just as ecosystem management is subverted by federal and state agencies so they can continue destructive practices, there is a very real danger that precepts of conservation biology will be manipulated to do the same. How do we ensure that conservation biology is properly applied to restore Earth and maintain its life support systems?

Legal definitions for ecosystem management and conservation biology do not currently exist.\* Without legal definitions, environmentalists face serious difficulties in establishing the important tenets of conservation biology. Without legal mandates (such as Wilderness designation) agencies will continue to accommodate commodity interests. Well-meaning field personnel in agencies, no matter how many they are, or how well supported by groups such as PEER or AFSEEE, (Public Employees for Environmental Responsibility; Association of Forest Service Employees for Environmental Ethics), will be unable to steer bureaucracies in the right direction.

Even Aldo Leopold could not cause the Forest Service to overcome its penchant for logging trees. His concept of wilderness surfaced in administrative designations of primitive forest lands in the 1930s, but it was another 30 years before a legal tool existed to keep the fickle Freddie from selling every last stick. It is a long haul from concept to reality; it will be many years before an Endangered Ecosystems Act or Biological Diversity Act can pass.

Even if embodied in law, conservation biology has limitations. The best science is compromised when it comes time to make decisions in the political arena. Look at how the scientific process on ancient forests unfolded in the Pacific Northwest, with scores of credible studies and even some decent legislative proposals. The sad final result, Option 9, is politically corrupted science. Though it will be done differently, cutting will continue on the remaining 13 percent of old growth, unless legal challenges can block Option 9's adoption by the Clinton Administration. Science can speak in probabilities, but cannot state with certainty, what Option 9 portends for imperiled species in our ancient forests.

Or how about the coastal plain of the Arctic National Wildlife Refuge, the calving ground for a herd of 180,000 Caribou? Oil development would have deleterious effects on the herd—only the degree to which the Caribou would be harmed is in question. Wilderness designation of the coastal plain would preclude oil development. Yet scientific studies by both industry and government were showcased by our detractors in Con-

gress as justification for allowing development in this arctic ecosystem segment.

And say a team of conservation biologists assembles to identify the boundaries of the Colorado Plateau, studies this ecosystem, and determines that, in order to ensure a representative sample of habitats and viable populations of native species, only the Escalante River basin, as the least disturbed area, needs a significant core protected as Wilderness. The conservation biologists, in this case, would be saying that more than two-thirds of what is currently included in a 5.7-million-acre Utah wilderness bill is extraneous.

But all that 5.7 million acres is still roadless; the extra two-thirds is no less magical, and certainly deserves Wilderness designation. We should now be pressing for Wilderness designation of the coastal plain on the Arctic National Wildlife Refuge before the oil industry again makes a run at development there. Environmentalists also should have insisted on Wilderness designations in the Northwest, so the last ancient forests there would not be liquidated.

We do now have a law on the books that enables us to protect core areas and to preserve biological diversity:

*In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefit of an enduring resource of wilderness....*

*A wilderness, in contrast with those areas where man and his works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man....*

—The Wilderness Act, 3 September 1964

Henry David Thoreau presented the concept 130 years ago, John Muir kept it alive around the turn of the century when Americans believed nature's abundance inexhaustible, and Aldo Leopold moved it along with a portrait of fierce green eyes in dying wolves in his exposition on land ethics. Howard Zahniser wrote the first wilderness bill, and Senator Hubert Humphrey introduced it in 1957. After sixty-six revisions and a groundswell of grassroots support, in 1964, the Wilderness Act passed.

The Wilderness Act's true potential has never been realized. The emphasis to date has been on saving America's vanishing wilderness for anthropocentric needs like recreation. We need now to place more emphasis on biocentric needs—for functioning natural systems—without losing the passion for pretty places and wild things.

\*Laws do address such principles, but only in piecemeal fashion. The National Forest Management Act does mandate protection of biological diversity, and the Endangered Species Act attempts to prevent extinctions, but neither is adequate.



The law has shortcomings (it allows continued livestock grazing, to name one); but that too great a proportion of primarily rock and ice and too few acres of biologically diverse habitat have been saved is our fault. We have lacked the political muscle. The remedy is not to give up on Wilderness. The remedy is to press for more and more and more Wilderness.

Ghost bears in the Cascades and songbirds in the Appalachians, admittedly, need something more. Locking up all remaining Wilderness would be insufficient. Areas not qualifying as Wilderness under the definitions outlined in the Wilderness Act need restoration and protection under some other designation. In these cases we will need to combine other methods—involving new international agreements and collaborative efforts between private and public landholders—to restore natural systems.

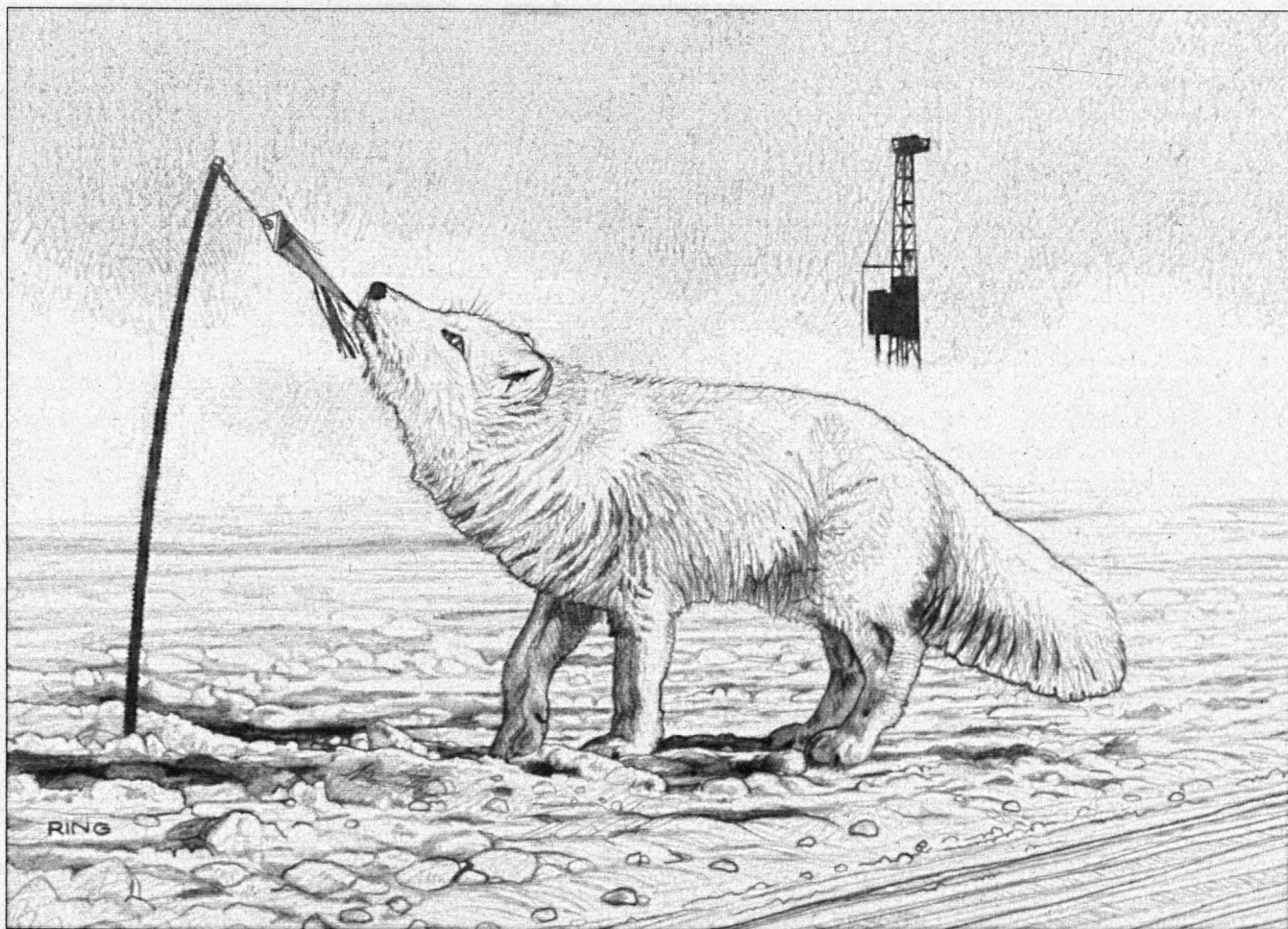
In much of the West, however, the potential of Wilderness designation to protect large wild cores can yet be realized. Adding designations for Wild and Scenic Rivers as wildlife corridors, and provisions for buffer zones, we can protect whole ecosystems and maintain viable populations of large mammals. Using the Wilderness Act, environmentalists can safeguard the coastal plain of the Arctic Refuge, a huge swath

of the Northern Rockies, and a good chunk of the Colorado Plateau—all in pending wilderness bills.

These campaigns should not be in lieu of plans to repair other natural systems. We should begin now the gargantuan task of turning land back into wintering habitat for Elk at Jackson Hole. We need to educate farmers in arid Utah about native plants that need less water. We should work with local residents to plan which roads to remove....

We should not, however, dismiss Wilderness; it is the most practical means available today to protect significant acreage. Conservation biology is yet another reason to work for wilderness, but it is not the only reason. Wilderness is something more than just a reservoir for biological diversity. Wilderness is spiritual. It is something into which we can escape, lest we go berserk in today's technocratic society. That's as good a reason as any to lock it up.

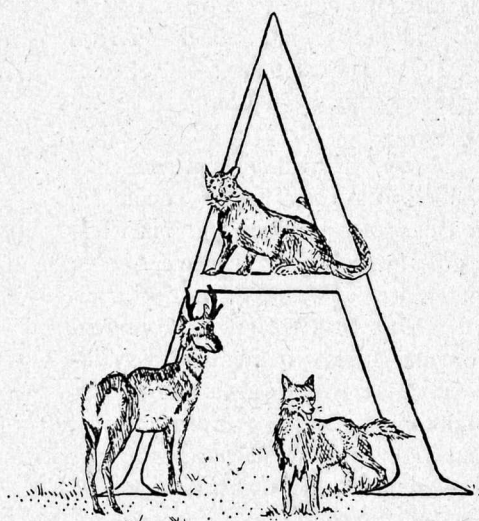
*Mike Matz is executive director of the Southern Utah Wilderness Alliance (1471 South 1100 East, Salt Lake City, UT 84105). Previously, he was banished to Washington, DC, by the Sierra Club, after starting his environmental career at the Northern Alaska Environmental Center in Fairbanks.*





# Fellow Travelers

by Mollie Matteson



After a three day ski trip in the Absaroka-Beartooth Wilderness, I was driving home through Yellowstone Park. It was still mid-winter, but the sun lingered, as if relenting of its terseness the previous month. In the Lamar Valley, a distant herd of Elk swept up a treeless hillside. One followed the other in a sinuous path, like the bows of a river. Closer, a small group of cows and calves watched my car with buttery eyes. Cows and calves: I wished there were more graceful words for mother Elk and their young, with their supple-stalwart bodies like modern dancers. Only some atrophied mind, viewing these animals as stock for harvest, could have placed the terms for penned and prodded bovines on these elegant ungulates.

Bison slumbered on the snowy ground, resembling haphazardly-placed leather couches. A Coyote, fat and fluffy as a Panda, stared at me as I cruised by. "Hi, sweetie!" I shouted out the window on impulse. The instant internal retort, "Oh, God, you're becoming a sappy old lady before you're 30." The dreaded anthropomorphism: it wouldn't be long before I was dressing Lhasa apsos in overcoats and rhinestone collars, and why didn't the Park Service supply those poor Coyotes with little vinyl ponchos?

My husband teases me when I blurt "Bun-bun!" at passing hares and cotton-tails. I speak familiarly to the Lazuli Bunting that frequents our feeder and the kingfisher perching above the bridge we cross on our daily run. I must sound alternately like a child and a victim of senility. But I care less about that than I once did. I did not call to the Coyote because it needed something from me. Rather, I was glad to see it, and joyous that (though I do, at times, participate in "research" myself) this one wore no collar save its own luxurious ruff. If shouting greetings to Coyotes signaled the early onset of my dotage, I thought, then I would hope for a long life of such mental instability.

I continued north, scouting the cliffs along the Gardiner River for Bighorn Sheep. No sheep, but a few napping "bull" Elk. I was puzzled by their ability to sleep while balancing four-foot-high candelabras atop their heads. On wind-swept, chocolate-colored hills above the Yellowstone River, antelope grazed. I was out of the Park now, and without being conscious of it, I had begun a mental checklist. Next: Mule Deer. Then: Bald Eagle. A Rough-legged Hawk on a fence post. And another. When I spotted the Goldeneyes swimming along the icy margin of the river, like punctuation marks on an ancient scroll, I felt a distinct easing in my chest, an involuntary sigh. I realized then I'd not simply been observing the passing scene. I had been searching for those little round ducks, expectant and anxious, like a passenger disembarking from a train and searching the crowd for a familiar face.

*When the Pleiades and the  
wind in the grass are no  
longer a part of the human  
spirit, a part of very flesh and  
bone, man becomes, as it were,  
a kind of cosmic outlaw,  
having neither the  
completeness and integrity of  
the animals nor the birthright  
of a true humanity.*

—Henry Beston,  
The Outermost House

Ever since I'd left the trail, the piles of bills at home, letters unanswered, the maw of my office door loomed larger with every mile. I'd sought those creatures like one trapped in a nightmare, flailing subconsciously for the sweet reality of another's warm back, the reassurance of a shoulder, a leg, an embracing arm. These animals, not mine in any sense, were nonetheless compatriots, fellow travelers. What could my freedom to move about, my ability to speak, to study, to contemplate, to effect change, mean in a world without chickadees, Pine Martens, spiders and salamanders? I might as well live in a box: that darkest, most silent space, inside my own skull.

A friend of mine recently called an employee of Animal Damage Control to ask if he would speak at a conference she was organizing. Their conversation stretched to an hour, as he railed against the biases, illogic, and misinformation of activists opposed to "predator control." "He said he hated emotions getting involved with management decisions," my friend reported.

"Isn't that a contradictory sentence?" I asked. "He 'hated' emotions?" I felt sorry for the man. Feeling frustrated, angry, resentful, yet thinking solutions lay in the direction of elimination, denial, and repression of emotions, just as his agency eliminates, denies, and represses other species. What would hap-

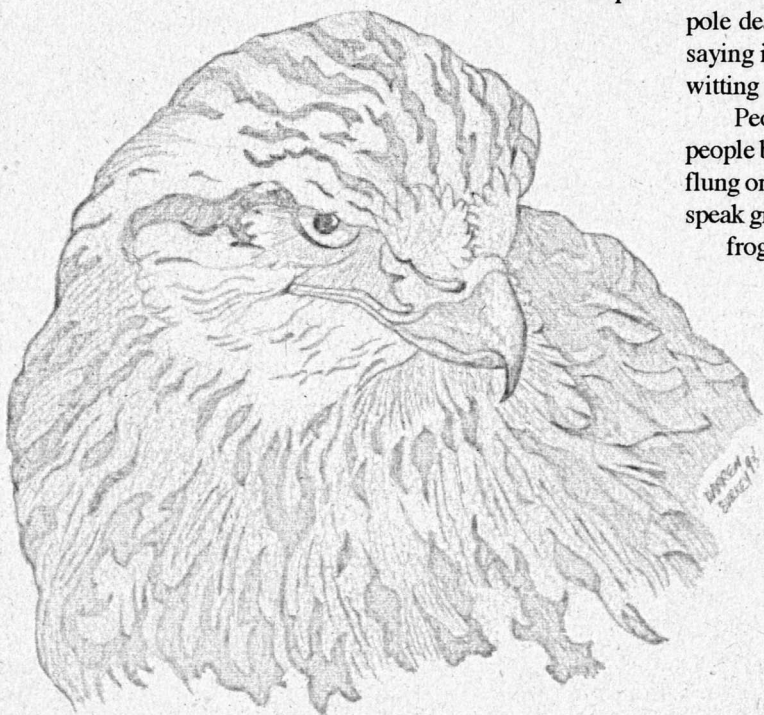
pen if for one day that man were required to walk out in the woods and sing out hello to the ravens, wave to a deer, whisper to a Coyote? He would probably rather die than have to behave that way. Why? Would he fear that a breath of compassion, of friendliness, might brush his skin and weaken his steely "objectivity?"

It is a truism that only humans divided within themselves can commit acts of barbarism. We deny feelings of compassion and identification in order to justify brutality and isolation. We claim noble goals (knowledge, management, order, progress) to mask our desire, our desperation, for control. David Orr writes in the December 1992 issue of *Conservation Biology* about teaching "the love of life." His essay (insightful, bold, and honest, as his writings always are) makes the point that we do not come to science, or to conservation, as two-legged computers. Yet almost no scientists or bureaucrats, not even many environmentalists, dare to speak loudly, if at all, such words as kindness, caring, joy, wonder, love. If these words are used, they are used as weapons to beat back the "emotional" types.

I once spent an entire afternoon rescuing tadpoles from shrinking, shallow pools in a gravel quarry. My best friend and I—we were about 8 or 9—fetched Tupperware from her mother's cabinets, and ferried the hapless baby frogs from the doomed pools to the biggest, deepest ones. Perhaps we would have done the species a favor by letting the descendants of imprudent mother frogs desiccate and die. Perhaps we overcrowded the bigger pools, and thus caused more tadpole deaths than we saved. Perhaps. Yet I have no trouble saying it is not an overabundance of human kindness—unwitting though it can be—that is threatening the world.

People judge others by the company they keep. I judge people by those they consider to be their company. How far-flung or confined is their net of inclusion? To whom do they speak greetings? For whom do they mourn? Are finches and frogs and elm trees part of their circle? Would they pause to grieve for a shattered deer by the side of a highway? We are warned against personalizing, anthropomorphizing, caring. I will warn others, for my part, against not personalizing, not caring enough. Conservation, as David Orr tells us, will not happen without the impetus of love. For me, though, it really comes down to this. I do not like traveling alone. When I greet Coyotes, Elk, a river, I am reminding myself—and rejoicing—that once again, I have found plenty of good company. **WERF**

Mollie Yoneko Matteson (POB 3975, Eugene, OR 97403) is a wildlife biologist, environmental writer, and Wild Earth correspondent.



Rough-legged Hawk (*Buteo lagopus*) by Darren Burkey



# Ecosystem Management Cannot Work

by Michael Donnelly

## A NEW OXYMORON

'Ecosystem Management' is the buzzword behind the Clinton Administration's continued resource extraction on public lands. In the argot of forestry, it follows decades of previous timber-production code words, such as 'Sustained Yield,' 'Non-declining Flow,' 'Integrated Resource Management,' 'Multiple Use,' 'New Perspectives,' and 'New Forestry.'

As with most bureaucratic jargon, it is difficult to figure out just what ecosystem management means. Andy Kerr of the Oregon Natural Resources Council summed up the concern of most conservationists when he told the president at the 1993 Portland Forest Conference that, "When you mention ecosystem management, I hear ecosystem, while a forester hears management."

The assumed authority on the matter, the Forest Ecosystem Management Assessment Team (FEMAT), defines it as, "A strategy or plan to manage ecosystems to provide for all associated organisms, as opposed to a strategy or plan for managing individual species."

Jack Ward Thomas, Chief of the Forest Service and guru of ecosystem management, has no doubts about what it means. In a 13 June 1994 memo to Regional Foresters, he states: "...this challenge is the application of ecosystem management principles and forest plan standards and guidelines *while achieving our annual timber sale goals.*" (emphasis added)

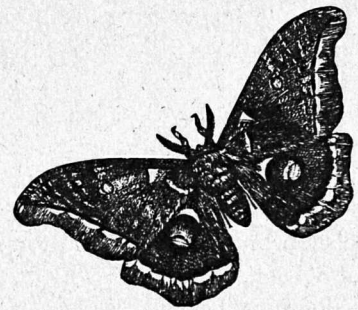
Let's assume for a moment that ecosystem management isn't just another great sound-bite rationale for continued logging, grazing and mining of public lands. Of course, it is; but even if it weren't, can we ever have enough knowledge to actually achieve it?

## A FEW PAST EXAMPLES OF "ECOSYSTEM MANAGEMENT"

### "Debris" Removal from Creeks

In the 1980s, the Detroit Ranger District of the Willamette National Forest was number one of all ranger districts in the lower 48 states in timber cut, averaging over 125 million board feet per year. By 1994, with virtually all the land base either protected or in tree plantations, the district's sales amounted to less than three million board feet annually.

In 1992, the district contracted out for a person to place 28 artificial structures in Devil's Creek, a tributary of the Breitenbush River in the Oregon Cascades. A



*No human (or collection of humans) has enough information to even make an accurate prediction as to the actual outcomes of theories applied to the landscape.*

device called a "spider," looking like a Spielberg erector set Star Wars creation, walked up the creek on its five legs with an assortment of logs, stumps and boulders slung beneath it. These items were strategically placed along the creek and anchored with cables and huge bolts. After two winters, most are still in place.

The purpose was to mimic naturally occurring conditions. The structures catch spawning gravels on their upstream sides and develop pools for cooling, resting and cover on the downstream sides.

But the washed-out, boulder-strewn condition of the creek had not been naturally caused. In 1977, in an era before most people used the term 'ecosystem' but when management was already in vogue, the same ranger district determined that fish populations were declining because of all the "impediments" in the streams. So, in the wisdom of the day, resource managers contracted loggers to drive a bulldozer down Devil's Creek and throw anything "larger than one's wrist" out of the channel and above the high water mark. To this day, flats along the waterway are lined with huge jungle gyms of woody debris.

Shortly after the channel cleansing, during the next winter's high water, the creek came "unzipped." The channel meandered around, pools were covered in silt and gravel, and fish populations dropped dramatically.

This "management" technique was practiced systematically on Forest Service and Bureau of Land Management forests during the 1960s and 70s. The cost of repair, such as at Devil's Creek, is prohibitive and only a small fraction of the many thousands of miles of blown-out creeks will ever get the same techno-fix. Not surprisingly, the district ranger who achieved those obscene cut levels was promoted and is now the Forest Supervisor of the Payette National Forest in Idaho.

### Snag Management

On the opposite side of Devil's Ridge from Devil's Creek runs the South Fork Breitenbush River, the longest unbridged river in the entire Oregon Cascades until 1986 and the construction of a much protested logging bridge. Running parallel to the river is the reclaimed 14-mile-long South Breitenbush Gorge National Recreation Trail.

Casual hikers might think their walk through cathedral-like groves of ancient firs, hemlocks and cedars constitutes a pristine wilderness experience. On closer examination, though, one notices an antiseptic, sterile ambiance to the forest. There are no standing dead trees (snags) anywhere.

In the 1960s and 70s, the Forest Service practiced "Snag Management." The theory was that snags are literally standing lightning rods. So, fire prevention crews and loggers were sent in to lop off all the standing dead trees. While they were at it they high-graded old-growth cedars wherever possible for the booming California shake roof market.

In 1993, the cycle was completed when the Forest Service contracted out the job of creating snags—since it was by then well known that snags are the wildlife hotels of the forest

and integral parts of the ecosystem. In fact, a healthy forest will have about one-third of its trees either dead or dying at any given time.

So, contractors climbed trees and placed charges in their tops, then set them off, killing perfectly healthy ancient trees to create new snags to replace those lopped off earlier.

Of course, like everything natural in the forest, snags exist for a reason. And no woodpecker is likely to knock its head against a rock-hard explosion-created snag. A natural snag takes years to reach the punky, insect-infested and decomposition-assisted state that creates the prime wildlife habitat.

### Management for Kirtland's Warbler

Perhaps the most telling example of failed past ecosystem management is the story of Kirtland's Warbler (*Dendroica kirtlandii*). This famed neotropical migrant winters in the Bahamas and nests only in six Michigan counties, giving it the most restricted range of any North American songbird.

Named after 19th century naturalist Dr. Jarad Kirtland, the bird was first discovered on Kirtland's farm near Cleveland, Ohio by his son-in-law in the mid-1850s. The original specimen is kept at the American Museum of Natural History.

Through the years, people noticed that the bird's numbers had dropped dramatically. In 1951, a count found a total of 500 pairs. Every ten years thereafter another count occurred. By 1971, the numbers had fallen critically low—down to 200 pairs. Yearly counts were instituted.

Early on, ornithologists had learned that the warbler has very specific habitat requirements. The bird only nests on the ground below Jack Pine trees between five and fifteen feet in height.

Jack Pine release seeds only when exposed to fire. In a natural forest, the Jack Pine is one of the first trees to reestablish after fire, starting the successional process anew. Years of clearing forest lands for plantations and farms saw a major reduction in the range of the Jack Pine. Moreover, years of determined Smokey-the-Bear management fire suppression had left few Jack Pines in the five to fifteen foot range. Kirtland's Warbler was in trouble. So, their habitat began to be managed specifically for their survival.

The Forest Service and the Michigan Department of Conservation set up the Mack Lake Kirtland's Warbler Management Area in 1963 near Mio, and later embarked on a management scheme of controlled burns to create nesting habitat. The typical project was to clearcut and remove the marketable timber from a 500 acre area. The limbs and cones were left behind. Before the birds returned from the Bahamas, usually in early May, a prescribed fire was started. The fires also created opportunities for training firefighters and testing equipment.

Even after years of such management, the songbirds were still declining in numbers. Then on 5 May 1980, a 250 acre prescribed burn got out of control. By the time the fire was put out, over 31,000 acres had burned, with scores of summer cab-



ins destroyed and one forester killed. The entire program came under intense criticism. Some felt that the warblers weren't worth saving if it cost lives and property.

Yet, the 1987 count of 167 pairs represented the low point, and now after the serendipitous major burn, the entire area has revegetated with the ideal Kirtland's Warbler nesting habitat. The 1993 count was 485 pairs. The early June 1994 count of 633 pairs surpasses the original count from 1951. Mother (Earth) certainly does know best.

There are many more examples of past failed management policies. The bottom line is that no human (or collection of humans) has enough information to even make an accurate prediction as to the actual outcomes of theories applied to the landscape.

The new Clinton Forest Plan for the Northwest's Northern Spotted Owl forests, developed by Chief Thomas and the scientists of the FEMAT team, calls for continued cutting of the old-growth habitat of 46% of the surviving members of this Threatened subspecies based on a dubious ecosystem management premise: it is fine to continue cutting existing habitat outside reserves, as areas of non-habitat have been set aside inside reserves; owl numbers can continue to decline as existing habitat outside reserves is cut over the next ten to twenty years, because the drop will stop short of the point of no return and the species will rebound 150 years from now as the new habitat comes on line. No kidding. That's the rationale.

Ecosystem management will undoubtedly join stream-clearing, snag management, fire suppression, and Kirtland's Warbler management as another example of human hubris. In our addiction to "management," we fail to recognize that nothing beats nature left to her own devices. "Forest Health" would not be the issue it is today were it not for past management activities — virtually all for the benefit of resource extraction. After years of pat *mea culpas* like, "we don't do it that way anymore," it's time we stopped doing it that way in the first place. **WERF**

*Michael Donnelly grew up in the Michigan habitat of Kirtland's Warbler. He is president of the Friends of the Breitenbush Cascades in Oregon. In 1986, he filed one of the first old-growth lawsuits, over timber sales in the Devil's Ridge roadless area.*



# Letters

## ENE NOT SO NON-ESSENTIAL

I would like to respond to the article by Tom Skeelee from the summer 1994 edition of *Wild Earth*, entitled "Fish and Wildlife Service Experiments with Endangered Animals."

The voices of opposition to carnivore reintroductions are loud, and the concerns of landowners, ranchers, farm-

ers, and hunters need to be addressed, whether they are based upon fears or facts. The U.S. Fish and Wildlife Service (FWS) discovered upon their first major proposal to reintroduce a large predator into the wild that the wording in the Endangered Species Act (ESA) is inflexible. The language in the ESA infers that the "taking" of an animal includes such things as interfering with, harassing, or accidentally trapping, and stiff penalties are included for offenders. In 1981, the planned reintroduction of the red wolf into northwestern Tennessee met with stiff opposition and ultimately was defeated because the restrictions of the ESA prevented FWS from addressing landowner concerns. Local citizens need assurances that if an animal becomes a problem it can and will be dealt with. The Experimental/Non-essential (ENE) designation allows the proposers and opposers to work out their differences for each reintroduction, to the benefit of the Endangered species. In the late 1980s the FWS began a successful reintroduction of the red wolf into North Carolina. Without the ENE designation that program probably would have been blocked by local governments and citizens. The bottom line is that without the ENE designation, it is unlikely that any of the planned reintroductions of gray wolf, grizzly bear,

Mexican wolf, or black-footed ferret would make it past the proposal stage. As long as predators are seen as a threat to local economies, introductions will be blocked without provisions like the ENE designation in the ESA.

—Robert Barber, *Biology Graduate Student, SUNY College of Environmental Science and Forestry (SUNY ESF, 242 Illick Hall, Syracuse, NY 13210)*

## RESPONSE FROM SKEELE

I openly acknowledge that the ENE designation can appear to meet its goal of appeasing local concerns about the reintroduction of predators. These concerns generally fall into three categories: 1) predators as a direct threat to humans, 2) a direct threat to human activities, or 3) an indirect threat to human activities. However, evidence shows either that the threats to humans and our economies are greatly overstated, or that ENE designation has not quelled local opposition.

Concerning direct threats to human life, only the grizzly bear is a direct threat to humans, and the ENE designation will never change that fact. Besides, the chance of a judge ever sending a person to jail for killing a grizzly bear in self-defense is so small that the ENE designation is unnecessary.

For concern number two, let's consider the impact

## Statement of Purpose

*Wild Earth* is a non-profit periodical serving eco-centric grassroots groups within the conservation movement. We advocate the restoration and protection of all natural elements of biodiversity. Our effort to strengthen the conservation movement involves the following:

- ✦ We provide a voice for the many effective but little-known regional and ad hoc wilderness groups and coalitions in North America.
- ✦ We serve as a networking tool for grassroots wilderness activists.
- ✦ We help develop and publish wilderness proposals from throughout the continent.
- ✦ We render accessible the teachings of conservation biology, that activists may employ them in defense of biodiversity.
- ✦ We expose threats to habitat and wildlife, and offer activists means of combatting the threats.
- ✦ We facilitate discussion on ways to end and reverse the human population explosion.
- ✦ We defend wilderness both as *concept* and as *place*.
- ✦ We are the publishing voice of The Wildlands Project: the North American Wilderness Recovery Strategy.



of wolves on livestock. For starters, ranchers in northern Minnesota or northwest Montana, where existing wolves are fully protected, have learned to accept wolves because they've experienced only 1 to 2 percent losses regionwide as well as the immediate response and involvement of the federal predator control program once losses occur. We hear less screaming about wolves in these two regions than we do from wolf opponents living in the Yellowstone region, where reintroduced wolves will be designated an ENE population.

In fact, the ENE designation in Yellowstone has worked so poorly at quelling local opposition that the American Farm Bureau and its northern Rockies affiliates have filed a sixty day notice of intent to sue the FWS over its plans for that region. According to one Wyoming Farm Bureau executive, their position remains "that the federal government is using the experimental population designation to convince the public that there is nothing to fear from such reintroduction." And in North Carolina this past July, the state's General Assembly passed "An Act to Allow The Trapping and Killing of Red Wolves by Owners of Private Lands" (after only seven wolf incidents and no confirmed livestock depredations).

Finally, there's the concern over in-

direct threats of predators to human activities. In the case of the ferret, the issue is really over the protection of their prey base—the prairie dog. With only five percent of their historic range remaining, I side with the prairie dog and the hundreds of species dependent upon or associated with this keystone species. In contrast, there are only ten grazing permittees and no oil and gas lease holders within the Montana ferret reintroduction area.

The ESA plainly states that its purpose is to conserve both imperiled species and the ecosystems upon which they depend. Even if the ENE designation provides some sense of political security to those industries that caused the original demise of these predatory species, I still contend (as I did in my article) that the FWS is ignoring the law and biology in an effort to protect a few human interests.

—Tom Skeele, Director,  
Predator Project (POB 6733  
Bozeman, MT 59771)



illustration by Brush Wolf

## CAMPFIRE MESSAGE RIGHT

The primary message of the last installment of "Around the Campfire" (Fall 1994) was 100% bang on. It crystallized what have long been but fractured and occasional thoughts in my mind as a former Earth

First!er cum fledgling academic who has recently been charged with

teaching potentially formative undergraduate courses such as "Human-Environment Relationships." Dave put into words what I, in my sloth-like inertia, have never dared (i.e. taken the time) to verbalize. I and many other former and would-be-monkey-wrenchers have come to appreciate the combined power of the pen (er, word processor?) and the spoken word. I don't need to proffer quotes from the original piece. It is there for all to read.

It is most troubling to see the front-burner issue of explosive population growth given over to the politico-religious media flunkies. In the two years I taught the aforementioned class in Montreal, Quebec, the section on population theory and dynamics generated discussions that were simultaneously startling and refreshing. We had mini-debates. The hardcore Catholics took on the tree- and bunny-huggers. I had the feeling that many individuals from each group had never been forced to articulate their ideas, much less defend them, to the other.

The students ranged from dyed-in-the-wool, card-

carrying teenagers to mothers and fathers with 'grown' kids. There were, of course, numerous folks from the 'gray' area—those not committed to one ideal (ZPG= Zero Population Growth) or other (ZBC=Zilch Birth Control). It was a sobering slice of reality and I carry it

*It is most troubling to see the front-burner issue of explosive population growth given over to the politico-religious media flunkies.*

with me every day. You cannot move people by defying them with a bludgeon but, rather, by demonstrating (with hard and indisputable facts) the power of your argument. I required people to provide the class with published material to bolster their main points and population figures, and these were then open to discussion. This way the 'facts' were debated openly and honestly. The outcome was astonishing. This rather personal and generally heated debate meant more than all the 6 o'clock sound bites ever mustered by the Pope, George Bush or the good folks at Planned Parenthood. As Dave has said before, we have to change the collective minds one person at a time. It really works.

The point? I guess I'll break my own rule and reiterate from the "Campfire": "when we attack people who are not yet beside us, we make it very difficult for them to ever come alongside us." How true!

—Bruce C. Forbes.  
Ph.D. (Arctic Centre, University of Lapland, Rovaniemi, Finland)

## THE BATTLE CONTINUES

I was surprised to see Kathleen Fitzgerald's review of the Douglas-Hamiltons' book *Battle For The Elephants* published in *Wild Earth*. I would like to comment on some of the issues mentioned in the review, and bring up one or two relevant factors which were not mentioned.

### *The Global Picture*

It should be recognized that even conservative estimates put the current continental African elephant (*Loxodonta africana*) population in the range of 400,000-600,000 individuals (Douglas-Hamilton et al. 1992 as cited in Cumming & Taylor 1993). Compare this with the current total population estimate for the Asian elephant (*Elephas maximus*) of 30,000-40,000 individuals (Santiapillai & Jackson 1990). Asiatic elephant populations, both wild and "domesticated" [captive], are

*Within the tremendous publicity concerning African elephants in recent years, the far more severe plight of the Asian elephant has been largely ignored.*

declining at rates approaching or exceeding those of their African cousins. Whereas poaching is generally cited as the proximate cause of recent African elephant declines and habitat loss a secondary factor, habitat loss is the primary threat to survival of the Asian elephant with poaching as an important secondary factor

(Santiapillai & Jackson 1990).

Within the tremendous publicity concerning African elephants in recent years, the far more severe plight of the Asian elephant has been largely ignored. This may be attributed to the fact that the general public finds photographs of chainsaw-mutilated elephant faces a more compelling image than the sap-weeping stumps of rain-forest trees. Rightly or wrongly, many wildlife conservation and animal rights NGOs have heavily exploited the ivory-poaching issue as a fundraising tool.

### *Southern Africa*

#### *Regional Perspective*

Elephant populations in parts of southern Africa increased substantially during the period (1970-1990) that East African elephant populations were being decimated due to poaching, habitat loss and degradation (Cumming et al 1990, Taylor & Cumming 1993). Elephant populations in the southern African range states are currently estimated at 200-230,000 individuals and constitute 33% of the continental population. The countries of Zimbabwe and Botswana together support some 70% of the southern African elephant population (Taylor & Cumming 1983).

The Upper Zambezi metapopulation which ranges from western Zimbabwe, northern Botswana, southern Zambia, northern Namibia and southern Angola is currently estimated at more than 100,000 elephants. Zimbabwe's Hwange National

Park and its environs contain the easternmost segment of this regional metapopulation and currently support an estimated 18,000-25,000 elephants. As Ms. Fitzgerald notes, the Republic of South Africa has a controlled ["harvested" or "culled"] elephant population limited to a total of some 8000 individuals; more than 90% of these elephants belong to the Kruger National Park population (population estimates extrapolated from data in Cumming et al. 1990, Martin et al 1992, and Taylor & Cumming 1993).

### *"Playing God"*

Humans have now excluded both African and Asian elephants from much if not most of their preferred habitat throughout nearly all of their historical ranges. Elephants in southern Africa are currently largely restricted to areas which have, so far, been considered too marginal in rainfall, soil nutrient availability, or other factors (e.g., tsetse-fly infestation) to allow their conversion for subsistence or commercial agriculture. Elephant populations within southern Africa are now largely concentrated in areas of semi-arid woodland and scrubs, where they often occur in unnaturally high population densities due to the presence of man-made permanent water sources and/or population compression from surrounding human-dominated landscapes.

*Wild Earth* readers should be familiar with the problems deer overbrowsing is creating in North American forests (see R.F. Mueller's article in *Wild Earth* Fall

1994 issue). Many will recognize that in the absence of natural predators to control deer populations, protecting the biodiversity of these forests may ultimately entail human control ("culling") of burgeoning deer populations. The situation with regard to elephant browsing impacts in areas of artificially high population densities is exactly the same. Waiting for "God" or "Nature" to take a hand in human-created ecological catastrophes may doom to extinction sensitive endemic plant species and other organisms not as resilient or widely distributed as their predators.

### *Culling and the Ivory Trade Issue*

As Ms. Fitzgerald's review aptly demonstrates, the CITES ivory trade and elephant culling issues are now inextricably linked in the public mind. Opponents of elephant culling on ethical/emotional grounds have fostered and promoted this development, in order to reduce the financial incentives for elephant culling by decreasing recoverable revenues from the subsequent sale of hides and ivory. This strategy seeks to increase culling costs to such prohibitive levels that budget-constrained African countries will not be able to implement such strategies in the absence of export markets for elephant products (cf Sea Shepherd strategy for halting Norwegian whale hunts). It is therefore important to emphasize that there is no scientific connection between the ivory trade and elephant culling (population-reduction management) issues (see Sikes 1966).



*Poaching and the Ivory  
Trade Issue*

Elephants cannot "roam the land of Africa free from poachers" (as Ms. Fitzgerald poetically stated) any more than bison can roam freely across the borders of Yellowstone National Park. The price of ivory has crashed as a result of the CITES ban and poaching has been reduced accordingly, but ivory poaching has by no means been eliminated. A World Wildlife Fund study instituted following the enactment of the 1989 CITES ban on ivory trade found that with the collapse of ivory prices, traditional domestic markets for ivory in parts of central Africa expanded when ivory suddenly became affordable to local residents. Poaching continues to supply a thriving international black market, and recent arrests indicate that elephant ivory often moves through the same smuggling channels (and sometimes in the same consignments) as rhino horn. Some illicit ivory dealers are apparently stock-

piling ivory in the hope of a reopening of the international trade, with the assurance that they can always sell it on the black market eventually in the event of a continuing ban.

It is worth noting in this context that rhino poaching continued unabated following the 1977 CITES ban on international trade in rhino horn. Since 1977, African rhinos have been poached into near extinction throughout most of their pre-ban range (Milliken et al 1993). Asian rhino populations similarly continue under grave threat of extinction from poaching; the horn and byproducts from various Asian rhino species have a higher market value than those of African species (Cumming et al 1990).

*The Battle Continues*

The world of wildlife and conservation politics is, as Ms. Fitzgerald affirms, very tangled indeed. Mitigation of human-induced threats to biological diversity will sometimes entail very radical and unpleasant ac-

tions, including the complete extirpation of exotic species populations or the control of population densities in native species within sensitive habitats. Single-species management agendas, even for keystone and flagship species such as elephants, may not necessarily promote the protection of regional and global biodiversity.

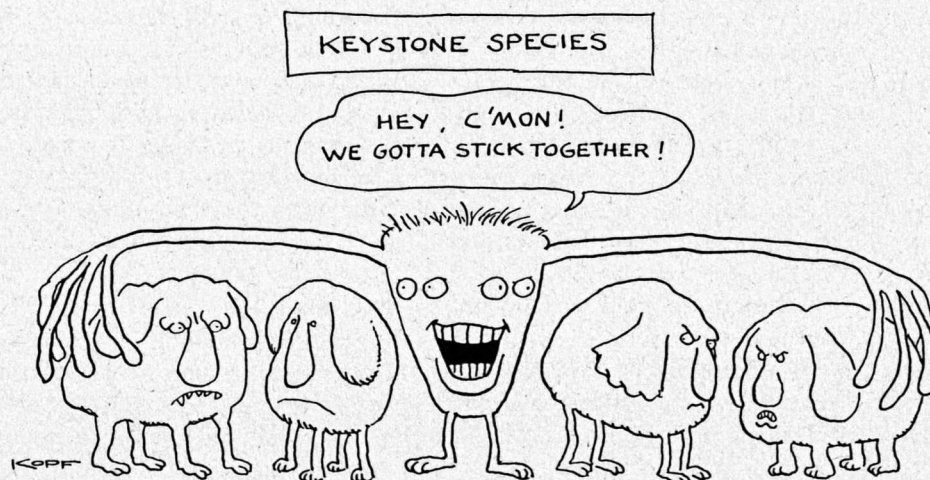
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—Joseph P. Dudley,  
Hwange National Park P.B. DT  
5776 Dete, Zimbabwe AFRICA

Long-time *WE* readers may have noted the disappearance of the magazine's staff notes column "It's What We Do." With this issue we retire that column; hereafter, an occasional staff notes section will appear as organizational news warrants.

With this issue we must bid farewell also to *Wild Earth* Outreach Director Kathleen Fitzgerald, who leaves us to spend time in the Big Outside. In her resignation, Kath shared her "burning need to get lost in the wilderness for awhile" and hope to be a "stronger and more effective advocate for wilderness after spending some time in it." We envy and honor her adventurous spirit, and would attempt here to express our gratitude for her tireless efforts on behalf of *Wild Earth*—both magazine and planet—but mere words would be insufficient. And thus...the board and staff wish Kath simply...Happy Trails.



### D'Arbonne National Wildlife Refuge

In Louisiana's D'Arbonne National Wildlife Refuge (see summer 1994 *WE*) in the fall of 1994, 870 acres were clearcut. The acreage now periodically flooded as a result of the Columbia Lock and Dam is targeted for continued clearcuts because of increased mortality and late successional condition, even though this condition provides good wildlife habitat.

Refuge Manager Lee Fulton is formulating a new environmental assessment. I requested a complete environmental impact study including an in-depth biological survey. A biological survey has never been conducted on the D'Arbonne Refuge, and Fulton says he has no intention of doing one, despite the primary objectives of the refuge being to protect over 11,000 acres of bottomland hardwood habitat for wildlife; provide habitat for Endangered species including the Bald Eagle and Red-cockaded Woodpecker; maintain habitat for all indigenous species of wildlife; and provide wildlife oriented recreation and interpretation opportunities to approximately 75,000 visitors annually. Clearly, clearcutting undermines all these objectives.

—Jimmy Witherington, 1484 Griggs Rd., Choudrant, LA 71227

### Central Appalachia Wilderness

Proposals have been made for Wilderness/Corridor systems in the George Washington and Monongahela National Forests (See *WE* articles by RF Mueller, vol. 1, #3 & vol. 2, #2). Since then Virginians For Wilderness has been working to begin implementing these proposals. We have been extending our activities to the adjacent Jefferson National Forest, as well. We have combined our activities with Charlie Sullivan's Central Appalachian Biodiversity Project, which puts out a joint newsletter.

An important part of our work is detailed biological surveys (doing what Babbitt talks about!) in the three National Forests and on state and private

lands where possible. These surveys take the form of traverses, usually from low to high elevations, in which every identifiable species—plants, animals, fungi—is noted in relation to elevation, pH, soil types and moisture, and forest types. Also recorded is forest age, and succession and disturbance patterns, including fire history. We try to monitor all unusual biologic communities with resident rare species, in addition to timber sale areas before and after. Since June 1992 we have made more than 65 such traverses and transcribed all field notes. Of course, our observations go back further. Recently our capability has been greatly enhanced by the assistance of Dr. Robert Hunsucker, who has unique knowledge of Appalachian flora.

Unfortunately, much of our effort must be devoted to forest protection, particularly of roadless areas and old growth. We review as many as possible of public agency documents such as scoping notices and environmental assessments. Mike Jones, Steve Krichbaum and R. F. Mueller have also appealed numerous timber sales in the three National Forests. Recently Steve did a great job as his own attorney taking the U.S. Forest Service to court in connection with their proposed intrusion into the Clayton Mill Spring Special Biologic Interest Area. At present we are appealing another intrusion into a roadless area with the cooperation of the Southern Environmental Law Center.

Compatible with our proposal for the GWNF is Ernie Reed's effort to enter into an agreement with the Forest Service on a 65,000-acre Primitive Recreation Area. His proposal has received considerable support but the Forest Service is as ever reluctant to allow the road closings this would entail. We'll keep at it!

The proposal for the Monongahela Wilderness/Corridor system has generated quite a bit of interest in West Virginia, and it was republished by the West Virginia Highlands Conservancy, one of the groups with which we network. Our

ultimate objective for the Central Appalachians is legislation something like the Northern Rockies Ecosystem Protection Act. This will require much more of the type of groundwork we're doing now.

—Bob Mueller, Virginians For Wilderness (Rt.1 Box 250, Staunton, VA 24401)

### Big Bend Ecosystem Proposal

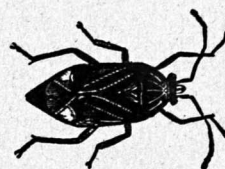
The Greater Big Bend Ecosystem proposal (*Wild Earth* Fall 92) caught the attention of the Big Bend Natural History Association and the administration at Big Bend National Park. The Natural History Association reprinted the proposal in the newsletter handed out to all park visitors. Several other recent articles, including a piece in *Texas Highways*, have basically outlined the same idea, thus giving it greater credibility and exposure. Big Bend is being seriously considered as a release site for captive Mexican Wolves. This would strengthen the concept of a large ecosystem reserve along the Rio Grande.

—George Wuerthner, POB 3975, Eugene, OR 97403

### Nevada Desert Proposal

The Greater Desert Wildlands Ecosystem proposal (*WE* Winter 92/3) focused on lands just north of Las Vegas. As far as I know, no one has carried forth this idea. I'm a little disappointed that Friends of Nevada Wilderness have not printed the idea I sent them in their newsletter. I outlined the same basic idea in my book *Nevada Mountain Ranges*, introducing more readers to the concept. Recently a portion of the Greater Desert Wildlands Ecosystem proposal was given momentum when the Spring Mountains were designated a National Recreational Area.

—George Wuerthner





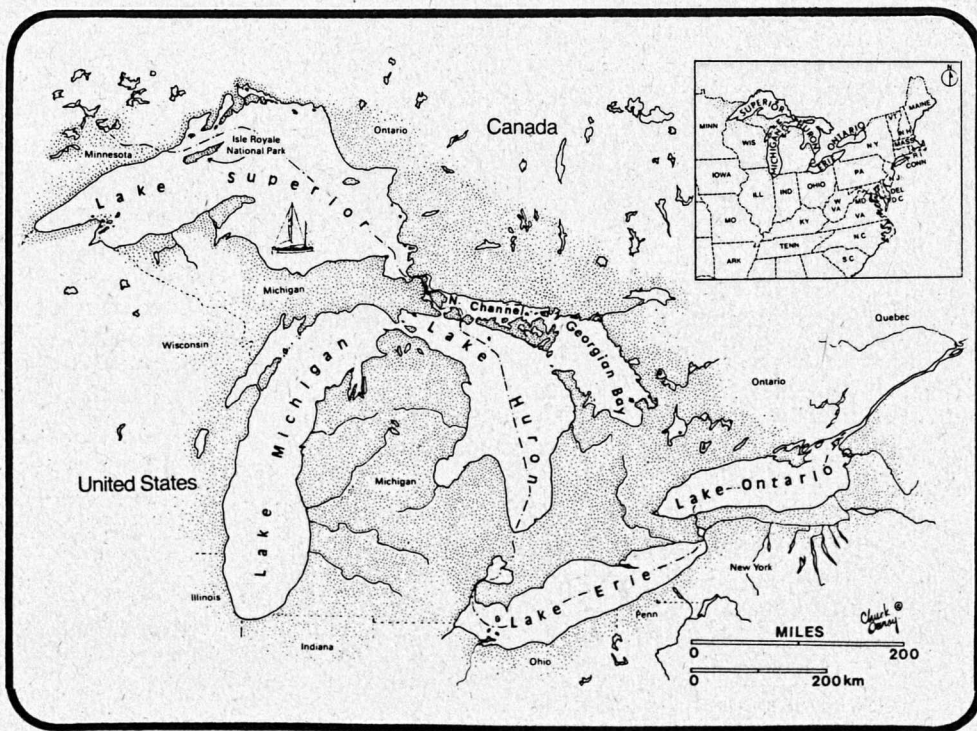
# The Great Diversity of the Great Lakes

by John A. Kinch

Fifteen miles away from Gary, Indiana, enduring emblem of the unnatural, lies one of the country's premier spots for biological diversity. So says a February report on biodiversity in the Great Lakes basin prepared by The Nature Conservancy with support from the Environmental Protection Agency. According to the report, the Indiana Dunes National Lakeshore on Lake Michigan "ranks third of all U.S. National Parks in plant diversity, even though its acreage totals less than 3% of either of the top two (Great Smoky Mountains and Grand Canyon)" (p.14). Such remarkable revelations in "The Conservation of Biological Diversity in the Great Lakes Ecosystem" show that Great Lakes biodiversity is far richer and more diverse than experts had previously thought. Not only is Indiana Dunes National Lakeshore a rose among thorns in the heavily industrialized and populated upper Midwest, but dozens of areas contain viable populations of endangered species, as well as rare yet intact natural communities. In some cases, these natural communities and species here have their best or only representations in the world, the report says.

"What surprised us the most is how many globally-significant elements there are in the system," said David Rankin, an environmental scientist with the Great Lakes Program of The Nature Conservancy and co-author of the report. "We expected to find thirty to forty critical elements and, instead, we found one hundred and thirty-one... Usually the news about the Great Lakes is bad—the toxic-chemical-of-the-month. This is definitely a good-news report about the basin."

Compiled from state and Canadian biological inventory networks, the report identifies 131 elements within the basin that are "critically imperiled...on a global basis"(iii). These include species such as the Michigan Monkeyflower and Indiana Bat, both federally listed as Endangered; Kirtland's Warbler, now limited to a tiny area in Michigan; and the world's last known population of White Catpaw Pearly Mussel. The report also catalogs natural communities characteristic, if not unique, to the region. These include rare northern prairie, called "alvar," containing arctic and temperate plants; the "country's most imperiled savanna communities"; and what's thought to be the world's largest



freshwater delta—the St. Clair River in eastern Michigan (17).

“Of the 131 elements of global importance, nearly half occur exclusively and predominantly within the basin, or have their best examples here,” says the report. For many of these elements, the basin represents their last stand against extinction. Although it is good news that these species and communities survive here, it underscores the urgency of acting now to protect them.

“The big implication I took away from this,” said Rankin, “is that a biodiversity approach restricted to political boundaries—a country or county, for example—is too limited. The ecosystem is much more willing to talk to you. You see better what we collectively need to work on at the local, state and regional levels.”

Rankin considers the report to be a “road map to the ecosystem,” which environmental groups and agencies from the grass-roots to the federal level can use to coordinate their protection efforts. The report should also provide the necessary hard data to give greater clout to the region in competition for finite environmental funds and expertise, said Rankin.

In addition to identifying significant elements in the Great Lakes, the report outlines the greatest threats to the region’s biodiversity. Not surprisingly, these threats are development, water level management, and agriculture—especially along the coasts. Of the 201,000 square mile watershed, 94,000 square miles is surface water—20% of the world’s supply. Once declared “late” in the 1970s because of pollution, this incredible

#### **GLOBALLY-SIGNIFICANT SPECIES AND NATURAL COMMUNITIES**

The report finds 14,000 locations of “high quality ecological communities and rare species” throughout the 201,000 square mile Great Lakes basin.

Of the 131 globally imperiled elements, 31 are rare ecological communities, some of which are unique to this region of the world. These include freshwater marshes, interdunal wetlands, southern fens, forested bogs, barrens, savannas, deltas and bedrock beaches.

Forty-nine plants, some of which live nowhere else in the world, are noted, including Michigan Monkeyflower, Pitcher’s Dune Thistle, Dwarf Lake Iris, Lake Huron Tansy, and Houghton’s Goldenrod.

Rare insects in the region include the Karner Blue Butterfly, Mitchell’s Satyr, and Lake Huron Locust. Twelve kinds of mollusks and nine fish are listed, among them the Salamander Mussel and the Shortjaw Cisco. The five birds identified include Kirtland’s Warbler, whose only nesting grounds in the world are in a Jack Pine forest in central lower Michigan. Three reptiles receive listing, including the Illinois Mud Turtle and Northern Copperbelly Water Snake. One mammal is identified as globally-imperiled: the Indiana Bat.

natural resource has rebounded in recent years. Nevertheless, the lakes’ health and water-dependent coastal systems remain particularly vulnerable to human disturbance, especially as urban sprawl and second-home building gobble up more of the coastline.

One illustration of the ever-tenuous position of the ecosystem can be found in Great Lakes marshes, such as Kagogan Sloughs in Wisconsin. These wetlands serve as important migratory bird stopover points, as fisheries, and as natural cleansers of the lakes themselves. Already rare in the southern Great Lakes, as more of the marshes in the northern half are drained for second homes or dredged for marinas, the lakes lose their ability to purify waters of pollutants. In the long run, preserving these marshes would make better economic and environmental sense than expensive human-made water-purifying schemes. These marshes, along with other sensitive coastal wetland systems and lake plains, contain a “disproportionate amount of the basin’s special biological diversity,” according to the report. Lose the Great Lakes’ marshes and you lose the Yellow Perch which come there to spawn in the shallow waters, the Bald Eagle and Osprey which come to feed on the fish, and the ecosystem’s integrity.

The battle lines for preserving biological diversity in the Great Lakes, as this report notes, will clearly be in the coastal ecosystems. Many grassroots land trusts, such as the Little Traverse Conservancy of Michigan, concentrate their preservation efforts in these places. As Executive Director Tom Bailey notes, the smaller land trusts can buttress efforts of larger entities such as The Nature Conservancy, US Forest Service, and EPA by, for example, getting conservation easements on properties surrounding a biologically-rich reserve. While the surrounding land may not be as ecologically significant as the reserve, it can buffer the reserve from human use around it.

“The Conservation of Biological Diversity in the Great Lakes Ecosystem” represents a major step in coordinating what have been in the past important but disparate efforts to preserve the nature of the Great Lakes. As E.O. Wilson said recently, the key to preserving biodiversity is to “educate, educate, educate” the public. The report does just that, and anyone concerned about Great Lakes biodiversity would do well to get a copy. According to David Rankin, the priority of his office over the next couple years will be to get as much biodiversity information into the hands of grassroots groups as possible—“And to have them use it.”

If you’d like a copy of this report or would like to let Rankin know of your group’s existence, contact The Great Lakes Program of The Nature Conservancy at 79 West Monroe St., Suite 1309, Chicago, IL 60603, (312) 759-8017.

*John A. Kinch (1259 W. Grand River 42C East Lansing, MI 48823) is working on a dissertation pertaining to biodiversity at Michigan State University, and continuing his avocation of environmental writing.*



As people continue to encroach into undisturbed areas, some wildlife species find themselves in human-made, or artificial environments. There are currently Desert Tortoises living on the fringes of expanding suburbs in the Southwest; Red-cockaded Woodpeckers living on golf courses in the Southeast, Bald Eagle sightings in Denver, and Peregrine Falcons nesting on skyscrapers in many cities (as a result of both urban release efforts and natural dispersal). All of these species share two important features. They are dwelling in urban, or artificial, environments; and they are listed under the Endangered Species Act (ESA) as Threatened or Endangered.

The ESA makes no special mention of urban wildlife, nor does it make provisions for protection of individuals of Endangered species who find themselves in cities, by their own or other means. This issue is likely to become increasingly important in the future, and should be looked at carefully. The following examples illustrate the unclear legal status of Peregrine Falcons in urban environments.

In October of 1993, the Las Vegas Nevada Hilton was planning to build a suite on top of the hotel, and so was seeking authorization to *remove*, not relocate, the Peregrine Falcon nest box that the Nevada Division of Wildlife had installed the year before. The nest box atop the hotel was part of the state's efforts to reintroduce this Endangered species to Nevada. The Hilton's request to remove the nest box caused great concern because this pair is presently the only known breeding pair in the state, and was very successful last year (fledging four young from the Hilton nest box). The US Fish and Wildlife Service (FWS) authorized the removal as an "incidental take" in a cooperative agreement between the state and the agency under section 6 of the ESA. This is confusing, since section 6



# Peregrine Falcons in Urban Environments

*A Growing Dilemma for Some Endangered Species*

*by Allison Jones and Peter Stacey*

*The status of  
Endangered species in  
urban environments is  
ambiguous, and the  
extent to which they  
are protected by law is  
poorly defined.*

outlines cooperative agreements that provide for habitat acquisition and other means of conservation, but does not explicitly authorize takings. An official at the FWS regional office in Portland, Oregon explained that the removal was authorized because (a) the Hilton is private property, and (b) it could not be demonstrated that the birds would die as a result of the nest box removal.

Removal of the Peregrines' nesting site was authorized without a permit at all. Indeed, FWS did not even issue a written opinion under section 6 on this matter. To this day no good answers have been given concerning the decision for the nest box removal.

The Las Vegas Peregrine situation is not an isolated incident. It appears that Los Angeles Peregrines may also be suffering from an ambiguous status under the ESA. In Los Angeles, breeders of expensive carrier pigeons and "tumbler" pigeons have, apparently on more than one occasion, shot Peregrines that posed a threat to their pigeons. This is obviously a real blow to Peregrine Falcon reintroduction efforts in southern California. No more releases are planned in Los Angeles, and eggs are being pulled from the nests and sent back to the Santa Cruz Predatory Bird Research Group facility because the release coordinators are worried about the Peregrines' safety in Los Angeles. The alleged shooters have not been brought to court. According to a FWS official in Los Angeles, it is the responsibility of the FWS or the California Department of Fish and Game to bring the perpetrators to court. When jurisdiction is spread out like this, it tends to result in less protection for imperiled species.

The Las Vegas and Los Angeles Peregrines share a common problem. The status of Endangered species in urban environments is ambiguous, and the extent to which they are protected by law is poorly defined. Artificially released, or "hacked," Peregrines are not considered to be "experimental" populations. An experimental population designation means a species undergoes a first-time reintroduction in a certain area, and FWS establishes before the reintroduction that the population will not receive the same protection as other Endangered species. A good example is the upcoming Gray Wolf reintroduction in Yellowstone. If the reintroduction happens, the wolves will be consid-

ered an "experimental, non-essential" population; if they wander onto private ranches, ranchers may legally shoot them. Since Peregrine releases are not labeled as experimental populations, however, these birds should receive the same protection that other listed species receive under the ESA. In fact, section 9 states this explicitly. The situations in Las Vegas and Los Angeles show that these birds are not receiving proper protection.

It is important to note that not all Peregrine Falcons in cities are the result of hacking efforts. Presently, around half the breeding Peregrines in Los Angeles are the result of natural recruitment from rural areas. Cities offer attractive environments for Peregrines. In cities, the Peregrines encounter little competition, pigeons are usually abundant, and skyscrapers offer stations from which to survey and attack prey. That many of the Peregrines in cities have come there of their own accord makes it all the more crucial that protection for these birds be more clearly defined.

As we continue to transform animals' habitat into "people habitat," we can expect to see more and more species living in artificial environments. Some of these will be listed species, and will suffer the same unclear status as the Peregrines described above. Currently, the Endangered Species Act is open for interpretation concerning Endangered and Threatened species in urban situations. We need more dialogue within the biological community on this problem. It's time we clearly define Endangered species' status in not only their natural habitat, but unnatural as well.

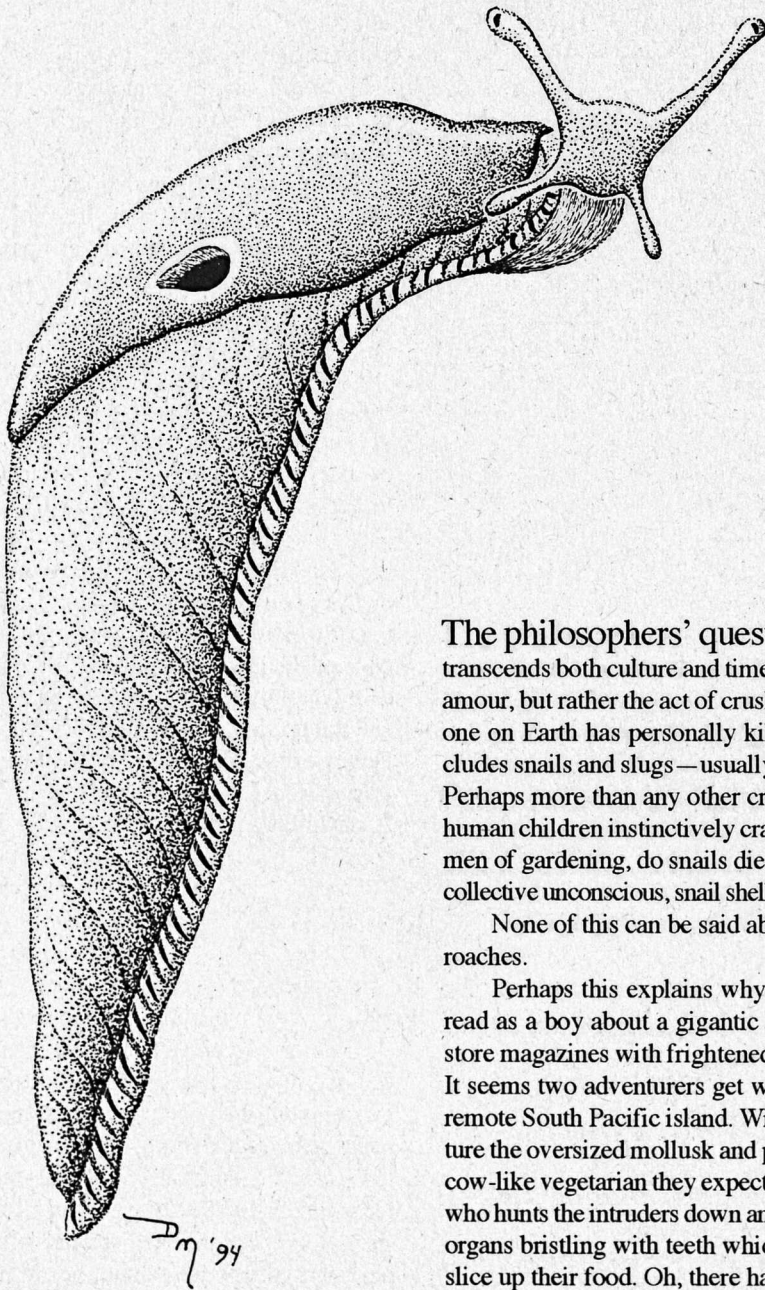
*Allison Jones (Environmental and Resources Sciences, 1000 Valley Rd, University of Nevada, Reno, NV 89512) is a graduate student pursuing an MS in conservation biology. Her research focuses on the effects of cattle grazing on small mammal communities in the Great Basin.*

*Peter Stacey is a professor of environmental resource science at the University of Nevada, Reno. He teaches conservation biology and is currently researching juvenile dispersal patterns of the Mexican Spotted Owl.*



# SLUGFEST

by Christopher Manes



The philosophers' quest for a universal human experience, one that transcends both culture and time, probably doesn't end in religion or aesthetics or amour, but rather the act of crushing a snail. At some time or other, almost everyone on Earth has personally killed a gastropod—the class of mollusks that includes snails and slugs—usually before age ten, and usually just for the hell of it. Perhaps more than any other creature, snails fall victim to the casual slaughters human children instinctively crave. Only later, when youth declines into the regimen of gardening, do snails die for a purpose. But whatever the rationale, in our collective unconscious, snail shells pop underfoot like party-favors at a Jungian ball.

None of this can be said about those other fauna of the Id: rats, snakes, and roaches.

Perhaps this explains why I remember to this day a piece of bad fiction I read as a boy about a gigantic snail. The story appeared in one of those liquor store magazines with frightened blondes on the cover in inevitably torn blouses. It seems two adventurers get wind of rumors about a huge snail that inhabits a remote South Pacific island. With money signs in their eyes, they decide to capture the oversized mollusk and put it on public display. But instead of finding the cow-like vegetarian they expect, the big slug turns out to be a cunning flesh-eater who hunts the intruders down and devours them horribly with its radula—rasplike organs bristling with teeth which gastropods slide in and out of their mouths to slice up their food. Oh, there have been other giant mutant mollusks in pop culture—the 50s B-movie *The Monster That Challenged the World* comes to mind, or Dr. Doolittle's giant pink sea snail—but none you could really root for like this pulp fiction escargot.

Regrettably, titanic, avenging snails creep along the dewy sidewalks of pop culture and nowhere else. As a matter of simple physics, garage-sized land mollusks would collapse under their own weight. Nonetheless, gastropods get revenge against human depredations the old fashioned way: by living well. In particular, malachologists (the biologists who study mollusks) will tell you that snails have the best, perhaps kinkiest, sex lives in nature.

Gastropods are hermaphrodites. Each individual has both male and female sex organs. As a result, every coupling in the world of snails amounts to a kind of monogamous orgy, a *menage a trois pour deux*.

For example, the common garden snail, *Helix pmatia*, the mollusk found in geranium beds and French cuisine, has a love life most people would envy. When an erotic mood strikes, the garden snail and its prospective mate will slowly circle round each other (at a pace of about 17 miles per year\*) for several hours in a sticky, slow-motion polka. Because their eyesight is so poor, they apparently need this ritual to make sure the other snail belongs to the same species.

Then begins the gastropod equivalent of S&M. Each snail prods the soft flesh of the other's underbelly with a "love dart," a calcium carbonate spike about one-fifth of an inch long. Every species generates its own specially shaped love dart, evolution's first marital aid. The love dart stimulates mating by prompting the animal's reproductive pore to protrude from the right side of the snail's head. Unlike human sex, snail couplings allow participation and viewing at the same time.

Spurred to a frenzy by the love darts, the aroused snails mate by intertwining and interpenetrating one another in a gooey orgasm of slime and sperm. The copulation can last as long as three days.

In contrast, human love-making ordinarily takes about fifteen minutes and generally involves only one set of genitalia. ("Speak for yourself!" I can almost hear someone in back shout.) Baboon males ejaculate in under ten seconds. Gorilla love-making is not much better. Given our culture's veneration of sexual prowess, it's hard to see why we consider primates more evolved than snails.

In fact, by any standard, gastropods are one of the most successful classes of animals on Earth. Only arthropods can claim more species than mollusks, and most mollusks are gastropods. Hardly a habitat exists that snails have not colonized, whether the sea floor or the summit of mountains. Even the Sahara Desert—the last place on Earth you would expect to find a mucus-loving mollusk—has its spiral-shelled denizen, *Erminia desertorum*, the Egyptian Desert Snail. The story goes that a specimen of the desert snail's thick white shell was on display in the British Museum shell col-

lection for four years before its dormant occupant decided to awake and look for something to eat.

The key to the snail's success is its shell, a remarkably complex and subtle structure. Composed of calcium carbonate (limestone) assimilated in the gastropod's diet, a snail's shell grows from a mass of white living cells inside the lip called the mantle. Though extremely thin compared to shells of ocean dwelling mollusks like clams, its rounded shape helps ward off attacks from most predators of comparable size. Where snails congregate in large numbers, such as in the waters of Lake Rudolph in eastern Africa, even the tiniest shells can, over time, change local geology, producing limestone strata and altering the Ph of the water.

Snail shells appear in the most unlikely niches of history and landscape. The brilliant limestone finishing stones that once covered the great pyramids of Egypt stood as tribute to the power of the pharaohs—and the fertility of sea snails. The Mojave Desert valley where I live bears the name "Coachella," an early misspelling for "Conchilla," meaning the valley of little conch shells. The desert here once lay at the sea bottom, and wherever you scratch the ground fossilized white sea snails appear. Palm Springs, playground of the stars, is built on dead mollusks.

Few people notice, but most snail shells, like most humans, are right-handed. Malachologists use the term "dextral," meaning the shell coils right from the top in a clockwise direction. A few species are left-handed or "sinistral." Next time you see Rembrandt's 1650 etching of a marble cone snail, notice that the shell erroneously appears as sinistral. Rembrandt neglected to reverse the spiral for the etching, proving that the Dutch Master knew the depths of the human soul better than he did a common mollusk.

Other cultures are less cavalier about the subtleties of snail shells. Hindu sculpture often depicts the god Vishnu with a rare white sinistral shell of an Indian Ocean species called a Chank. The left-handed shell was thought to be holy, so much so that

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days.*

\*They don't pace that long, though.—Ed.



drinking medicine from the sinistral Chank shell supposedly increased a drug's healing powers.

Unfortunately, even a chief Hindu deity cannot save snails from the stupidity of his lesser creation, humanity. Fourteen species of snails are on the US Endangered or Threatened species lists. The Partula Snail at one point was reduced to eight known individuals confined to a terrarium in a biologist's lab. Pollution and habitat destruction are the chief culprits. However, the plight of several varieties of island snails exemplifies the biological havoc wreaked when humans tamper in paradise. The effect of exotic species on the lyrically named "singing snails" of Oahu Hawaii proves the point.

The singing snails (*Achatinella* or "little agate snails") don't really sing. But they once thronged Hawaii's forests in such great numbers that the sound of their shells scraping over tree bark made a rustling audible for hundreds of yards around. The singing snails prospered until the twentieth century when World War II brought a large unwanted relative of the native snails to Oahu.

The relative was *Agatina*, the "agate" snail of Africa. *Agatina* is also known as the Giant African Snail. The size of a papaya, with a shell six inches in height and a body seven inches long, *Agatina* is the largest land snail on Earth. When the Japanese Empire began to sprawl over the South Pacific, its far-flung foot soldiers needed a good source of protein they could easily transport. In typically quirky fashion, the Japanese military decided on the big African gastropods.

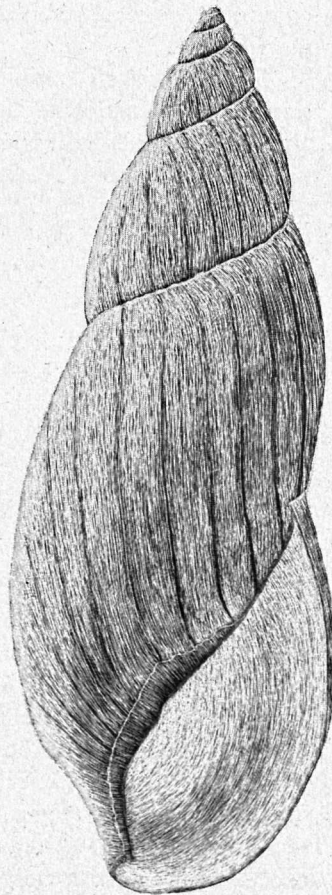
By the late 1930s, *Agatina* had crawled out of the woks of the Rising Sun and into the forests of islands all over the Pacific, including Hawaii (brought apparently by merchants, not soldiers). The Giant African Snail has a voracious appetite, eating everything in sight, even the paint off houses. On Guam, their numbers grew so numerous that their crushed bodies on roads became traffic hazards, the equivalent of ice in less temperate climes. One year the giant snails destroyed virtually the entire tea crop of the Indian Ocean island of Sri Lanka.

Unable to stop these slimy hordes, American authorities began to engage in some half-baked ecological tinkering. It came to their attention that *Achatina* populations in Africa are kept in check by a predatory snail called *Gonaxis*. While only a tenth the size of *Achatina*, *Gonaxis* is a vicious cannibal snail. It attacks the larger snail by cutting the muscle that pulls *Achatina* into its shell. Unable to defend itself, the hapless goliath is slowly hacked to death by the smaller snail's sharp radula. Authorities decided to release *Gonaxis* on Oahu and other Pacific islands plagued by the exotic.

Like the children's song about the old woman who swallowed a spider to catch the fly she had swallowed, the introduction of *Gonaxis* just caused more trouble. *Gonaxis* did indeed reduce the population of Giant African Snails; but it also attacked native snails, like *Achatinella*. Soon people were trying to figure out ways to get rid of *Gonaxis*.

Thus did bad generals, bad cuisine, and bad science conspire to silence the singing snails of Oahu. And the Manus Island Tree Snail, *Papustyla pulcherrima*, not to mention a half dozen other rare gastropod species of the South Pacific that fell victim to the imported *Gonaxis*.

Perhaps I can be excused, then, for still hoping that on some deserted coconut island, my gigantic pulp fiction snail sits curled up in its monstrous shell, pondering vengeance.



DM 88

*Christopher Manes is a lawyer, philosopher, and writer, who pays especial attention to the downtrodden. Previous of his articles for Wild Earth have venerated fungi and jellyfish.*

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# Cryptogamic Doomsday

by David Hogan



*The health of cryptogamic soil crusts...could be the smoking gun in the ongoing grazing debate.*

The importance and the plight of cryptogamic soil crusts are almost universally unrecognized by conservationists concerned with western North American arid lands. Only a few have discovered that the health of cryptogamic soil crusts on Western public lands could be the smoking gun in the ongoing grazing debate.

The principal component of cryptogamic soil crusts is blue-green algae [cyanobacteria], one of the oldest life forms on Earth. Historically, blue-green algae, found in soils throughout the arid West, combined with different regional fungus species to form dense, continuous layers of pinnacled lichen, spreading over vast tracts of land and dominating areas where alkali soils prevented or limited establishment of vascular plant species. Cryptogamics were also abundant in most areas where larger plant species didn't grow, such as between desert shrubs, or filling in gaps of exposed soil in arid grass- and shrub-lands. It is highly likely that native grasses, shrubs, small trees, annual herbs, and cryptogamic crusts formed an almost complete cover over Western arid land soils, allowing for maximum infiltration of even the most severe precipitation (intense thunderstorms), and preventing soil erosion. Today, mature cryptogamic soil crusts have been eliminated from much of nearly all arid Western ecosystems largely as a result of livestock grazing.

According to experts, "cryptogamic soil crusts are prevalent throughout the arid and semiarid regions of western North America" (Anderson et al. 1982). Some surmise that cryptogamic crusts were once prevalent as a roughened, black topsoil cover on land anywhere in the West below the pinyon/juniper/oak (P/J/O) belt, which occurs between 5500 and 7000 feet elevation in the Southwest, and a bit higher farther north. Although it seems likely that cryptogamic soils were also found in the P/J/O ecosystems, the cover of larger shading trees and sometimes thick chaparral keeps exposed ground to a minimum, thus limiting cryptogamic soil cover to grasslands, rocky outcrops, and areas of poor soil quality. Cryptogams are apparently now abundant in sandy soils of riparian areas at all elevations, but this is likely a result of the elimination of once abundant riparian vegetation. Cryptogamic soils were most abundant throughout the Great Basin, Mojave, and Sonoran Deserts of the West, where they formed living sheets over nearly all land that wasn't solid rock or already occupied by vascular plant species such as Creosote Bush, Palo Verde, Mesquite, or grasses and annuals.



The importance of cryptogamic soils is summed up by Loope and Gifford (1972): "Soil crusts formed by algae and other microflora influence infiltration and soil stability...mold and algal crusts increase the tensile strength of soil, prevent wind and water erosion, increase organic matter, resist drought, break the force of raindrops, and colonize bare areas." To expand on these points:

- Cryptogamic soil crusts increase the tensile strength of soil through the interconnection of many billions of separate soil particles into a single unit of topsoil, which may cover many square miles.
- Mature cryptogams form an extremely complex microtopography which, when combined with the presence of vascular plant species, effectively reduces ground level wind speeds. In an undisturbed arid ecosystem, shrubs, grasses, and cryptogams cushion the impact of raindrops; and the porous nature of cryptogams prevents ponding and rainwater runoff. Instead, precipitation is completely absorbed into the cryptogamic surface crusts, and then into subsurface soils. In an undisturbed state, arid land ecosystems were much less prone than now to massive runoff and flash flooding.
- The mere presence of cryptogams increases organic matter. Cryptogams further increase organic matter through the pro-

motion of mosses, liverworts, and other non-vascular plant species. Nutrient fixation by cryptogams also serves vascular plant species, thus increasing the coverage of those species, which then provide for fallen and decaying organic debris.

- Cryptogamic soil crusts support arid land ecosystems through periods of drought by insulating subsurface soils. This insulation slows the loss of moisture and maintains stable soil temperatures. Maintenance of stable soil temperatures and moisture levels reduces stress on surrounding vascular plant species, which in turn support more stable populations of invertebrates, mammals, and avifauna during the drought.
- Cryptogams often colonize arid land soils that are unable to support vascular plant species due to salt content or other factors. Without cryptogams, many Western lands with poor soils remain unvegetated, allowing massive erosion.
- Undisturbed cryptogamic soils support levels of organic carbon and nitrogen 300% and 400%, respectively, greater than those of soils underneath. In effect, cryptogamic crusts "fix" both organic carbon and nitrogen at soil horizons where they are useful to surrounding vascular plant species, and keep these nutrients from being swept away by wind or water.

### The Missing Link

While working recently to restore a riparian area on a small parcel of land—now off limits to cows—in the Burro Mountains of southwestern New Mexico, I became aware that one of the main factors contributing to the decline of the small drainage's riparian habitat was the yearly summertime flash floods that blast through the property from upstream private and Forest Service lands. Based on historic photos and descriptions of nearby riparian areas which have now turned to sand, and the presence of giant cottonwood stumps on our property and others nearby, it became obvious that frequent flash flooding was not natural here. Many factors seem to contribute to the unnatural flooding. Most of the upstream watershed is grazed by livestock, and nearly all of the largest oak trees were cut down earlier this century, eliminating substantial ground cover. Although grassland diversity of plant, insect, and small mammal species is rich on the property compared to outside the fence [where livestock still graze], exposed soil is still common between each bunchgrass. Some bunchgrasses even form small pedestals, indicating that soil between grass bunches has recently been washed away. Although the property has been rested from livestock grazing for nearly ten years, and recovery of the grassland and oak forest is incredible, something is still missing. The important niche once occupied by a substantial cover of mature cryptogamic soil crusts is vacant, and as a result, the ecological system remains unstable.

—David Hogan

To say that Western land managers are unaware of the importance of cryptogamic soil crusts is to woefully understate the problem. At a recent New Mexico Native Plant Society meeting, a lecture regarding the "economic and ecological importance of grasslands" was given by a head biologist for the Gila National Forest. He went into great detail regarding the importance of grass as the ecological base of many Southwestern ecosystems, yet replied "crypto-what?" when questioned about the role of cryptogams. Unaware of or uninterested in the existence of vital cryptogamic crusts, land managers continue to advocate absurd "land management activities" such as livestock grazing. Which brings us to an important point: Substantial mature cryptogamic soil cover is incompatible with the presence of domestic livestock.

According to experts:

*Both cryptogamic cover and number of cryptogamic species are reduced by grazing....if soil stability is enhanced even slightly by biologically induced crusts, the carrying capacity of many arid ranges must slowly but steadily decline through time so long as the grazing treatment precludes the re-establishment of some degree of cryptogamic crusts....any domestic grazing use may prove incompatible with highly devel-*

oped cryptogamic crusts... (Anderson et al. 1982a).

*Our data demonstrated that cryptogamic cover is severely reduced by domestic grazers (Anderson et al. 1982b).*

Although limited information is available regarding the impacts of native grazers on cryptogams, it seems likely that due to co-evolution, native grazers caused little damage to the vast tracts of cryptogams found in the arid West.

Conservationists take note: It is likely that the massive reduction of cryptogamic soil cover has greatly contributed to the loss of more than 50% of all arid lands topsoil in western North America. The reduction of cryptogams will continue to dramatically alter vegetation patterns, and result in unnatural flash flooding, a primary factor in the decline of Western riparian areas. Without healthy cryptogamic soil cover, unnaturally high rates of soil erosion will continue, soil nutrients will be lost, and flash flooding will destroy even those riparian areas where livestock are excluded. In short, desertification will accelerate. The solution to all of these problems is the total removal of livestock from western North American arid lands. **WERF**

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## ORGAN MOUNTAIN / DESERT

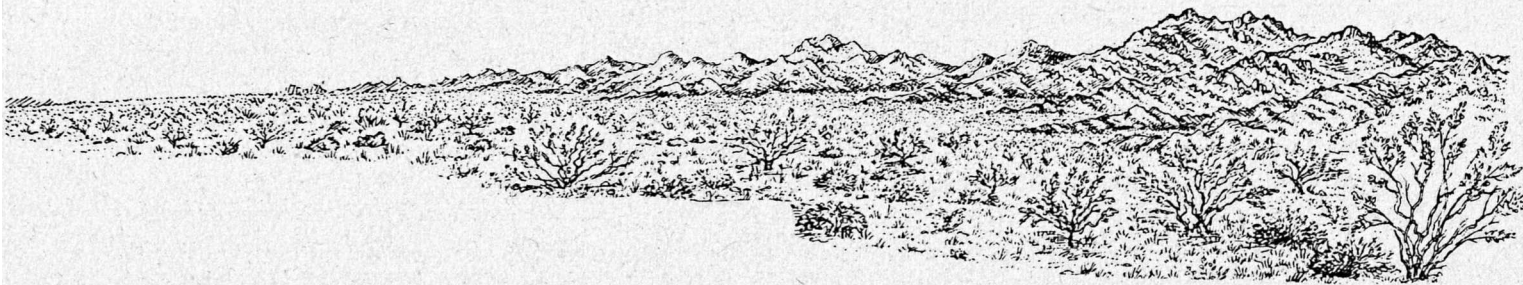
Las Cruces, New Mexico

Listen...old wolves and young coyote pups;  
I came to turn over ghosts / visions  
in turning over stones not looking  
for Mormon tea nor turquoise, a tan  
not even snake skin shed for a belt  
or arrowheads / shards shifting with soil  
as rain opens tunnels into that special antiquity;  
not looking for cities of gold, or the pistol  
which killed Billy the Kid or the blanket  
on which he made love, nor Geronimo's headband.

Few hear the sound of silence,  
noiseless wind passing these mountains,  
or fall of March snow while stars chill night  
and moon stretches broken shadows.  
This astonishing quiet engulfs...  
natural reverence enclosing itself.  
There is turquoise this afternoon,  
night glitters in cobalt, snakes do die  
and leave skin for boys, pictographs  
materialize if you search and for scraggy bushes  
of Mormon tea. But stones do not move  
nor barrel cactus, ocotille, nor this hawk  
feather resting in memorial on the rabbit skull,  
or dew to lick from rocks and thorns.

There is something to carry to Albuquerque  
or Brooklyn, but not arrowheads tipped with  
ancient blood. I wonder if others will find it,  
or the wolves again, the young coyote pups.

—Maurice Kenny





# State Complicity in Wildlife Losses

by George Wuerthner

Management and control of wildlife is largely the responsibility of state fish and wildlife agencies. While federal agencies may manipulate the habitat of wildlife on federal lands, actual "ownership" of the wildlife is retained as a public trust with the state. This is why the state of Alaska can set policies regarding wolf control on federal lands in the state outside of National Park units, and it is why Montana can continue to hunt Grizzlies—a Threatened species—in the Glacier-Bob Marshall Ecosystem.

Unfortunately, most fish and wildlife agencies have an overwhelming bias toward production of "harvestable" species—i.e., the animals one can shoot, trap, or catch. This often means less glamorous or "undesirable" species are ignored or even destroyed to enhance the availability of "game" species.

Nowhere are the failings of state game agencies more evident than in Montana, a state renowned for its abundant wildlife. If that sounds contradictory, let me explain. While the large number of big animals in Montana gives the appearance of abundance, this bounty is relative. Montana, like other Western states, does not have wildlife in the numbers that it could support—given the low human population and potential availability of habitat. Populations of Elk, Pronghorn and Mule Deer have flourished, but they still don't approach their biological potential, in large part due to habitat degradation by the extractive industries—industries the agencies are loath to criticize.

Furthermore, many species not desired by "sportsmen" are extinct or declining toward extinction. Unless we change the way that wildlife and wildlife habitat are managed, recovery of endangered species is unlikely.

In the 1970s the Montana Fish and Game Department, like many game agencies, changed its name, to the Montana Department of Fish, Wildlife and Parks (MDFWP), ostensibly to reflect a broadening of scope and vision. All wild animals, not just species hunted by humans, were to be given equal consideration. Despite the name change, substantive revisions in policy have not occurred. The Department has merely made a few cosmetic changes, such as featuring articles (often of excellent quality) about non-game species in its publication *Montana Outdoors*, as well as hiring one non-game biologist.

Even with catchable native fish MDFWP's record is dismal. The Fluvial Arctic Grayling, Bull Trout, Kootenai River White Sturgeon, and Westslope Cutthroat Trout are nearing extinction while the Department looks on. Of course, it is studying the declines, but it has failed to use every resource available, including legal action, to halt the activities responsible for species declines. Likewise, though prairie dogs are the major food source and create critical habitat for everything from the endangered Mountain Plover to the Swift Fox and the Black-footed Ferret, the MDFWP refuses to halt shooting of prairie dogs, or criticize poisoning programs demanded by livestock interests conducted on federal and state lands.

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*Nowhere are the failings  
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MDFWP officials like to suggest that the success they have had with Elk and deer demonstrates their effectiveness at wildlife management. Yes, the Department has been effective in bringing about recovery of these huntable animals from turn of the century decimation (largely by market hunters), but most of these species are highly adaptable animals (especially deer), that have recovered throughout the United States. Furthermore, due to climatic and topographic factors, Montana has always been favorable to large ungulates, particularly Elk, Pronghorn and deer. In this naturally favorable environment, the state's low human population, and until recently low level of human development, has allowed species we favor, like Elk, to recover some of their former distribution and abundance.

Meanwhile, less adaptive and less glamorous species are falling through the cracks. Bull Trout are declining because of habitat losses and water quality degradation—due to logging, cattle grazing in riparian areas, and stream dewatering—as well as interbreeding with non-native Brook Trout. Many of the same factors are contributing to the declines of Westslope Cutthroat Trout and Arctic Grayling.

Columbia Sharptail Grouse are down to one population because they require ungrazed grasslands—nearly impossible to find in this state, one of the largest beef producers in the West. Swift Fox, a former resident of the state's grassy plains,

has been extirpated as a breeding population due to predator control activities aimed at Coyotes, and the plowing up of native grasslands to grow wheat.

One would think that with the obvious connection between resource exploitation, habitat loss and species decline, the Department would actively oppose habitat destruction. Yet when I queried the Department to learn if they had ever appealed a timber sale, tried to stop predator control activities, or taken a rancher to court for destroying riparian areas or dewatering a stream, I was told the agency had never taken such actions. This despite overwhelming evidence that fish can't live without water, and that timber harvests negatively affect everything from spawning Bull Trout to Grizzly Bears. Even where MDFWP appears to become involved in species recovery, as it is belatedly for the Fluvial Arctic Grayling, the motivation for its actions seems to be mainly one of maintaining management control.

If the MDFWP is to be a wildlife custodian, it must be a wildlife advocate. Many forces are destroying wildlife habitat daily. Yet the Department appears to spend more energy fighting animal rights activists than habitat loss and degradation, except for subdivisions which are easy to criticize.

In fact, MDFWP is hostile to the Endangered Species Act. The Department has repeatedly hindered other agencies and biologists working on endangered species.



When biologist and author Doug Chadwick petitioned the US Fish and Wildlife Service to list the Woodland Caribou as Endangered in northwest Montana, the MDFWP opposed listing, even though historic records as well as recent sightings indicated that Caribou were native to the area. Similarly, the Department has opposed listing for the Fluvial Arctic Grayling even though perhaps only one viable population of the fish survives, in the Big Hole River, and it is thought to number less than 1500.

The Department's behind the scenes lobbying appears to pay off—the US Fish and Wildlife Service (FWS) recently ruled the grayling warranted listing but was precluded since other species were in greater danger of extinction. A petition to list the Bull Trout, also strongly opposed by MDFWP, met a similar fate. The justification the federal agency used to preclude listing both fish was MDFWP's argument that they could bring about recovery without the bureaucratic interference of the Endangered Species Act. The interference the MDFWP fears is being legally forced to confront the state's major economic forces. Dewatering of streams for irrigation by ranchers and sedimentation from logging roads are the major factors contributing to the decline of both the Bull Trout and the grayling. Listing would have given anyone the power to file a suit to force the federal agencies and MDFWP to implement changes in the way livestock production and logging occur. That might have happened this year; for in the summer of 1994 the Big Hole River was dewatered so severely the riverbed actually went dry in several areas.

Opposition to listing of obviously imperiled species is only one bad part of the Department's sordid record on wildlife. When both the male and female adults in the now famous Nine Mile wolf pack near Missoula were killed, orphaning the five-month-old pups, the Fish and Wildlife Service proposed feeding roadkill deer to the youngsters until they were old enough to hunt on their own. Since the MDFWP has authority over wildlife, even dead wildlife it seems, FWS had to ask MDFWP for permission to pick up the road-killed deer. MDFWP refused this reasonable request, lamely claiming they feared the pups might pick up the scent of humans from the deer carcasses and thus lose their fear of people. The Department seemed unconcerned that if the pups didn't get some food quickly, they wouldn't be alive to lose their fear of anything. With no alternative, the Fish and Wildlife Service was forced to shoot live deer on several of its nearby Refuges to provide food for the wolf pups.

The Department's allegiance to sport hunters instead of wildlife is also illustrated by its actions regarding Trumpeter Swans, the large, graceful white birds that once ranged from Minnesota to California. Today, outside of Alaska, and with the exception of recent transplants, nearly all of the 2000 wild Trumpeter Swans known to exist reside in the Greater Yellowstone Ecosystem. Having all their "eggs in one basket" makes them highly susceptible to disease, harsh winters, and other natural calamities. In the late 1980s, Trumpeter Swans were proposed for listing in the Rockies by the Idaho chapter

of The Wildlife Society. The Fish and Wildlife Service rejected the listing request. According to conservationists knowledgeable about swans, the decision was not based on biological considerations; rather, political interference from the Bush Administration at the request of state wildlife agencies and congressional delegations kept these magnificent birds from being listed.

Nevertheless, efforts to ensure the survival of the swans continue, and FWS is attempting to translocate birds and establish new Trumpeter breeding populations to enhance their long-term prospects. One of the best places for Trumpeter Swan reintroduction is the Rocky Mountain Front region of Montana. Here, where the prairie meets the mountains, is a high proportion of state and federal land and numerous shallow, pothole lakes with the reedy habitat preferred by the swans. However, except for one swan pair that naturally reestablished here, swans are not breeding along the Front; and other swans are not likely to recolonize the region any time soon—if the MDFWP has its way. When FWS proposed augmenting the existing lone pair with other breeding-age swans, MDFWP refused to cooperate, reasoning the presence of Trumpeters would preclude hunting the nearly identical Tundra Swans that migrate through Montana each autumn.

Amazingly, MDFWP even opposes recovery of species that do not threaten hunting opportunities. For instance, several environmental groups recently petitioned to have the Lynx listed under the Endangered Species Act. FWS is studying the Lynx's status across the entire northern tier of states including Montana. Despite the Lynx's perilously low numbers (only one was caught in Montana in 1992), the Department continues to allow trapping of the cat.

Similarly the Department demonstrates hostility to Black-footed Ferret recovery. Due to MDFWP's strong lobbying, Black-footed Ferrets may be reintroduced in Montana as an "experimental, non-essential" population—even though they are among the rarest mammals in the world, with less than two hundred adults known to exist, almost all in captivity. This year the ferrets in captivity failed to produce any young. [See Tom Skeele's article "FWS Experiments with Endangered Species" in summer '94 *WE*.]

Bubonic plague recently swept through the prairie dog towns in central Montana where ferrets are to be relocated. Yet, rather than let decimated rodent populations recover, the Department continued to allow hunting of prairie dogs in this area. The number of prairie dogs is declining so rapidly across so much of their current range that some biologists feel that prairie dogs may soon warrant listing themselves.

The MDFWP's hostility to Endangered species is partly a "states rights" issue. If a species is listed, state fish and game departments no longer have complete control over the animal. Many state fish and game departments resent this federal intrusion onto their turf.

The resentment of the ESA is likely also partly because it reflects poorly back on the managing agency. After all, if the

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MDFWP had been protecting wildlife as effectively as they claim, species would not now be nearing extinction in Montana. Nearly every species in Montana proposed for listing as Endangered or Threatened was at one time widely distributed and relatively abundant. Montana's imperiled species have declined largely because of impacts of extractive human activities, including farming, mining, logging and ranching. Though subdivisions are a growing threat, they are still a relatively minor factor in the decline of most imperiled species within the state.

MDFWP does not have control over habitat degradation, but it does have clear authority to advocate protection of wildlife. Being a strong wildlife advocate means using every means available—including legal action, media attention, and support for ESA listings—to protect wildlife. Endangered species status, in turn, can bring to bear legal restrictions on activities that degrade habitat. Public criticism by MDFWP of habitat degrading practices would bring attention to the problems, and give others striving to restrict or reform such activities greater credibility and clout. If, for example, the MDFWP appealed timber sales on the basis that they harm Bull Trout or Grizzly





Bears, it would support the similar contentions by citizens and environmental groups.

To understand why MDFWP is reluctant to criticize the logging, ranching, farming, and mining industries, we need to look at how the Department gets its funding as well as its underlying assumptions. Like other state fish and game agencies, MDFWP gets most of its operating funds from the sale of hunting and fishing licenses. Thus any reduction in hunting or fishing opportunities translates into a funding loss for the Department. Since the first goal of most bureaucracies is to preserve themselves and their jobs, anything that might reduce hunting or fishing license sales is viewed unfavorably by the agency. Since ranchers, farmers, and timber companies own the bulk of Montana's landbase, hence control access to a disproportionate number of the state's hunting and fishing opportunities, the MDFWP is reluctant to assume an adversarial role.

MDFWP may feel even more pressure to appease extractive industries than other Western state fish and game agencies. Montana has a smaller proportion of public lands than other Western states, with only 30% in federal or state ownership. Much hunting and fishing within the state depends upon access to private lands—which would be restricted if MDFWP and sportspersons were seen as antagonistic toward extractive industries.

Funding is only part of the problem, though. Philosophically, many who work in the MDFWP are more closely aligned with resource exploiters than with preservationists. After all, wildlife is typically viewed in our consumer society as something to be "harvested." This commodity view of wildlife is widespread within state wildlife agencies and permeates their language, as when they talk of "surplus" game and the need for "resource" management. A 1994 attitude survey published in the *Wildlife Society Bulletin* of The Wildlife Society, the professional organization that represents many wildlife biologists, found that the majority had "utilitarian views" of wildlife. Not to suggest that the people within these agencies don't appreciate the aesthetic and other non-consumptive values of wildlife, but when push comes to shove, most agency personnel will find they have more in common philosophically with the logger or the rancher than the wildlands advocate or animal rights activist.

Politically, too, state game agencies are tied to resource exploiters. Many policy decisions are dictated by fish and game commissions. These are usually politically appointed and generally do not reflect the values or desires of the public at large. The commissions of most Western states are controlled by resource extraction industry members. Montana's fish and game commission is dominated by ranchers.

This critique is not meant to be an overall indictment of hunting and fishing, nor of hunters and fishers. Many of these people have contributed to the recovery of wildlife populations and acquisition of habitat. Many of our conservation traditions, from National Parks to National Wildlife Refuges, were established with the support of enlightened hunters and fishers.

Nevertheless, maintaining huntable and fishable populations of a select few species does not ensure preservation of biodiversity over the long run. A broader vision and a broader representation of citizens by state wildlife agencies is needed.

No doubt as fewer and fewer people hunt, agencies dependent upon license sales for their existence will find they must modify their agenda to include a greater diversity of wildlife interest groups if they are to survive. Some state wildlife agencies have already begun to broaden their support base, expanding their activities for endangered species and non-huntable species, to reflect society's widening concern for wildlife.

Of course, state wildlife agencies are only part of the problem. Reforms of land management agencies and many other bureaucracies are equally essential aspects of biodiversity preservation. Nevertheless, changing the attitudes and actions of state fish and game departments has the potential to reverse the declines of many "non-harvestable" species.

One incentive for change could be increased public financial support of state wildlife agencies to achieve broad-based advocacy for wildlife. This might involve a tax on all outdoor recreational equipment, with proceeds going to wildlife and park departments. At present a tax on fishing and hunting equipment helps fund many wildlife projects. Broadening the array of taxable items could generate huge sums of money to fund wildlife agencies.

Another funding mechanism might be "impact" taxes on exploitative industries. Any industry that damages wildlife habitat would be taxed. Given that most destructive activities can benefit some wildlife—rabbits and deer sometimes increase after logging, for example—the tax should reflect impacts on all native wildlife. If the activity enhances numbers of abundant and adaptable species at the expense of rarer or more habitat specific species, the tax would be proportionally higher—although in no instance should any activity be permitted to jeopardize a species. Funds collected would be directed toward wildlife habitat acquisition and protection. Obviously, we should also start giving complete protection to the habitat of threatened and endangered species.

These are only a few possible reforms. Until agencies are reformed, decline of many wildlife species will probably continue even in relatively unpopulated states like Montana. **WERF**

*George Wuerthner is a wildlife biologist, wilderness explorer, and author. He has written 15 books. His latest is California Wildlands.*

# How to Burn Your Favorite Forest

## *A Primer on Natural Fire*

by Ron Steffens

Each of us has a mountain, a forest, a grassland, a desert, a savanna that we love for its wildness. We want it to stay natural. What we love we call Nature; yet if we love it enough, if we love the inscrutable force of a particular place and wish it to remain wild, then we may have to watch it burn.

Look at the mass of the American landscape, both public and private—from Alaska to the Everglades, from the hills of southern California to those of Arkansas, from Arizona to Alabama, from Montana to Maine—and more often than not you will see an ecosystem shaped by and dependent on a recurring cycle of fire. Ponderosa and Lodgepole Pine, Quaking Aspen, Giant Sequoia, sagebrush, prairie, the bogs of Alaska, the Longleaf Pine of the Southeast, the oaks of the Ozarks, the pinewoods of New Jersey and the spruce of Canada...all burn, with fire cycles from two years to 500.

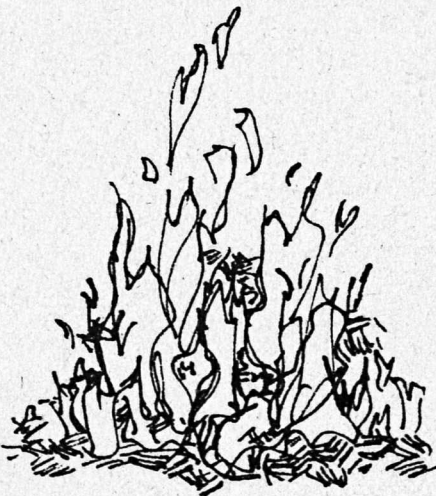
The 1988 fires in Yellowstone and the 1991 Oakland fire should have reminded us that a fair proportion of the North American continent is combustible. Yet in the week prior to the Los Angeles wildfires of 1993 (not to be confused with the riot-fires of 1992), a crew of fire experts were flying the hills of Santa Monica, videotaping examples of our talent for building against Nature rather than with it. Houses were laddered up steep inaccessible slopes and lodged at the heads of canyons which form natural chimneys. Combustible exotics trailed fuel from wild vegetation to flammable rooftops.

This was meant to be a precautionary film, aimed at preventing a future disaster in what firefighters call the “urban-wildland interface.” A week later these houses were ash and the networks were filming an inferno.

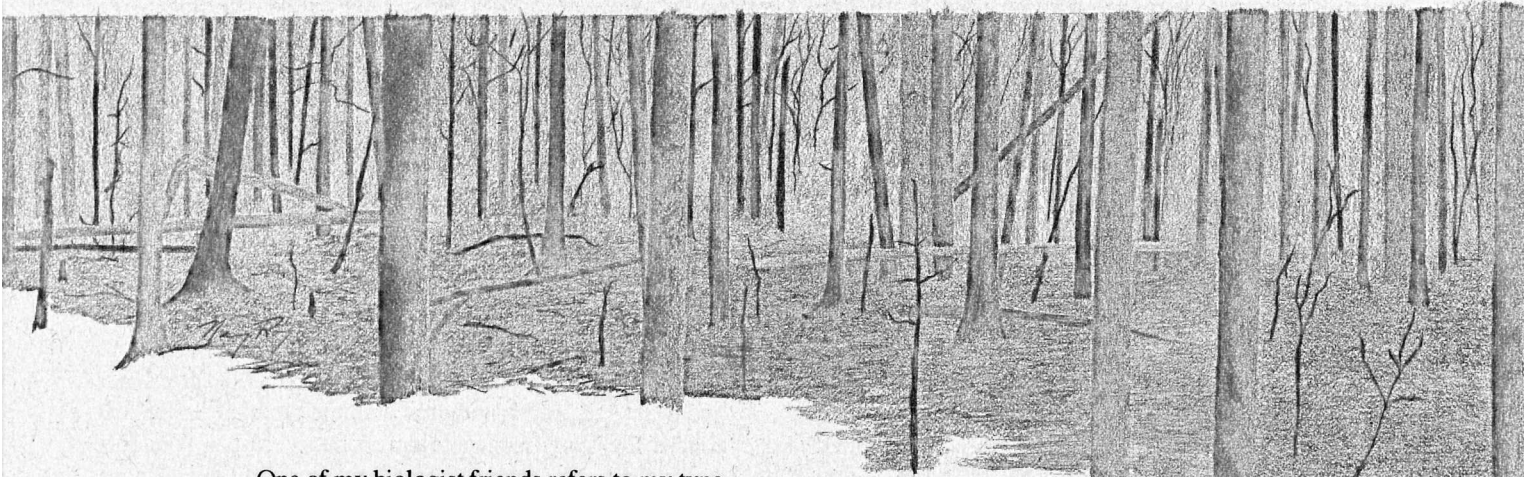
The fires of L.A., of course, were not entirely natural. The habitat and Santa Anna winds are native; the arsonists and overcrowded hillsides offer extreme versions of humanity. So blame lies in our court; particular blame might be aimed at the neighborhood association that stopped a prescribed burn which would have reduced the dead fuels that collect when you put out all the natural fires.

The more you disturb a mountain, the more likely you are to spawn a disaster. A logged mountain is apt to be burned to rid it of a huge tonnage of curing slash. A scraped and subdivided mountain, with encroaching brush and decades of unburned fuel, is harder to treat with prescribed fire and nearly impossible to protect when a 50 mile-per-hour wind is pushing fire up its slopes.

If we are to properly celebrate Nature we must celebrate the agents of natural transition and renewal, be they hurricanes, floods, earthquakes, volcanoes, meteorites (a large one of which may have precipitated the Cretaceous mass extinction), or wildfires (which have been occurring, according to fossil charcoal, for 375 million years). I'll focus here on wildfire, as it is more predictable and user-friendly than meteorites or volcanoes, and because it keeps me in the mountains each summer.







One of my biologist friends refers to my type as pyrologists. My vocation is wildfire, natural and prescribed. Such fires can be terribly destructive and if a fire needs to be put out—if homes are threatened, if decades of fire suppression have created an unnatural tinderbox—then I'm as gung-ho as any fireline grunt to stomp out the flames. But my sympathies lie with natural fire. When lightning strikes a snag, I track the smoke and monitor the behavior of the resulting fire. If the fire meets the right criteria, I urge my superiors in the National Park Service to call it a PNF, a prescribed natural fire.

PNF is jargon. So is MIPF, which stands for Management Ignited Prescribed Fire, more commonly called a prescribed burn.

Jargon, as Orwell taught us, is too often a tool of technocratic fascists. In this case, though, the dull acronyms might allow a reticent bureaucrat to say yes to natural fire, since our traditional synonyms for natural fire, ranging from *wildfire* to *holocaust*, tend to discourage courage.

Unfortunately, if you want to have any input in the return of fire on public lands you need to speak this jargon. Call up the local FMO (Fire Management Officer) to ask how many PNFs the district had last season and the FMO may listen. Call up and accuse Smokey Bear of being a propaganda flunky for the forestry industry and the FMO will stare out the window, wishing that he or she was out in the field planning the district's next prescribed burn.

Like most wildland issues, natural fire is part science and part politics. So you need to speak the jargon of both fields if natural fire is to return to the land you love.

Start with a search for good science, which may not be immediately obvious in your local bureaucracy. In most land agencies are dedicated practitioners of field ecology, often invisible to the public. Take a hike with the local fire ecologist. He or she may not wear that exact title. Ask your firefighting friends and they'll steer you to someone—who might be labeled a firefighter or range-

conservation specialist or assistant FMO or emergency services coordinator—who is at heart a pyrologist.

Ask about the fire return cycle, which is sometimes estimated by collecting a local fire history, wherein someone cores live trees and saws sections from scarred stumps to figure the frequency and intensity of natural fire over the last few centuries. If a fire history hasn't been done, volunteer to do it yourself. You'll count a lot of tree rings but you'll also see a lot of good country, since fire-scarred stumps are often found on the remotest hillsides. Plus there's no better way to corrupt your local bureaucracy than with free labor.

Whether your research is in the field or the library, you are looking for fire frequency, also called the fire return cycle: the number of years in which a habitat completes a cycle of burning, sprouting, growing, dying, burning, and resprouting. You're also looking for fire effects: Does aspen require a hot fire to resprout? Does Ponderosa require frequent cool fires to create a mixed-age forest? Taken together, these variables are often labeled the "natural fire regime," which will vary according to habitat types, soil types, fuel types, rainfall, snow depths, elevations, steepness and aspect of slopes, drought cycles, wind patterns, and other climatic, topographic, and biologic factors.

Though fire regimes vary greatly even within regions and from north-facing to south-facing slopes, there are accepted generalities. Sagebrush in Wyoming, for instance, has a historic fire return cycle of 15-50 years. When it burns, barring such disturbances as cattle grazing or Elk overpopulation (a problem since natural predators of ungulates have been reduced or extirpated), it is replaced by annual and perennial grasses which provide a flush of nutritious and consistent forage for wildlife. After 10-25 years, the sagebrush has returned, dead stems have collected, and the habitat is increasingly susceptible to fire.

Douglas-fir, which edges down toward the sagebrush in parts of the Rocky Mountains, shares a similar fire return cycle and the trees are adapted to surviving hot, fast ground fires. Climb 500 feet up the mountain and you'll find Lodgepole Pine, which has adapted to catastrophic stand-replacing fires (e.g., Yellowstone in 1988), with a fire return frequency that ranges from 100 to 500 years.

*The concept of implementing a policy of natural fire may be straightforward, but its application is intricate, even dangerous.*



The Northern Rockies burn in August. Far to the south in the Ponderosa Pine of Arizona, fire burns in early summer, paced by the arrival of the monsoon lightning and roughly following a seven-year drought cycle that is in turn influenced by the El Nino current off Chile. With sky-islands surrounded by desert and a regular cycle of drought, fires creep through the undergrowth as frequently as every 5-10 years.

Fire effects are equally various. While fire-dependent species have adapted to fire, it would be simplistic and disingenuous to say that the effects of all fires are good, given a century of human-caused fuel buildup. Adding to this dilemma are the potential effects of global climate change; soon we may be deciding how to manage habitats threatened by droughts and fires that are distinctly unnatural. However, braving simplicity and begging innumerable exceptions, I will argue that the effects of your average lightning-ignited fire are ecologically correct.

The ground-truthed reality of most fires is hardly as horrible as Bambi and Smokey would have us believe. Much of the day a fire may creep so slowly through the duff that an hour afterward the ants will come out and ruin your picnic. Often a fire will crawl through the duff in the morning and then torch a few acres of trees in the afternoon, creating a wonderful mosaic of old and new habitat. Soon the ash fertilizes fresh forage. The crowd of young trees has been thinned; and the survivors, released from competition, grow eventually into a cathedral forest. The standing dead trees become feeding stations and nest sites for woodpeckers, bluebirds, rodents, weasels, and bears. Even crown fires, which seem so completely destructive as you run off a mountain swept by flame, are often patchy, leaving a wet north-facing slope untouched while searing the south, and hop-skipping over entire canyons.

My evidence is partly anecdotal. I've watched thousands of acres burn—and then, an hour or a day later, walked among the smoldering logs to see Mule Deer feeding on par-broiled shoots, Red-tailed and Zone-tailed Hawks circling over mice, a Black Bear tearing open freshly exposed logs; and with the first rain, the black ash explodes into a meadow of wildflowers and grass.

I have monitored natural fires, ignited prescribed burns, and fought old-fashioned wildfires in the cactus and grasslands and Manzanita brush and oaks and piney mountains of Arizona, in the dense Lodgepole and open sagebrush of Wyoming and Idaho, in the hardwoods of Missouri...and everywhere, afterward, the habitat comes to life. Often it is different life, which we might denigrate because of our own fear of fire, but a mountain shifting from growing trees to charred stumps is a mountain more alive and changing than any human institution.

It is quite human to mistake fire as death. Fire return cycles match or outlive our own sense of life, so when a mountain burns, every 50 or 100 years, it may remind us of our own mortality (or, if you're a logger, of missed opportunities). Our religions may profit in metaphors of rebirth, but to judge our mountains with religious metaphor tends to shortchange them. A well-watched mountain is certainly an inspiration; but unlike most religions, which promise some form of mystical life after death, a mountain delivers a verifiable life from death. It burns, a part of it dies, a part of it is reborn.

It is also quite human, even with all the reassurances of ecology and spirituality, to want to keep your mountain green. In the Rincon Mountains of Arizona I have hiked the steep North Slope, dark with ancient Douglas-firs and chock-full of fallen logs, and I have dreaded, anticipated, predicted the path of the fire that will one day sweep from down below. Sometimes I have monitored slow-burning fires on this mountain for weeks. Other times I have cut firelines to stop small blazes from entering these trees, and I've led fire crews up cliffs and against hellish flames to stop a huge up-canyon blaze from sweeping into this forest.

Someday, though, in my life or my daughter's, the North Slope must burn (and this past summer, nearly 20,000 acres of this mountain burned because it was the right time for it to burn—but the North Slope didn't burn...not yet). The toughest question facing fire managers these days is, when? To allow a naturally ignited fire to burn, or to light a prescribed fire in the right conditions, might reduce the fuel loading and return a stand of trees to its natural fire regime. But in cool conditions the fire may not even start; in dry conditions it may turn the slope to ash. The risks of natural fire, to both a forest and a career, are huge; the rewards are often invisible for 50 years.

The concept of implementing a policy of natural fire may be straightforward, but its application is intricate, even dangerous. Natural fire policies are finally being written into Fire Management Plans in many parks and forests throughout the country, but the plans are not always applied. Be prepared to face stonewalling bureaucrats. Politely ask how much of the



local budget goes to fire suppression, how much for prescribed and natural fires.

Of course, these moneys often dovetail, which makes meaningful public input difficult. If you plan to test your local bureaucrats with tough questions, be prepared to answer some questions yourself. If we fight to halt logging of old growth, can we then turn around and say we want natural fire to burn in old growth? Should isolated old-growth stands in fragmented landscapes be allowed to burn? Can we compromise with New Forestry advocates in order to blend low-impact small-scale logging with natural fire to create a more natural cycling of habitat?

The Forest Service needs to reform (and often curtail) logging and mining and livestock grazing on the National Forests. Ecological restoration, with fire as one of the tools, might fill in the bureaucratic vacuum and provide local jobs. Yet if we reform forest management to protect habitat for wildlife and recreationists, we might only recreate the crown jewel National Parks syndrome, wherein paradise attracts crowds who love the land so much we pave it for them. Tourists are fascinated by the flames and sympathetic to the pageantry of the fire return cycle. Yet let a natural fire burn a few weeks and these same tourists (and those who make a living off them) will begin complaining about smoke and charred trees. And in many regions, the time to burn is also high season for tourists.

No matter what the bureaucracy, the people sorting out these questions—FMOs, park superintendents, forest district supervisors—hear more often from lovers of strictly green forests, or logged forests, than from those who support a natural fire policy. I can attest, having chatted often enough with my bosses, that a new generation of middle managers is eager for the challenge of ecologically responsible management. But the bosses, in the bureaucracy and out, from county politicians to congresspeople, need to hear from those less partisan than the professional pyrologists. They need to hear citizens, lots of them, who support the potentially uncontrollable (and therefore politically dangerous) process of natural fire.

Your efforts may be fruitful if you play off your advantages, one of which is money. Fire management, whether suppression or prescribed natural fire, is funded largely from a national pool, with local budgets based on history of past fires rather than local politics. Fire money is managed locally but does not come directly from the district's operating budget. Therefore, any money a local district gets is like a Christmas check from a relative—it may arrive each year but the amount is usually a surprise. So when you argue for natural fire, you aren't asking a local manager to give up his or her local funds. Playing this budget game, however, requires consistent prodding of distant and anonymous budgeteers, which is often the task of the local pyrologist whom you are prodding.

A second advantage that should support a move toward natural fire lies in the demise of more traditional milk-cows. Timber budgets are down in the Forest Service; the Park Service talks of shifting its funding priorities toward resource management instead of visitor protection and entertainment;

and bureaucrats look to the national fire accounts for money to keep their parks and districts staffed. When faced with stalled budgets and shifting priorities, a fire budget may be the ship leaking the least. So we may see a renewed interest in fire. And much of that interest may lean toward natural fire. Numerous official bulletins were issued during the 1994 season to explain the extreme fire behavior: one reason other than drought was the huge amount of fuel buildup that has occurred due to past decades of total fire suppression. The implied solution to extreme fires (and the way to prevent deaths of firefighters caught in such firestorms) is natural fire.

A fiscal argument for natural fire can also be made: often it is cheaper to manage a fire with natural boundaries than to mount a 500-person attack with slurry bombers and helicopters. This is a complicated argument and can easily backfire, because a fire, once declared a PNF, may burn for weeks or months. Putting it out when it starts, the fire managers control ten acres. In the right conditions and for roughly the same investment, they can allow the same fire to burn for two weeks and spread to 1500 acres and it may put itself out. Or in the third week the winds may shift, the drought indices turn extreme, and the pyrologists call in squadrons of hotshot crews and slurry bombers to contain a very costly fire.

Despite the risks, a well-managed natural fire program can cut the costs of fire. Allow natural fire some rope and fire managers can get by with fewer hours on the helicopter and call in fewer hotshot crews (at \$2800 per day). Even when they must suppress a fire, they can use natural fire barriers—ridges, rivers, a shifting wind, the winter's snow—to lessen the impact of control, and its costs, while still containing the fire.

The operative term here is "well-managed." A truly natural fire policy, where every lightning-ignited fire becomes a free-roaming agent of change, is no longer feasible in most regions of the lower 48 United States. At present our best hope is to live within Nature, seeking a balance that neither destroys it nor allows it to destroy us. Some fires must be put out—as quickly and safely as possible—if we are to avoid the human tragedies of an Oakland or Los Angeles.

Even in settled areas, though, fire cannot be eliminated; put a small fire out and you simply postpone the tragedy. With a proactive natural fire policy, setting a prescribed burn on one hillside and then the next, you might create fuel breaks to protect our misplaced houses. You might also remind the interlopers that there are boundaries determined not by man but by Nature. There are mountains owned by fire; just as there are habitats that feed us and comfort us—Eastern oak forests, open pine woodlands, grasslands—which we have managed with human-ignited fires for thousands of years.

These days, most large areas of open land are managed by bureaucracies, not wandering tribes. And within such bureaucracies, natural fire can be liberating. Fire crosses boundaries, thereby forcing bureaucrats to cross their usual boundaries. In the Greater Yellowstone Ecosystem, game and fish departments, the National Park Service, and the Forest

Service are beginning to cooperate on prescribed burns and PNFs. Unfortunately, a natural fire needs permission to cross from one jurisdiction to another. If the next jurisdiction doesn't want it, we have to try to put it out.

Without doubt, natural fire is frustrating. If you accept the challenge of helping a natural area regain a natural fire regime, be patient and supportive. I have spent weeks planning a prescribed burn only to have it rained out for two seasons in a row. I have watched advocates within the bureaucracy curse the slowboat politics of natural fire, the lack of money, the ultimate frustration of weather.

Be patient and Nature will show the way. Lead a field trip into a burned area and show the local activists and media what happens after a fire. Remember, even the most experienced among us can be dismayed by fire. A Tucson reporter, who is otherwise an exemplary environmentalist, once toured a huge fire in the Rincons and mistakenly conveyed the circling of a hawk as sorrowful hunger. Most likely he was watching a Zone-tailed Hawk, which tilts its wings and mimics a vulture. With ground cover burned off, this hawk was eating very well, I'm sure.

The reporter's mistake, and ours, is one of transferal. Bambi, I'm afraid, lives within our communal soul. Fire seems bad because we see it as symbolic of our own propensity for environmental destruction. But as long as fire remains a scapegoat, our mountains and plains and rural woodlots will remain a cartoon landscape and Smokey Bear will replace Grizzly Bear.

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## Near Truckee

People keep coming  
to this place,  
which could be anyplace  
in the west, these days.  
Except it's my home,  
where I was born  
just off the interstate,  
ran my first race,  
drank carrot juice from a straw,  
picked wild raspberries,  
watched my mother die  
as trees were cut  
in our secret place.

People with U-Hauls,  
putting up houses  
like tinker toys,  
as if they will last,  
as if owning land  
will buy them a place  
in forever.

There are flowers here,  
in this field,  
and down the road  
hammers fall on nails  
like the rain of foreboding,  
closer all the time  
to the heart of me,  
as if I can go on  
without my past,  
as if the blooms  
mean nothing.

Everywhere it's happening,  
this coming like flies  
to a carcass.  
My father bitter  
for the loss of the sugarpines,  
his wife, his family  
spread like pollen  
over crowded desert,  
the land aching from  
the weight of it all.

—Colin Chisholm



# The Red Maple *Acer rubrum*

## Bearer of Our Sins

by Robert Leverett

### INTRODUCTION

In the fall 1992 issue of *Wild Earth* I wrote an article entitled Sugar Maple: Most Northern of Hardwoods. I chose the Sugar Maple instead of the Red Maple, believing most people prefer the former as the symbol to which they can better relate. Though it didn't occur to me at the time, my perception of "what people think" was inordinately influenced by old-time New Englanders, particularly landowners, and resource managers. Members of these groups often possess above average knowledge of trees, in a wood products sense. They typically rate the Sugar Maple superior to the Red Maple in just about every category; e.g., sweeter sap for syrup production, greater lumber value, more desirable for landscaping.

Though the Sugar Maple will always be a favorite tree of mine, I have been suffering from pangs of conscience. It is now time to pay due respect to *Acer rubrum*, the Red Maple. For not only is the Red Maple a noble tree, it provides us a portal through which to view the past, present, and probable future of our Eastern forests.

### CLASSIFICATION

*Acer rubrum* is the state tree of Rhode Island. Common names for the species include Red Maple, Scarlet Maple, Swamp Maple, Soft Maple, and Water Maple. The Onondaga Indians (one of the nations of the Iroquois Confederation) of New York call the Red Maple "Ah-wah-hot-kwah"—the red flower.

Over the past 100 years, due in part to variant leaf shapes, sub-species of the Red Maple have been declared. However, apparently none of the forms have shown sufficient stability to warrant botanists permanently classifying them as distinct.

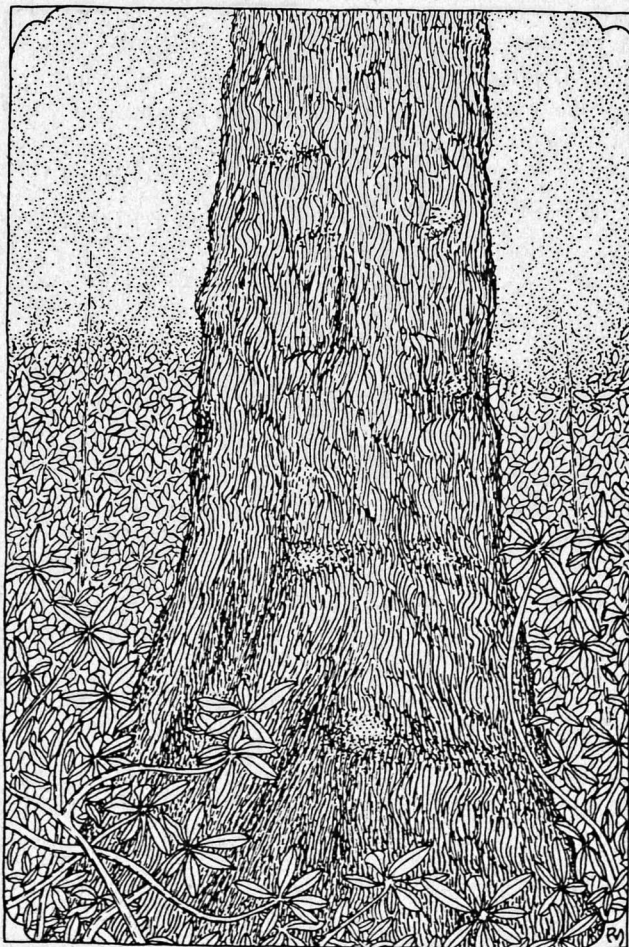
### PHYSICAL DESCRIPTION

The wood of the Red Maple is rather soft for hardwoods, considerably softer than Sugar Maple. By most descriptions, Red Maple wood is not very strong. Some descriptions of the species emphasize these weaknesses. In *A Sierra Club Naturalist's Guide: Southern New England*, Neil Jorgensen describes Red Maple as: "relatively short-lived, its wood is subject to rot, insect attack, and ice storm damage." Jorgensen's description is supported in Elbert Peets's *Practical Tree Repair* in which he states: "The red maple, as has been said, is subject to frost cracks." Peets further points out that "The red maple often shows long shallow wounds in the upper limbs, the result of the tearing out of minor branches."

*For there is not  
a just man  
upon Earth,  
that doeth good  
and sinneth not.*

—Ecclesiastes 7.20





• Red Maple - *Acer rubrum*

At 38 pounds per cubic foot, Red Maple wood is moderately heavy, midway between the density of Silver Maple at 32 pounds per cubic foot and 43 for the Sugar Maple. The Red Maple's wood is described as somewhat elastic, making it suitable for special uses like boat oars. Similar to other maples, the arrangement of the Red Maple's woody fibers can lead to something called curled and birds-eye varieties.

The bark of the Red Maple is smooth and gray on young trees, browner and furrowed on older trees, and shaggy with a characteristic upward curl on the oldest trees. Leaves are pale to dark green above, whitish-green beneath, 3 to 5 lobes, unevenly toothed, and commonly from 3 to 4 inches in length. However, leaf lengths can vary from 2 to 8 inches. The Red Maple exhibits a wide variety of leaf forms, even on the same tree—even on the same branch.

Leaf stems are 1 to 3 inches long. The twigs and buds are reddish. The bisexual flowers are red (yellow on occasion) and come in short clusters. On some trees male and female clusters are separate. On other trees clusters are restricted to a single sex. They appear during the spring from March through May depending on the climate. The small reddish fruits are about an inch long. The wings diverge at an angle of 50 to 60 degrees. The fruit appears from the period of May to July, again depending on the climate. The Red Maple is one of the few northern hardwoods that produces its seeds in the spring or early summer.

With reddish twigs, buds, and fruits, red flowers and brilliant red fall foliage, it is easy to understand why the tree's common names, Red or Scarlet Maple, are apt.

#### SIZE AND AGE

The Red Maple is described in most tree books as a medium sized tree 40 to 60 feet tall and on occasion 75 to 80. Height limits are usually placed at near 100 feet with such numbers achieved on only the most favorable growing sites. However, Volume III of *The New Nature Library on Trees, Mosses and Lichens* by Julia Ellen Rogers lists the Red Maple as capable of reaching 120 feet. Trunk diameters are commonly listed as 1-2 feet and occasionally up to 5 feet. Today, few people see Red Maples of large dimension; but in truth, all the above statistics understate the capabilities of the species.

Some sources of silvicultural data list the life expectancy of the Red Maple as between 150 and 200 years with a maximum of 350. Other sources indicate that the species is short-lived. In *The Complete Trees of North America: A Field Guide and Natural History*, Thomas Elias states that the Red Maple may live 75 to 100 years.

#### RANGE AND ADAPTABILITY

The range of *Acer rubrum* is remarkably broad. It inhabits a wider range of soils than its sister species. It is commonly listed as ranging northeast to Nova Scotia, northwest to Minnesota (and even the Dakotas according to one source), southeast to Florida, and southwest to eastern Texas. It climbs up the mountains of Vermont, New Hampshire, and Maine to 3000



feet. It grows up to 6000 feet in the southern Appalachians. So broad is the range of the Red Maple that it cannot be used effectively as an indicator species for forest types, with the possible exception of Red Maple swamps in the Northeast.

In current day New England, the Red Maple commonly populates wet areas near streams, but can be found sprouting prolifically in what until recently were old fields. *Acer rubrum* is equally adapted to moderately moist uplands. In fact it is hard to find areas in the East where Red Maples don't grow. In the Northeast, Red Maple is often a minor component of hemlock-spruce and hemlock-White Pine forest communities.

The Red Maple's wide adaptability and large niche in the Eastern forest ecosystem stands in contradistinction to many people's perception of it. In the Northeast, people often think of it as a wetlands species, but its propensity to repopulate disturbed areas, including old fields, and even to thrive on dry upland sites is testament to its adaptability.

Red Maple regeneration after logging can be prolific. Un-sightly stump sprouts characterize areas of regrowth. Multiple-stemmed trunks often signal land that has been cut over many times. Sprouts are thickest on smaller stumps, diminishing in number with increased diameter. Studies in the White Mountains of New Hampshire indicate that sprouting is most prolific on stumps 8 to 10 inches in diameter. The coppicing pleases some timber harvesters. They see extra boardfeet in the multiple stems, but dense stump sprouting often produces stems that are individually inferior, more subject to early rotting.

### USES

The Red Maple has a long history of use. The wood is used in various kinds of construction and is considered a fairly good fuel. However, as a timber tree, Red Maple has been judged inferior to many other species.

The birds-eye variety of Red Maple is particularly valued for interior furnishing of rooms. In her excellent book, *Our Native Trees*, Harriet Keeler mentions that birds-eye maple was prized for railway-cars and even steamship saloons. These uses were in vogue during the time Keeler wrote her book.

Native American uses for Red Maple paralleled those for Sugar Maple. Though the sap of the Red Maple is not as sweet as that of the Sugar Maple, the former was tapped in colonial times in some parts of the Northeast.

### RED MAPLE'S EMOTIONAL IMPACT

Notwithstanding the Red Maple's less than perfect score as a lumber species (lessoned further by over-cutting), few trees can evoke deeper passion in bonafide tree lovers. Because of its early flowering in spring and brilliant foliage early in the fall, it has prompted much verse. In *The Tree Book: A Popular Guide to a Knowledge of the Trees of North America and Their Uses and Cultivation*, Julia Ellen Rogers includes an excerpt from a poem by Lowell about the maple. In her words, "Who shall know the Red Maple better than this poet of New England?" References to the Red Maple can be found in the writ-

ings of such personages as Henry David Thoreau and Ralph Waldo Emerson. In *Our Friends the Trees*, Dr. P.G. Cross effusively praises the Red Maple: "Another important maple is the red flowering, or Scarlet Maple (*Acer rubrum*), of all maples, the most gorgeous, for both in early spring and in early autumn, this noble tree emblazons the landscape with its blood-red foliage, and flowers."

The emotional impact of a tree's size and beauty is predictable, but a tree can have a psychological influence on us in ways of which we are unaware. In his thought-provoking book, *The Power of Trees: The Reforesting of the Soul*, psychologist and archetypal ecologist Michael Perlman explores "deep rooted relationships" that have existed between people and trees for untold centuries.

### RED MAPLE AS A COMPONENT OF OLD-GROWTH FORESTS

Those who know the Red Maple as a small to medium size tree will be surprised to learn that the Red Maple can reach huge proportions when left to grow on favorable sites for long time periods. *Acer rubrum* can grow into an in-forest giant worthy of our highest admiration. In *Trees, Shrubs, and Woody Vines of the Great Smoky Mountains National Park*, Arthur Stupka cited what at the time he believed to be the largest specimen in the Park. The tree's trunk measures 17 feet 3 inches in circumference. Stupka's tree is not an oddity. Several years ago I measured a Red Maple on the Maddron Bald trail in Smoky Mountain National Park that stretched the tape to a full 17 feet, the largest I'd ever seen. With moss-covered buttressing roots and an arrow straight trunk, it stood in striking contrast to its troubled relatives growing on cut-over, marginally productive lands outside the Park—a living testament to how we have compromised the species by cutting the best of the originals and over-cutting the regeneration.

Two years later, while perusing the latest release of the National Big Tree Register, I came across the entry for the national champion Red Maple, growing in Michigan. The tree's dimensions are extraordinary: girth—18 feet 6 inches, height a wildly improbable 179 feet (equivalent to a 17 story building), and a crown spread of an equally improbable 120 feet. The measurements were submitted by renowned big tree hunter Paul Thompson and produced a remarkable total of 431 points on the big tree formula.

This splendid national champion Red Maple surpassed its counterpart Sugar Maple by a whopping 86 points and the champion Black Maple (*Acer nigrum*) by 83! Among eastern maples *Acer rubrum* is exceeded only by the national champion Silver Maple (*Acer saccharinum*). Moreover, the Red Maple champ loses this bout due to the unfortunate way the big tree formula is constructed. Since girth is measured in inches and height in feet, the formula weights girth 12 times over height. I have not seen the Silver Maple and mean it no disrespect, but at a dumpy 61 feet tall, I have a feeling that the Silver Maple is multi-stemmed. Given the extraordinary height

of the champion Red Maple, if the current Silver Maple champion is like its awkward looking, multi-stemmed predecessor, which I have seen, then the Michigan Red Maple is by far the more impressive tree.

The big tree saga continues. In October 1993, I received a report from Rob Messick of the Western North Carolina Alliance on an improbable Red Maple that had just been discovered by scientist Will Blozan of Smoky Mountain National Park. Will was studying the Park's old-growth forest (Will's amazing big tree discoveries will be the subject of a future *Wild Earth* article). From Rob's description, it was a foregone conclusion that I had to see the tree.

In July 1994, Will took Rob, myself, and an exceptionally dedicated group to see the tree. It poured on us all day, which made getting to the great maple something of a feat. We crawled 100 yards through a massive rhododendron slick and over moss-covered logs. It was a rainforest environment in every detail. Though Rob Messick had told me the tree's girth, I was not prepared for the emotional impact of actually seeing this hulking giant. The measurements were incredible: girth 23 feet 4 inches, height 135 feet, crown spread 88 feet. I looked up a straight bole free of branches for at least 60 feet. It was humbling.

We remeasured the Smoky Mountain colossus. On the big tree formula, the result came to 437 points, making the tree the new, unofficial national champion.

Back on the trail, we encountered more amazing Red Maples. One measured 11 feet 7 inches around and topped 143 feet in height. Its straight trunk soared 70 feet to the first branch. Another tortuous surfing through the rhododendron brought us to a Red Maple that measured 12.5 feet. Finally, Will mentioned another Red Maple that he had found growing in a different area of the Park measuring over 17 feet around.

In the Great Smoky Mountain National Park, I had seen trees that equal or surpass, in both girth and height, the trees in some of the Northeast's most impressive stands of White Pine. The genetics of the Red Maple permit greater ages and sizes to be attained than those in field guide descriptions and those in cut-over forests for which silvicultural data are accumulated.

As part of my continuing research on old-growth Red Maples, I reviewed data gathered by Harvard Forest researchers during their 1929-30 study of old-growth within New Hampshire's Pisgah Mountain area. Of 13 species of trees inventoried, on average only 5 achieved greater size than the Red Maple.

As the final chapter, this past August, I was exploring a patch of mature forest in the Mohawk Trail State Forest in Massachusetts. In the middle of the patch stood, proud and tall, a straight trunked old-growth Red Maple measuring a full 10 feet in circumference. Today it stands in sharp contrast to the nearby stump-sprouting specimens at the top of the ridge where continuous logging has led to the nowadays more familiar profiles. This big maple was the final proof I needed that Mother Nature had designed a magnificent tree and the degraded form we observe today bespeaks the wide gulf between nature's timeless wisdom and our ephemeral, technological meddling.

## RED MAPLE'S FUTURE

The plight of our natural forests has been described by noted big tree hunter and photographer Whit Bronaugh. In his article, "Ambassadors of the Past," in the January/February 1994 edition of *American Forests*, Bronaugh writes: "each of us creates standards of comparison based on the conditions in which we grew up. Too often we ask: What is environmental quality like now, and can we afford to allow it to get a little worse? Thinking like a champion tree, the answer is: Of course not, it's already a lot worse." The Red Maple is a good indicator not only of that worsened condition, but of our abominable ignorance of the current pace of that worsening.

Bronaugh reveals one of the biggest reasons for public acceptance of the degraded condition of our forests when he writes: "With 90 percent of our virgin forests gone before most of us were born, our concept of a forest is often set by the standard of second-growth. This perception is perpetuated by timber harvesters who talk of regrowing a forest in 60 to 100 years where trees 300 to 1000 years old have been clear-cut. That's like plowing a prairie, planting wheat, and calling it a grassland."

As for all species with any commercial value, the fate of the Red Maple in tomorrow's forests, or whatever substitutes for them, will probably be driven by economics. The species will likely be promoted locally as a source of firewood and be exploited regionally as a quick growing tree that can be harvested every 30 to 40 years for pulp. Wide-scale exploitation will perpetuate degraded forms and deepen our anesthetization to the decline of natural forests. Mother Nature will have few opportunities to reconstruct her original work, unimpeded by human interference.

Were it not for our surviving ancient forests, an increasingly alienated populace could not know that another species is in decline; that another design perfected over millennia is being compromised. Thankfully, a few of her original creations still grow in our ancient forest preserves, patiently waiting to tell their story. To stand dwarfed beside their immense trunks, to be sheltered beneath their great spreading limbs, to gaze into their foliage 100 feet above is to receive the meaning of that story. It is to experience the undiluted power of the species. It is also to understand what is being lost to our progeny. These sobering lessons can only be experienced where human intrusions have not left their marks: in our irreplaceable Eastern old-growth forests.

*Bob Leverett is the East's greatest old-growth evangelist. He has saved almost as many people as he has trees, by converting them to the old-growth gospel. Those interested in attending an old-growth forest revival can reach Bob at 52 Fairfield Ave., Holyoke, MA 01040.*



# Lebanon Situation Improves

by Fareed Abouhaidar

In an article in the Winter 1992/93 issue of *Wild Earth*, I described the deplorable situation of Lebanon's environment. In 1990, the war was still in progress and there was little environmental activism (or at least it was ignored by the media). I urged readers to ask the Lebanese government to recreate the Ministry of the Environment, last seen in 1982.

The war fizzled out at the end of 1990; since then, Lebanon has been rebuilding. Soon after President Herawi gained control, a new government was created that included a Ministry of the Environment.

And just in time! Lebanon's environment is in shambles after 16 years of war and an unprecedented building boom.

## MORE EXAMPLES OF ENVIRONMENTAL MAYHEM

The inner Quadisha Gorge, home of Khalil Gibran (*The Prophet*) and marked by steep forested slopes and huge natural bridges, remains intact, but the uplands are pockmarked with gravel pits and sand quarries. Many new buildings lie scattered along roads connecting old villages. In Bisharre, a huge, ugly building is under construction on a cliff overlooking the pathway to the Gibran Museum (established in his retreat, resembling cliff dwellings of the US Southwest).

The urban sprawl stretching north along the coast from Beirut now extends all the way to Batroun; only the Ras Shikka promontory separates it from the sprawl creeping south from Tripoli (total distance: 88 km). Much of the coastline has been ruined by beach developments, each with its private jetty.

In a once-secluded valley behind the Ras Shikka promontory is the Crusader castle of Mseilha, perched on a tall rock. The Beirut-Tripoli freeway now slashes through this valley. A gravel quarry has destroyed the hills behind the castle. Visitors on their way to the cedars of Lebanon grove pass near this travesty.

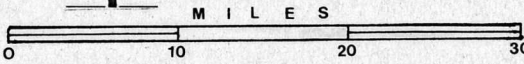
The Bekka Valley on a Sunday in October sounds like a war zone. Many of Lebanon's 400,000 "hunters" are there with shotguns slaughtering thousands of birds, many of them migrating from Europe to Africa. Dead hawks and storks line the shore of Qaroun Lake.

Even politicians once embraced the Lebanese "tradition" of unregulated hunting. Presidents and ministers hunted regularly, oblivious to hunting ethics and limits taken for granted in the U.S. Only Kamal Junblatt, deeply influenced by Hinduism, abhorred the practice; he banned the hunting of songbirds while Minister of the Interior.





# Lebanon



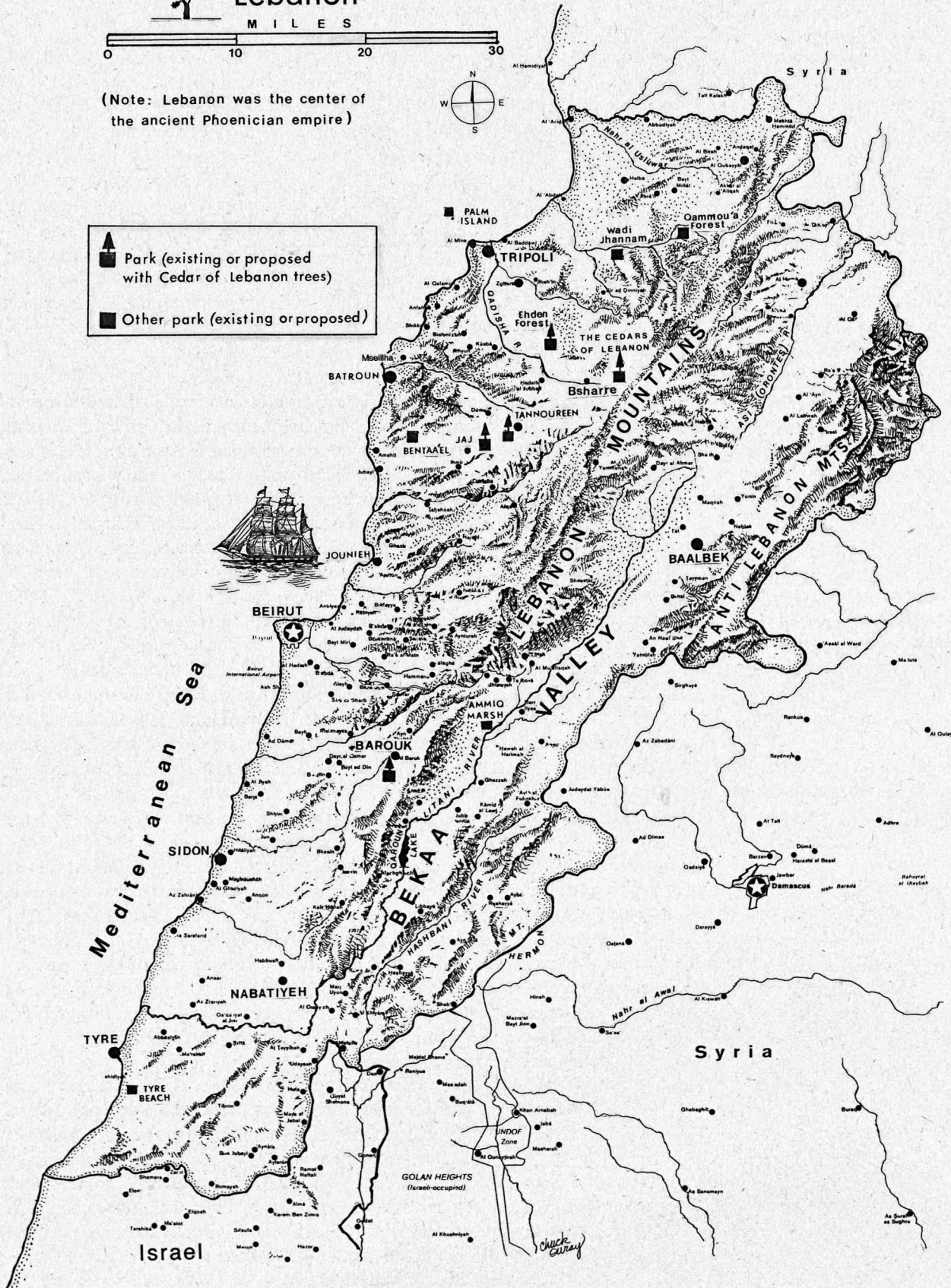
(Note: Lebanon was the center of the ancient Phoenician empire)



Park (existing or proposed with Cedar of Lebanon trees)



Other park (existing or proposed)





The air in Beirut is unfit to breathe, thanks to motor vehicles and drivers who would rather be stuck in traffic than walk a few hundred meters. Lebanon has received shipments of toxic wastes from industrialized countries. Rural garbage dumps spill downhill from roads. In 1992, a hot summer spawned countless fires that destroyed much of the remaining forest cover.

With the war over, an uncontrolled building boom could ruin most of the country. The Bay of Jounier, once described by the French poet Lamartine as the most beautiful in the world, was virtually destroyed by a port built by the government in the 1960s and numerous private jetties built during the war years. The lower slopes of the 500-meter mountain overlooking the bay are now studded with high-rise apartment buildings. Construction, has been banned, however, on the remainder of the pine-forested slopes.

### THE ENVIRONMENTAL AWAKENING

Environmental conservation is finally taking root in Lebanon, making impressive gains in the year after the Hariri government was formed. While lingering governmental corruption and business interests continue to be obstacles, Lebanon is already ahead of the U.S. in one sense: it lacks an organized "wise-use" movement. Indeed, conservation proposals are met with enthusiasm by many people fed up with environmental deterioration, and often are adopted by the new administration. Environmental public service announcements and reports are regularly aired on television.

I mentioned in my previous article the Friends of Nature. They and many other like organizations have growing memberships. The Society for the Protection of Nature and Natural Resources in Lebanon (S.P.N.L.) was founded in the dark days of 1985; its activities have multiplied in the last few months. It is a member of the World Conservation Union and is the Lebanon partner of Birdlife International. Universities and schools have their own clubs, including Green Line at the American University of Beirut. Green Line is pushing for bird sanctuaries, promotes environmental education in schools, is initiating a network of reforestation groups, and has established a facility to introduce children to native animals. Many towns also have local organizations concerned with protecting nearby forests or other natural sites. Interest permeates religious and social groups from the Shiite town of Nabatiyeh in the war-torn south to the bulldozer-ravaged Maronite heartland of the Keserwan.

### ACCOMPLISHMENTS

Victories have been many. Thanks to the environmental organizations and the Ministry of the Environment, the lonely Bentaa'el National Park, created in the early 1980s, has been joined by new preserves. The Friends of Horsh Ehden succeeded

## *Environmental conservation is finally taking root in Lebanon...*

in 1992 in gaining protection for the pristine Ehden Forest. It contains a rare mix of thousands of cedars of Lebanon, broadleaf trees, endemic shrubs, and six species and one genus of plants new to science. All harmful activities have been banned, including grazing or gathering of any living or non-living material, hunting, and even camping and picnicking. Management plans include a biological inventory, rehabilitation, a trail system, and a center for research and education.

Tiny Palm Island and others near it off Tripoli now are protected; they contain unique ecosystems and are important resting and nesting sites for migratory birds. Another cedar forest in the Barouk Mountains east of Beirut was recently declared a preserve. During the war, Walid Junblatt, the Druze warlord in control of the Shouf area (and son of Kamal—see above) fenced off the forest, posted rangers, and planted land-mines after tree-cutting was discovered. As with the Ehden Forest, management plans are being prepared for these preserves; they include visitor and research centers, trails, and local committees to oversee the areas.

More preserves are in the making. The Ammiq Marsh, a critical stopover for migratory birds in the Bekaa Valley that had become a lawless playground for "hunters," will soon be protected, saving it from drainage schemes conceived by previous governments.

Other areas to be protected include:

- Wadi Jhannam (Hell Canyon), a remote gorge in the north;
- Qammou'a Forest, also in the north, which includes a rare stand of huge, ancient junipers that survived the Ottoman and French railroad builders of the World Wars as well as recent woodcutters;
- two other cedar of Lebanon groves near Tannoureen and Jaj;

- the golden sandy beach south of the city of Tyre (its proximity to Israel and the resultant war situation saved it from beach developments);
- the famous cedar of Lebanon grove in the barren mountains above Bsharre, also known as the Cedars of the Lord. The trees here have suffered from a combination of unnatural disruptions and natural disturbances, among them insects thriving in the absence of birds killed by hunters, pollution from a cement factory on the coast, a recent monster snowstorm, and people cutting branches to carve into trinkets for sale to tourists. Many weakened trees have fallen. Now, trails are being designated to reduce trampling by visitors, and an entrance pay station has been built. Trees have been pruned and painted with disinfectants. A plan to plant 5000 trees in and around the forest was launched in fall 1993.

SPNL, has resorted to novel tactics and escalated pressure on the government to move in the right direction. Lebanese environmental groups are urging the World Bank and other international financial institutions to withhold economic aid to Lebanon until it meets international environmental standards, including CITES (Convention on International Trade in Endangered Species). European delegations were shocked to see kiosks selling cedarwood trinkets in front of the entrance to the Bsharre grove. Lebanon heard some harsh words as a result of the fiasco; the trinket booths have since been removed.

A proposal for protecting biodiversity in Lebanon's protected areas is ready to be presented to the Global Environment Facility for funding. It proposes species surveys, management teams for protected areas, guards, and educational materials. The plan is to be implemented through 1997.

A group of prominent environmentalists has been working on the Lebanese Environment Action Plan, to have been completed by April 1994, in cooperation with the Lebanese Environmental Assembly (the NGOs of Lebanon) and the Friedrich Ebert Institute of Germany. The result will be presented to the Ministry of the Environment.

There is still hope for saving what is left of Lebanon's incredibly rich natural diversity. A good omen is the recent sighting, at the tip of Beirut's peninsula, of a Mediterranean Monk Seal for the first time in decades.

*Fareed Abouhaidar (1628 W. Milagro, Mesa, AZ 85202) grew up in Lebanon, where he wrote letters to newspapers and created posters at school on environmental atrocities. An avid hiker in Arizona since 1985, he plans to hike more of Lebanon to make up for war-time deprivation. He has an M.S. from Arizona State University in Environmental Resources in Agriculture.*

#### WHOM TO CONTACT:

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Riccardus Habre  
The Friends of Nature  
Marine Research Center  
Jounieh, Lebanon

Booklets with scientific descriptions of Ehden Forest and Palm Island are available from Friends of Nature.

#### GOVERNMENT ENVIRONMENTAL ACTION

The Ministry of the Environment is still very small and sometimes shows no backbone, but plans are under way to expand it. The Ministry's Director General is an effective and dedicated environmentalist.

Some ten million birds continue to fall out of the skies of Lebanon each year. A hunting ban was instituted, but the Minister of the Environment relented under pressure from hunters and gunstore owners. Hunting will be banned for five years starting in 1995, thanks to unrelenting pressure from conservationists.

In fall 1993, several rock quarries gouging the mountains behind Beirut, as well as the one at Mseilha Castle, were shut down by Minister of the Interior Beshara Murhej. While quarry owners protested, environmentalists rallied in support of the minister.

With carnage continuing, the environmental movement, particularly



# ROAD-RIPort #2

by Kraig Klungness and Katie Scarborough

**Large-scale wilderness recovery** requires large-scale road removal. These inseparable goals are the focus of the new coalition called ROAD-RIP, the Road Removal Implementation Project.

In the summer 94 issue of *Wild Earth* we described the initial Road-Fighting Strategy Session held last February. The session resulted in what was first called the Road-Fighting Strategy Project, which has since become ROAD-RIP. In addition to a better name, we now have a steering committee, advisory board, clearly defined strategy, and some initial funding. With these elements, ROAD-RIP is growing into a national, grassroots movement to eliminate roads in wildland ecosystems.

Roads are prevented or removed at the grassroots level. It is here that we see the tangible results of roads closed, roadless areas protected, road-building schemes stopped, and de facto wilderness restored through the elimination of roads. With this in mind, ROAD-RIP functions as a coalition of grassroots wilderness groups with The Wildlands Project (TWP) and Biodiversity Legal Foundation (BLF) as the lead organizations.

TWP provides the vision for coordinating road elimination with large-scale ecosystem restoration, lends technical expertise, and serves as an information clearinghouse; BLF develops legal strategies and assists in their application. The coalition's regional grassroots groups provide the critical knowledge derived from their road-fighting experiences.

ROAD-RIP's work is to combine these elements into an effective set of road-fighting tools. To further empower the grassroots, we provide national coordination for regional campaigns, and educate the public on the ecological effects of roads and the benefits derived from eliminating them on public wildlands.

Road-rippers guides will be fundamental tools ROAD-RIP will put into activists' hands. We have three such guides being prepared now. Successful road-fighter Keith Hammer has agreed to expand and update his *Road Rippers Guide to the National Forests* for dealing with the U.S. Forest Service. Dan Stotter, David Bahr, and Aron Yarmo of Bahr and Stotter Law Offices in Eugene, Oregon, are writing similar guides for the Bureau of Land Management and the National Park Service. The guides will be produced as individual publications, as well as for inclusion in a loose-leaf road-rippers handbook that will also include sections on the ecological effects of roads, ORV issues, establishing road density standards, bibliographies, and other resources.

Along with these guides, we are developing a set of criteria that activists can take into the field to assess candidates for road closure. To provide scientific references supporting road closure and prevention, ROAD-RIP has asked TWP Science Director Reed Noss to oversee the revision and annotation of his bibliography of road-related literature.



ROAD-RIP plans to sponsor road-fighting workshops for activists. The workshops will cover the role of road elimination in establishing conservation reserves, and administrative and legal tools to use to stop roads. Building a national movement against wildland roads will be a theme underlying ROAD-RIP's guides and workshops.

ROAD-RIP hopes to rally this national movement around what we call the "Terrible Twelve" roads. These are being selected based on their ecological destructiveness and the potential benefit their obliteration would have for wilderness recovery. We will launch a media campaign against them as the most biologically destructive roads or road proposals in the United States, educate the public on the benefits of eliminating them, and support grassroots activism to fight them.

Especially important to activists getting started in ecosystem restoration through road closure will be the chance to benefit from the knowledge of groups and individuals already fighting roads. As he updates his Road-Rippers Guide, all of us will gain from Keith Hammer's many years of obliteration and revegetation efforts on the Flathead National Forest in northern Montana on behalf of the Swan View Coalition. We can also gain from the substantial body of knowledge on establishing and implementing road density standards being developed by the Predator Project's Roads Scholar Project under the guidance of Tom Skeele and Tom Platte.

ROAD-RIP will get information out about this work not only in training sessions and guides, but also in regular updates to coalition participants. ROAD-RIP's monthly memos have included reports about vital grassroots road-stopping efforts such as:

- Green Mountain Forest Watch's work to stop construction of a logging road into the Lamb Brook area of Green Mountain National Forest in Vermont (contact Mat Jacobsen at 802-257-4878 to get involved);
- California Wilderness Coalition's work to close an illegal jeep road in California's Ishi Wilderness in Lassen National Forest (contact Jim Eaton at 916-758-0380);
- SouthPAW and Southern Appalachian Biodiversity Project's work to keep washed-out Parsons Branch Road in Great Smoky Mountains National Park closed (contact Sherman Bamford at 703-342-5580);
- Mountain Heritage Alliance's campaign to prevent expansion of US 58 to four lanes through the Mt. Rogers National Recreation Area (contact Mark Barker at 703-342-5580).

Road-building on our public lands is one of the most ecologically destructive and economically wasteful boondoggles in US political history. It converts tax revenues needed for ecological restoration into welfare payments for wealthy corporations.

If your organization would like to become a member of ROAD-RIP, or if you would like more information, write us at POB 516, Houghton, MI 49931.

*Kraig Klunghness and Katie Scarborough are co-directors of ROAD-RIP.*

## Cold Front

all that's left of  
the moon obscured

by clouds \* dark  
hint of a smile

anonymous as head  
lights switched to lowbeam

I pump the pedal  
drive into the storm

moving too fast  
for thunder's jump

or lightning's sudden burn  
too fast

the stunned eyes of a rabbit  
crunch of bone

beneath the wheel  
(meal for the morning's beak)

what is it about an engine  
that makes it moan

all speed  
and no mercy?

—Lone Cone Free Poem





# Recovery of the Common Lands

*blueprint for a home-grown inventory*

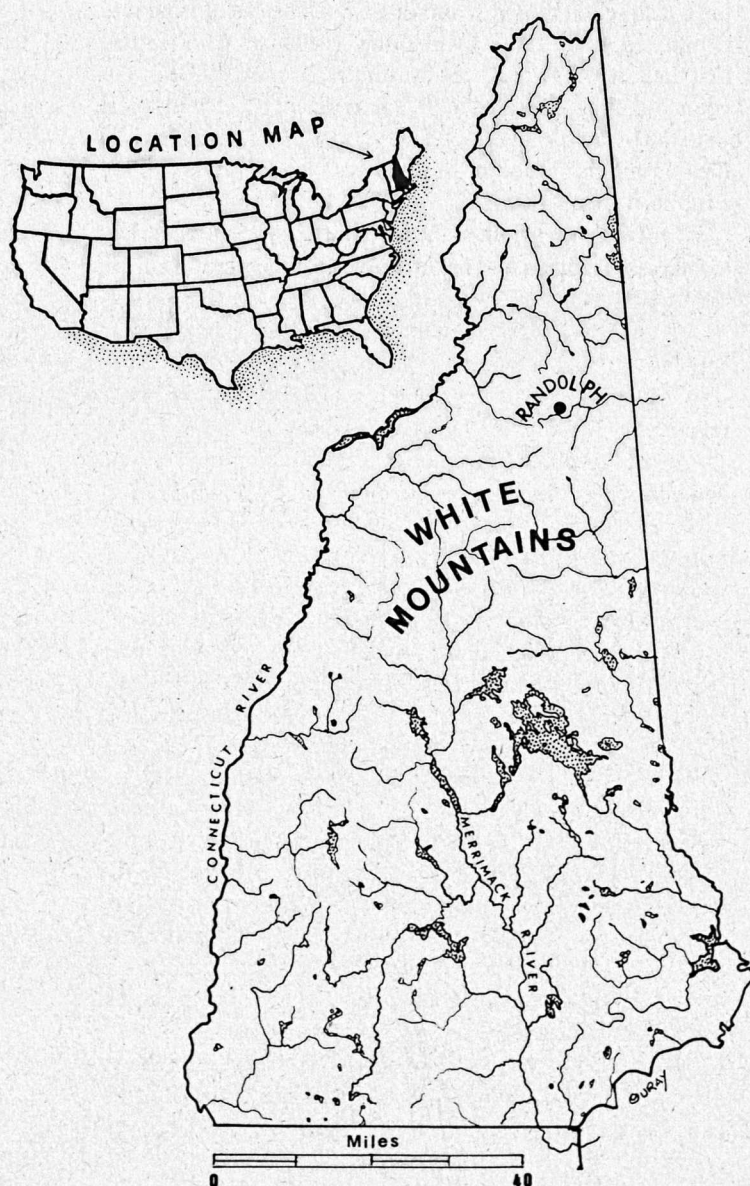
by Brad Meiklejohn

**O**ur culture has a bad case of ecological amnesia. We are accepting a degraded environment as "natural." Urban kids grow up not knowing that air and water should be clean; suburban kids think starlings are real wildlife; rural kids believe our scrubby third-growth woodlots are real forests. We are forgetting what belongs here.

Take New England as an example. On the whole, the region is in sad ecological shape. Most of the top-level carnivores are regionally extinct, all the major rivers are dammed and polluted, fish stocks and songbirds are in serious decline, exotic species and habitat generalists are widespread. Our forests have suffered a century of clearcutting, high-grading, herbicides, and exotic pests, and many habitats have been destroyed or badly fragmented. Yet few people who live here comprehend the extent of degradation. A common upbeat refrain from the region's timid environmentalists is that New England is more forested now than at any time in the past two hundred years. Talk about not seeing the forest for the trees...

We should strive to recover what has been lost. If we concentrate only on protecting what remains, we are conceding great biological defeat. While our parks and preserves safeguard the spectacular or the unusual, we have failed to protect typical or average landscapes. As a culture we are in danger of forgetting what is natural. We must remember what belongs here and work for its return.

We should start where most of us live—on the "common lands." The "ordinary" forest and the "average" prairie were the first to feel the axe and the plow. In the valley bottoms, rolling hills, and river mouths we built our farms, cities, and highways. We settled the common lands because they were easy places to live—places of rich soil, abundant wildlife, and mod-



erate climate. From an ecological point of view, we took the best first. Human development of the common lands has usurped the biologically-richest habitats, denying many species access to breeding grounds and reliable food and water.

We can start by recovering knowledge of the common lands.

When people know the importance of their backyards and their towns, they will support restoration efforts. Knowledge—of what is, what was, and what could be—can catalyze a community. I know one town where it happened.

I recently compiled a natural features inventory for Randolph, New Hampshire, a 30,000 acre community of 400 residents. The research was full of surprises, for me and for town residents. I discovered that 11 animals and 14 plants listed as threatened or endangered species occur in town. I determined that Atlantic salmon used to spawn in one of our rivers before the construction of dams, and that a rare species of trout was eliminated in the 1960s by chlorine "reclamation." I learned that the last wolverines east of Minnesota were killed in our county in 1922. I located a 40-acre remnant of ancient forest with 400-year old hemlock and yellow birch, and watched the autumn migration of thousands of birds moving along a major flyway.

Enlisting townsfolk in the inventory process was the key to success. Trappers told me of wolves passing through in the 1960s, loggers helped me find the last of the big trees, and kids showed me the snakes, salamanders, and turtles they caught. It seemed everyone was a birder, botanist, geologist, or mycologist eager to share his or her life list. It was not just my inventory—it was *our* inventory.

Most "resource" inventories are utilitarian in style and content, with obligatory sections on timber, minerals, deer yards, game and fish. Some towns opt to use a Geographic Information System (GIS) to produce all kinds of pretty maps and overlays. However, with a budget of less than \$500, an aversion to technology, and disdain for the word "resources," I opted for a more traditional route. In the style of early naturalists, I wrote an integrative description of the disparate pieces—climate, glacial history, soils, flora, fauna, migration routes, watersheds, wetlands, land use history, regional context—to depict an evolving natural history of the town.

So far the town has distributed 300 copies of the inventory: to residents, local and state politicians, absentee landowners, the US Forest Service, adjacent towns, and conservation groups. To my pleasant surprise, I now hear words like "corridors," "fragmentation," and "biodiversity" rolling off unexpected lips. People talk excitedly about the return of cougar and wolf, about closing roads, about logging restrictions, and...about wildlands recovery!

This can happen in any town, and it should. Compiling a natural features inventory for your town is neither difficult nor expensive. It is a great project for a graduate or college student, and some towns might even provide scholarship funds in return. High school and grade school students can contribute by compiling lists of birds, mammals, amphibians and insects.

Chances are good that most of the information you need already exists. The following are good sources to check:

- Every state has a Natural Heritage Program which maintains records on the distribution of rare plants and animals (although some programs are more functional than others). These can provide you with a list of the species known or expected in your area of interest. Look them up in the telephone directory, or call the state office of The Nature Conservancy.
- State fish and game offices should have species range maps, fish stocking records, trapping records, road kill data and deer yard maps.
- Topographic maps available from the U.S. Geological Society (USGS) enable you to delineate watershed boundaries, locate springs, and identify roadless areas. While at the USGS, pick up a geologic map. Pay particular attention to unusual rock types, formations, and features. Limestone and serpentine are two rock types that often support uncommon plants. Look for cliffs as possible nesting sites for raptors. Talus slopes and caves are often ecologically unique sites, where rare snakes, small mammals, or invertebrates may occur. Steep, rugged, or inaccessible terrain can hide pockets of old growth forest.
- The local branch of the Audubon Society should have breeding bird and Christmas Bird Count data and should know most of the birds in your area.
- National Wetlands Inventory (NWI) maps are available for most of the country from the US Fish and Wildlife Service. Seek bogs, fens, swamps, marshes, flood plains, springs, and seeps. FWS can also provide you with a list of the federally protected species in your state.
- Aerial photographs are useful for identifying cliffs, wetlands, vernal pools, and old-growth forests. The best source for these is the nearest Soil Conservation Service (SCS) office, where you can also find soils maps.
- County and town offices usually have property maps; and town, county and university libraries may have useful historic or scientific documents. General Land Office survey notes can be especially helpful for determining natural vegetation conditions at the time of European settlement (Cornett 1994). Kuchler's Potential Natural Vegetation of the Conterminous United States (1964) is a useful reference to what should occur in your areas. [Science Ed. Note: But in some regions, Kuchler's map is highly misleading, as it portrays a mythical "climax" vegetation rather than what really occurs with a natural disturbance regime.]

Talk with hunters, trappers, farmers, fishermen and long-time residents. Find out where the best springs are, where rare plants occur, and where animals feed, migrate, den, and hide. Identify unusual places and biotic hot spots, as well as the typical or representative forests, wetlands, or deserts. Piece together the history of disturbances such as fire and storm, as well as human disruptions such as logging, and speculate on the vegetation changes over the past two hundred years.



Evaluate the extent of fragmentation, the severity of environmental impacts, and the feasibility of wildlands recovery. Place your town in a regional context and determine critical linkages and wildlife travel routes. Finally, try to weave all the pieces together in a narrative mosaic, blend in some useful maps and nice art work, add a glossary for clarity, and print the natural features inventory for your town.

If you do not have time to do a complete inventory, bite off any piece that is useful. Possibly the two most important pieces of information are: 1) lists of threatened and endangered species and; 2) National Wetlands Inventory (NWI) maps. If you suspect a proposed development or logging operation will damage a wetland or harm a listed plant or animal, arm yourself with facts. An inventory can also help defend any public lands where you suspect that critters or habitat are being mistreated.

Some people believe the newly-formed National Biological Survey (NBS) will inventory the entire country. However, the NBS is dogged by political problems and may not survive to meet our expectations. Also, the NBS will focus initially on public lands, preferring to dodge the issue of private property rights.

I guarantee that every town has *at least* one significant natural feature, whether it be a rare plant, an endangered animal, unique geology, an important wetland, or a remnant of "typical" vegetation. Some things may be gone for now, buried under asphalt or covered in condominiums, but they will return if we let them. Wildlands recovery should begin at home and spread outward.

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*A recent graduate of the University of Vermont's Field Naturalist Program, Brad Meiklejohn now works for the Conservation Fund in Alaska, identifying and purchasing Grizzly habitat on Kodiak Island. Copies of "A Natural Features Inventory for Randolph, New Hampshire" are available for \$10, including postage and shipping. Write to: Meiklejohn, Box 1420 Durand Rd., Randolph, NH 03570.*



*detail from Berry Pruners At Work by Bob Ellis*

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# Forest Defenders Target Wisconsin Timber Law

*by Richard H. Chamberlin*

**A**s many of Wisconsin's private forests reach economic maturity, environmentally conscious landowners are backing legislation that would free them from having to cut trees to pay property taxes. The legislation, State Senate Bill 320, was introduced last session but failed to make it out of committee. However, its backers say a similar bill will be introduced during the next session which begins in January.

The bill was produced by a bipartisan legislative study committee composed of legislators, landowners, loggers, paper producers and environmentalists. The committee was charged with updating the state's 1985 Managed Forest Law (MFL). Under the existing law, landowners who have at least ten contiguous acres of land in a municipality that is at least 80% forested and capable of producing at least 20 cubic feet of merchantable timber per acre may enroll in the program. As an incentive the state lowers the tax rate to 85 cents per acre. This represents an 85% reduction from current tax rates on forested land, which average \$7 per acre. There is also a 5% severance tax on all merchantable timber when it is cut. A timber management plan must be approved by the Department of Natural Resources (DNR).

Originally, private forest land programs in Wisconsin were intended to encourage timber reforestation on cut-over lands after the





state's timber industry collapsed in the early 1900s. The MFL replaced the Forest Croplands Law (1927) and the Woodland Tax Law (1954). The controversy involves three changes imbedded in the MFL revision legislation and backed by environmentalists.

The first was a requirement that the management plan include a description of any threatened or endangered species known by the DNR to exist on the parcel to be entered into MFL status and a description of measures necessary to protect them. The landowner would be required to manage for these species.

The second change would have authorized the DNR to establish a managed forest reserve in the southern half of the state for protection of areas critical to threatened or endangered species. It was generally agreed that this reserve would encompass the Baraboo Hills—an area over 50,000 acres in size, containing wooded bluffs and valleys, about 45 miles northwest of Madison.

Formed by the erosion of ancient quartzite outcrops, the Baraboo Hills are the largest tract of deciduous forest in the oak savannah ecoregion which once extended from north-central Minnesota to northwestern Illinois. The Hills contain 23 rare or endangered species and serve as an exporter of biological diversity to other smaller habitats. Until recently the Hills' rocky terrain prevented conversion to farms or houses. However, pressure to approve mound septic systems threatens to increase development in the Hills and further fragment the forest. Currently only 8% of the area is protected through state and Nature Conservancy ownership.

The third change would have allowed exceptions from the MFL focus on commercial products in instances where private land is located within the managed forest reserves and other areas of importance already designated by the state. Owners would not lose MFL tax advantages just because they chose not to cut their trees. They could manage their lands for non-commodity resources such as ecosystem protection.

Other changes in the MFL proposed by the committee included raising the severance tax from 5% to 10% for merchantable timber cut, and doubling the fee for closing land to the public to \$4 per acre. But what seemed to some like a rational approach to balancing ecosystem protection with timber production seemed a threat to others.

"The primary reason that positive reforms to the MFL did not pass was opposition from the

leadership of the Wisconsin Woodland Owners Association," said Dave Cieslewicz, Government Relations Coordinator for The Nature Conservancy. "The reforms we supported would have given woodland owners more options in managing their land for aesthetics, wildlife of all kinds and biodiversity in addition to traditional wood products, but that message just didn't get out to the average woodland owner."

In early October the legislative audit bureau came out with a report on the MFL that environmentalists hope will strengthen their case for reform. The report found that, of the \$14.5 million in tax savings realized by the 25,000 participants in the program, 51% of the money went to only 20. Most of these were large paper companies.

"This shows the need to refocus the program to give more small landowners the opportunity to participate," said Cieslewicz. "Only one out of four small landowners are currently involved in the program because many of them don't want to manage their lands for timber production."

An aid to State Senator Robert Jauch, who chaired the study committee, said he is considering reintroducing a new version of SB-320 in 1995 when the legislature reconvenes. Whatever happens, environmentalists will keep pressing for forest reform in Wisconsin. A bill to require the state to manage its forests for native biodiversity will be reintroduced next session; environmentalists are being elected to the Conservation Congress, which provides citizen input into Natural Resources Board decisions; and lawsuits have slowed cutting in the state's two National Forests.

Older generations of state foresters have done a splendid job of restoring trees to lands that were clearcut and then abandoned by the lumber barons as they moved west in search of more timber. However, conservation biology is beginning to teach us about the delicate and complex relationships involved in sustaining a healthy forest. It is time for the Wisconsin legislature to take a step back to the future and listen to the voices of native sons such as John Muir and Aldo Leopold.

*Richard H. Chamberlin is a writer and forest activist who serves on the board of SWAN (Superior Wilderness Action Network; c/o Biology Dept., University of WI-Oshkosh, Oshkosh, WI 54901).*

# A Critique of and an Alternative to the Wilderness Idea

by J. Baird Callicott

Last March, I gave a talk at a symposium in Bozeman, Montana, celebrating the thirtieth anniversary of the 1964 Wilderness Act. I was preceded at the podium by a well-spoken, Amherst College-educated cattleman, Chase Hibbard, who described himself as the token redneck at this gathering of the wilderness faithful. He proclaimed his love of things wild and free and his dedication to steward the lands, private and public, grazed by his stock. He urged us all to find consensus and strike a balance between wilderness preservation and economic necessity.

When it was my turn to speak, I began by saying that if Mr. Hibbard was the token redneck, I was fixing to be the skunk at this garden party—a little simile I borrowed (without attribution) from a piece by Dave Foreman in *Wild Earth*. Thus at once I endeared myself to the audience—people can't hate a self-proclaimed skunk—and put them on notice that I might have something unsettling to say. There are two debates about the value of wilderness, I went on to note. One we just heard about, that between wilderness preservation and "jobs." (And, I pointed out, *profits*, doubtless the most important consideration to Mr. Hibbard, who doesn't work for wages, but one he never mentioned in his speech.) The other debate—*within* the community of conservationists, not between conservationists and cowboys—is about the value of the wilderness ideal to the conservation of biological diversity.

As a dedicated conservationist and environmentalist, I think we must reexamine the *received* wilderness idea, that is, the idea that wilderness is "an area where the earth and its community of life are untrammelled by man, where man is a visitor who does not remain." I want to emphasize that my intent in doing so is not to discredit the *areas* designated "Wilderness," and thus make them more vulnerable to development pressures. On the contrary, we need to multiply and expand such areas. Here I criticize rather the *concept* of wilderness, that is, how we conceive of the areas that we call wilderness. I do so hoping to strengthen conservation efforts by helping to ground conservation policy in a sound environmental philosophy.

After the existence of an "environmental crisis" was widely acknowledged in the late 1960s, the benchmark of environmental quality was the wilderness ideal of pristine, untouched nature. Accordingly, the





new breed of environmentalists believed that the best way to preserve nature, if not the only way, was to exclude all human economic activities from representative ecosystems and designate them as wilderness preserves. In them, some old-growth forests could remain standing, wild animals could have a little habitat, and so on. In effect, we attempted to achieve environmental preservation by zoning the planet into areas where environmentally destructive human economic activities—like grazing, mining, logging, agriculture, mechanized recreation, manufacturing, and real estate development—would be permitted and areas where such activities would be excluded. Several recent and not so recent realizations are subverting this simple philosophy of nature conservation through wilderness preservation.

First, at the practical level, the original rationale for wilderness preservation was not articulated in terms of biological conservation by turn-of-the-century environmentalists like John Muir. Instead, they emphasized the way wilderness satisfies human aesthetic, psychological, and spiritual needs. Wilderness, in short, was originally regarded as a psycho-spiritual resource. Often the most haunting, beautiful, silent, and solitary places are too remote, rugged, barren, or arid to be farmed or logged or even mined. Hence, an early criterion for identifying suitable areas for National Parks, such as Yellowstone and Yosemite, long before the Wilderness Act of 1964 and public acknowledgment of the environmental crisis, was their uselessness for practically any other purpose. Consequently, as Dave Foreman puts it with his characteristic bluntness, much designated wilderness is "rock and ice," great for "scenery and solitude" but not so great for biological conservation.

Second, at the political level, the wilderness preservation philosophy of nature conservation is defensive and ultimately represents a losing strategy. The development-permitted zones greatly exceed the development-excluded zones in number and size. More acreage of the contiguous United States is under pavement than is under protection as Wilderness. Less than five percent of the Lower Forty-eight is in a designated or de facto wilderness condition. As the human population and economy grow, the pressure on these ragtag wild areas becomes ever greater. In temperate North America, wilderness reserves, national parks, and conservancy districts have become small islands in a rising tide of cities, suburbs, farms, ranches, interstates, and clearcuts. And they are all seriously compromised by human recreation and by exotic species colonization. Big wilderness has receded to the subarctic and arctic latitudes. Even these remote hinterlands are threatened by logging, hydropower schemes, oil exploration and other industrial intrusions, not to mention the threats posed by global warming and by exposure to sharply increased levels of ultraviolet radiation. The wilderness idea, hopefully and enthusiastically popularized by John Muir's best-sellers at the close of the nineteenth century, has played itself out, here at the close of the twentieth, in the pessimism and despair of Bill McKibben's recent best-seller, *The End of Nature*. McKibben's thesis needs no elaboration by me because his title says it all.

Third, at the international level, the uniquely American wilderness idea is not a universalizable approach to conservation. But the environmental crisis, and particularly the erosion of biodiversity, is global in scope. Thus we need a conservation philosophy that is universalizable. In Western Europe, conservation via wilderness preservation is meaningless. In India, Africa, and South America, American-style national parks have been created by forcibly evicting resident peoples, sometimes with tragic consequences. The Ik, for example, were hunter-gatherers living sustainably, from time immemorial, in the remote Kidepo Valley of northeast Uganda. In 1962, they were removed in order to create the Kidepo National Park, an area where the community of life would henceforth be untrammelled by man, where man would be a visitor who does not remain. Forced to settle in crowded villages outside the park and to farm, their culture disintegrated and the Ik degenerated into the travesty of humanity made infamous by Colin Turnbull.

Fourth, at the historical level, we are beginning to realize that wilderness is an ethnocentric concept. Europeans came to what they called the "New World" and since it did not look like the humanized landscape that they had left behind in the "Old World," they thought it was a pristine wilderness, where, as David Brower put it, the hand of man had never set foot. But the Western Hemisphere was full of Indians when Columbus stumbled upon it. In 1492, the only continental-size wilderness on the planet was Antarctica. The aboriginal inhabitants of North and South America, further, were not passive denizens of the forests, prairies, and deserts; they actively managed their lands—principally with fire. Some paleo-ecologists believe that in the absence of Indian burning, the vast, biologically diverse open prairies of North and South America would not have existed; that the American heartland would have instead been grown over with brush. Some believe that the North American forests would not have been as rich and diverse in the absence of the Indian's pyrotechnology.

By the seventeenth century, when English colonists began to settle the eastern seaboard of North America, the native peoples had suffered the greatest demographic debacle of human history. Their populations were reduced by perhaps 90% due to the ravages of Old World diseases, which had swept through the hemisphere transmitted first from European to Indian and then from Indian to Indian. So, the Pilgrims did find themselves in a relatively desolate and howling wilderness, as they lamented, but it was, ironically, an artificial wilderness—though that combination of words seems oxymoronic. Europeans inadvertently created the New World wilderness condition by means of an unintended but utterly devastating biological warfare on the aboriginal inhabitants.

Fifth, at the theoretical ecology level, ecosystems were once thought to remain stable unless disturbed; and if disturbed, to return eventually to their stable states, called climax communities. To be constantly changing and unstable is now believed to be their usual, rather than exceptional, condition. Thus, whether we humans interfere with them or not, ecosystems will

undergo metamorphosis. But wilderness *preservation* has often meant freeze-framing the status quo ante, maintaining things as they were when the "white man" first came on the scene. Hence the wilderness ideal, *so interpreted*, represents a conservation goal that would be possible to attain, paradoxically, only through intensive management efforts to keep things the way they were in defiance of nature's inherent dynamism.

Sixth, at the philosophical level, the wilderness idea perpetuates the pre-Darwinian myth that "man" exists apart from nature. Our oldest and most influential cultural traditions have taught us that we human beings are exclusively created in the image of God, or that we are somehow uniquely endowed with divine rationality. Thus we, and all the products of our essentially supernatural minds, were thought to exist apart from and over-against nature. For a wilderness purist, encountering any human artifact (not his or her own) in a wilderness setting spoils his or her experience of pristine nature. But Darwin broadcast the unwelcome news that we self-exalting human beings are mere accidents of natural selection, no less than any other large mammal. We are one of five living species of great ape. We are, to put it bluntly, just big monkeys—very precocious ones, to be sure, but monkeys nonetheless. And everything we do—from bowling and bungee-jumping to writing *Iliads* and engineering space shuttles (and committing acts of ecotage, most definitely)—is monkey business. For many people, Darwin's news was bad news because it seemed to demean us and to undermine our noblest pretensions and aspirations. But I think it's good news. If we are a part of nature, then we have a rightful place and role in nature no less than any other creature—no less than elephants, or whales, or redwoods. And what we may do in and to nature—the transformations that we impose upon the environment—are in principle no better or no worse than what elephants, or whales, or redwoods, may do in and to nature.

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I say "in principle" because I certainly do not wish to leave anyone with the impression that I think because we are just as natural as all other organisms, everything we do in and to nature—every change we impose upon the environment—is okay. My name is not Alston Chase. (This brought a howl of laughter and applause from the Bozeman crowd, since Chase is a resident villain in the local environmental philosophy melodrama.) Most anthropogenic change is certainly not okay. Indeed, most of what we do in and to nature is very destructive.

But other species, too, may have either beneficial or harmful effects on the rest of nature. If there were five billion elephants on the planet instead of five billion people (or remembering that an adult elephant is more than a hundred times as heavy as an adult human, if there were as much elephant biomass as presently there is human biomass), then planet Earth would still be in the throes of an ecological crisis. Elephants, in other words, can also be very destructive citizens of their biotic communities. On the other hand, the biomass of bees and other insect pollinators of plants is probably greater than the human biomass (I don't know, I'm not a biologist) and certainly the bee population far exceeds the human population; but the ecological effect of all these bees is undoubtedly beneficial. So, if the ecological impact of the activities of bees and elephants can be either good or bad, then why can't the ecological impact of human activities be good as well as bad? Measured by the wilderness standard, all human impact is bad, not because human beings are inherently bad, but because human beings are not a part of nature—or so the wilderness idea assumes.

Personally, I hope that those of us affluent North Americans who wish to do so can go on enjoying the luxury of respectfully, worshipfully visiting Wilderness Areas. In my opinion, the greatest value of the Wilderness Act of 1964 is ethical. It formally acknowledges a human commitment to humility, for-

*Beaver card. Ives -- it is -- hope*



## Land Ethics

bearance, and restraint. But as the centerpiece of a nature conservation philosophy, we need to find an alternative to the wilderness idea. Fortunately, we need not look far. We find the appropriate alternative in the concept of biosphere reserves, a concept hatched in Europe, focused on the tropics, and given the imprimatur of the United Nations. Thus, it has genuine international currency. Further, biosphere reserves are selected not on the basis of scenic qualities and not because they are otherwise useless, but on the basis of ecological qualities. Such reserves, intended to preserve biological diversity and ecosystem health, should be designed not only to harbor the charismatic megafauna—bears, wolves, bison, and the like—but the entire spectrum of indigenous species, invertebrates as well as vertebrates, plants as well as animals.

A policy of invasive human management—by means of, say, prescribed burning or carefully planned culling—is cognitively dissonant with the wilderness idea, but not with the biosphere (or biodiversity) reserve idea. Indeed, one of the signal differences between the old wilderness idea and the new concept of biosphere reserves is a provision for compatible human residence and economic activity in and around reserves.

Had the Kidepo National Park been conceived as the Kidepo Biosphere Reserve (though of course to think that it actually might have been is anachronistic) then the Ik and their culture could have been part of what was preserved. Looking toward the future, the Buffalo Commons, envisioned by Frank and Deborah Popper, was, upon first hearing, so violently opposed because it was originally uncritically cast in the wilderness mode. It is becoming politically more palatable, even attractive, as residents of the target regions see an opportunity to stay, not leave, and switch from farming and livestock ranching to various ways of sustainably exploiting American Bison, Elk, deer, and Pronghorn antelope. As I envision a Buffalo Commons, private herds of cattle and sheep would be removed all over the arid and semi-arid West. Absent domestic stock, the native vegetation could reclothe the range. And with the fences down, the native ungulates could roam free and wild. Erstwhile ranchers and farmers could retain a home forty and form management co-ops to allot themselves culling rights, proportional perhaps to how much land each put into the commons. If the Blackfeet, Arapaho, Cheyenne, and Lakota could cull the unowned Elk and Buffalo herds without compromising biological diversity, why can't the contemporary residents of the same region?

The biosphere reserve idea may be the centerpiece of a coherent and universalizable conversation philosophy, but not the whole of such a philosophy. The wilderness idea is half of an either/or dichotomy: either devote an area to human inhabitation and destructive economic development, or preserve it in its pristine condition as wilderness. The classic wilderness advocates, such as Roderick Nash, in other words, envisioned no alternative to industrial civilization offset by wilderness preservation. As long as it stayed on its side of the fence, industrial civilization went unchallenged.

The core-buffer-corridor concept of The Wildlands Project casts it in the new biosphere reserve paradigm. But the authors of "The Wildlands Project Mission Statement" still, in my opinion, concede too much to industrial civilization as we know it, when they write, "Intensive human activity associated with civilization—agriculture, industrial production, urban centers—could continue outside the buffers." Complementing the biodiversity reserve idea in a sound nature conservation philosophy are the ideas of appropriate technology and sustainable livelihood—i/ by "sustainable livelihood" is meant human economic activity that does not compromise ecological health and integrity. Solar alternatives to hydroelectric and fossil fuel energy should be aggressively explored. Alternatives to industrial agriculture should be encouraged by means of policy changes. Urban sprawl should be controlled by better planning and stricter zoning. Timber reserves should be harvested ecologically as well as sustainably, as now ostensibly mandated by the new Forest Service policy on National Forests. And so on. Thus some biological conservation might be integrated with economic activities in areas not designated as biodiversity reserves (cum buffers and corridors), just as some economic activities might be integrated with biological conservation in those that are.

I was impressed with how the Greater Yellowstone Ecosystem seemed to be a looming presence in the collective consciousness of Bozeman. Almost all the symposium speakers mentioned it. Some dwelled on it. A few spoke of nothing else. It being my spring break and all, I had set aside a few days afterward to go trekking. The Park pulled me like a magnet. I rented a car and drove up the Paradise Valley to the north gate. Then I poked around the valley of the Yellowstone River and those of the Lamar and Gardiner, two of its tributaries, on foot.

Tired of a long, bitter Wisconsin winter and with my cross-country skis back home in my shack, I never got anywhere near the backcountry. Climbing up on McMinn Bench near Mt. Everts, I could see the Park Headquarters village in the vicinity of Mammoth Hot Springs, the town of Gardiner off to the north, US 89 running south to Norris Geyser Basin, and US 212, which is kept open all winter as far east as Cooke City, Montana. But the difference between inside and outside the Park boundaries was like the difference between night and day. Inside, the headquarters village, the roads, the camp grounds, all had hard edges. And there were no fences. Outside, the gate town had a long filament of gas stations, motels, fly shops, and whatnot strung out along the highway. New-looking houses were scattered here and there on the nearby bluffs. Though I was usually walking through a mixture of mud and Elk manure, the Park seemed clean. Beyond, the landscape seemed marred and cluttered.

Both outside and inside the Park I saw Elk, Mule, and White-tailed Deer, and Pronghorn. Inside the Park I saw plenty of Bison. At close range the evidence of Elk overpopulation was ubiquitous: aspen were absent, an Elk-eye-level browse line was on the Douglas-firs and Whitebark Pines, game trails

Really smart

traversed the slopes every 50 feet or so of elevation, the river banks were denuded and eroding, and everywhere I stepped, I stepped in Elk scat.

The Greater Yellowstone Ecosystem (comprising Yellowstone and Grand Teton National Parks, the Bridger-Teton, Targhee, Gallatin, Custer, Caribou, and Beaverhead National Forests, three National Wildlife Refuges, and BLM, state, and private lands) is the biggest relatively intact ecosystem in the Lower Forty-eight. The Park is a listed UNESCO Biosphere Reserve and World Heritage Site. What the Yellowstone Biosphere Reserve lacks is a thoughtful buffer zone policy and well-articulated corridors connecting it with the Bitterroot, Bob Marshall, Glacier, and Cascade core habitats. I have no personal experience with potential corridors, but the Paradise Valley is an ideal candidate for a buffer zone on the north boundary of Yellowstone National Park. Under the new mandate for ecosystem management, the Forest Service should manage its "multiple use" forests as buffer zones to the adjoining parks and to its designated Wilderness Areas in the Greater Yellowstone Ecosystem. Up to now, the Forest Service has extensively roaded and permitted clearcut logging, especially in the Targhee and Gallatin National Forests, "treatments" not consistent with biosphere reserve buffer zone management. Stock grazing is permitted on nearly half the public lands in the Ecosystem, including (incredibly) designated Wilderness Areas in the National Forests and parts of Grand Teton National Park. But what hope can we entertain that the absolutely essential winter ungulate habitat represented by a multitude of private properties in the Paradise Valley will be managed as a buffer zone?

Let's look at what's going on in the Valley now. With my first quart of cold beer in three days on the seat between my legs, my left hand on the wheel, and the right taking notes as I drove from Gardiner to Livingston, this is what I saw:

Immediately beyond the Park boundaries a good deal of open land in the side hills between the Yellowstone River valley and the mountains has been bought for winter range by the Rocky Mountain Elk Foundation. But virtually within sight of the Park gate and only a stone's throw from the river, some enterprising entrepreneur has dug a gravel pit. As I drove by, a bulldozer was pushing loose rock around in a cloud of dust.

The next notable manmark on the landscape is the former alpine estate, Royal Teton Ranch, of the late Malcolm Forbes, who must not have known that his view opened on the Gallatins, not the Tetons. As his last rite to Mammon, Forbes got top dollar for his prime Montana property from a California survivalist cult, the Church Universal and Triumphant. Right

on the river bank the hard core cultists live in a tacky shanty town (and the rest in places like Livingston and Bozeman). Back in the side hills of the Gallatin Range they have erected bomb shelters, the fuel storage tanks of which were found leaking diesel oil. As I drove by at eventide, cult cattle were watering in the Yellowstone and trampling its banks. It so happens that the old Forbes place has geothermal "resources"; and I saw steam rising near the little settlement. The "Church" plans to develop these resources, putting the Park's geysers at the risk of extinguishment.

Then, on the side of the road away from the river, I passed an "elk farm," a rundown house and some ramshackle outbuildings beside a small, grassless paddock enclosed by a high fence. I was told that game wardens had finally caught the wily proprietor luring hungry wild Elk into his compound by night. Later he would sell them as pen-raised animals.

A little relief from this world of wounds came when I drove into Yankee Jim Canyon, most of which is part of the Gallatin National Forest, where the mountains on either side of the Valley narrow and the river flows fast through a shallow gorge.

Down north of the Yankee Jim respite, the valley widens, framed on the east by the Absoroka and on the west by the Gallatin ranges. Once more the property is mostly private. Ranches. Cattle. I wasn't around long enough to know whether or not the ranchers in the Paradise Valley were conscientious

land stewards, like Mr. Hibbard. But what I could see through the windshield at sixty miles per hour was the meaning of "trammed"—to be caught or held in, or as if in, a net; enmeshed; to be prevented or impeded; confined, according to Webster's Collegiate. The valley was trammed, enmeshed, and impeded by a network of fences.

Interspersed with the ranches, closer to a wide spot on the road called Emigrant and on into Livingston, are riparian smallholds with mansions sitting on them, belonging to gentry from elsewhere who found their little piece of paradise on the Yellowstone River. Two miles east of Emigrant on a big bend of the river is Chico, a hot springs resort. I didn't go there, since I had just had an *au naturel* soak in the Park.

To accommodate itinerant pilgrims to the valley, someone was rearranging the river bluff with a bulldozer and building an RV "campground," farther down the road. The hookups were all installed. When I passed by, the driveways were just going in.

As I got closer to Livingston, the gentrification of the riparian zone became more intense. The mountains pinch in again and stop at the north end of Paradise Valley, near a place called

*And what could Paradise  
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## Land Ethics

Allen Spur. I rolled on into town—gradually. The highway is lined with modest houses along the river, lumber yards, gas station/seven-eleven stores, motels, fast food joints, trashy empty lots—the usual mishmash of totally planless strip development, Anyplace, USA.

And what could the valley become? A Buffalo Commons. Or, more precisely, an Ungulate Commons.

Most cults—the Branch Davidians were an especially spectacular example—eventually self-destruct. Hopefully the Church Universal and Triumphant will be no exception to the rule. Then the federal government can do what it tried before to do, purchase the old Forbes place and devote it to wildlife.

The government thought it couldn't afford Forbes's asking price, and so probably would shrink from the thought of buying the whole Paradise Valley, much of which may not be for sale. So what can be done? Convince the ranchers to tear down their fences, the most ubiquitously trammeling presence on the land; get rid of their cattle; and invite in the Elk, Bison, antelope, and deer. Coyotes will keep the ground squirrels in check; Black-footed Ferrets will hold down the prairie dog population; Gray Wolves and Mountain Lions will take out old, sick, and less fit large herbivores, leaving the cream of the free-ranging crop for the erstwhile cattle ranchers to skim. The gentry should love to look out their picture windows and see free wild animals, rather than their neighbors' fenced cattle. And the tourists might pay even more money to park their Winnebagoes in the midst of "free nature"—as Arne Naess dubs this fair mix of people and wildlife—instead of in just another roadside attraction.

But how to avoid the tragedy of the commons? Through cooperation. The Paradise Valley is well defined and self-contained. A ranchers' co-op could hire its own wildlife ecologists and, in consultation with the Fish and Wildlife, Forest, and Park Services, set their own sustainable harvest quotas.

After my talk at the wilderness symposium, Chase Hibbard was asked what he thought of my remarks about switching from cattle ranching to market hunting native ungulates. He was opposed to it. Categorically. I asked him, Why?, if market analyses suggest that such a scheme would be more economically attractive than cattle ranching. You know, business is business. Are cattle a religion in Montana, or what? He answered, Yes, they are. (This symposium was full of surprises.) And he went on to lay down the usual line of bullshit (pun intended) about how cattle are a part of what makes the West the West (in the Hollywood-mediated American mind), and how his family has been running cattle here a long time. A long time! I wanted to say, but didn't—a blip on the trajectory of the true history and future of the West which belongs to the Bison and to those whose livelihood once did and may soon again center on this shaggy symbol of North America's high, semi-arid country and on the other native grazers and browsers.

Thinking over this exchange of opinions, I came to the conclusion that cattle were not the real cult-object of the Western ranchers' religion. Private property is. In addition to the

Church Universal and Triumphant, the Paradise Valley is not home to neo-Baal cultists. No, John Locke is the theologian of cattlepersons. As I envision a Paradise Valley Ungulate Commons—a key part of the Greater Yellowstone Biosphere Reserve Buffer Zone—private "real" property would remain in private hands. Privately owned "animal units" are what would go, along with fences, one purpose of which is to mark real estate boundaries and segregate one rancher's privately owned herd from another's.

Would this be so unAmerican? Not if we think more expansively, in historical terms. That's more or less the way the Indians—bona fide Americans if anyone is—did it. Each group had a territory, the property rights to which they claimed and enforced. But the animals were their own bosses. And if, to get a hearing, we must confine ourselves to the short-term scale of Euro-American history, pelagic fisherpersons, traditionally, own their boats and tackle, but the fish go where they will, owned by no one. So the precedent and paradigm for an economically exploited native Ungulate Commons should perhaps be marine fisheries rather than terrestrial ranches. With this difference: A network of North American Ungulate Commons would be far less liable to overexploitation, because the stocks are composed of large, visible specimens that are fairly easy to count and they fall under national jurisdictions (those of the United States, Canada, and Mexico, now, for better or worse, coordinated by NAFTA).

The biosphere reserve conservation concept includes another, less often discussed zone, the transition zone. Here too, the key is appropriate technologies and sustainable economies. Starting at Livingston and going east, montane Montana gives way to high plains Montana. The Great Plains region is already moving in the direction of a Buffalo Commons. The fences are still up, but several big ranches—most famously, the one belonging to Ted and Jane—are switching from cattle to Buffalo. While Buffalo are certainly less tractable and more difficult to contain, they need less care than cattle, and so are becoming an increasingly attractive alternative for imaginative and well-landed high plains entrepreneurs. And many Indian groups are expressing a keen interest in restoring Buffalo herds to reservation land, with the added incentive of the Bison's place in their histories, cultures, and religions.

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# Wilderness—Now More Than Ever

*A Response to Callicott\**

by Reed F. Noss

Callicott's essay is peculiar. It is nicely written, erudite, and definitely provokes thought. But it also provokes, at least in me, a good deal of frustration. Many of us in the conservation movement have worked hard for years to promote ecological and evolutionary understanding as the logical foundation for land conservation (land in the sense Leopold used it, including air, soil, water, and biota), but coupled with the aesthetic and ethical appreciation of wild things and wild places for their own sakes. Following Leopold, we have tried to unite brain and heart, rationality and intuition, in the struggle to defend wild nature. Yet here comes Callicott, a leading environmental ethicist, a Leopold scholar, a professed lover of wildness, mounting an attack on the concept of wilderness. His article in *Wild Earth* is only the latest in a series of essays in which Callicott assails the idea of wilderness as anachronistic, ecologically uninformed, ethnocentric, historically naive, and politically counterproductive. I believe Callicott is dead wrong and I will try to tell you why.

First, I must state emphatically that I agree with much of Callicott's essay.

His progressive interpretations of biosphere reserves, buffer zones, transition zones, sustainable livelihood, and ecological management are all in line with what I and many others affiliated with The

Wildlands Project have supported and proposed. But

Callicott portrays all these integrative concepts as *alternatives* to wilderness protection, as things conservationists should spend their time on instead of

defending wildlands. To support his contention that

the wilderness idea no longer has merit, Callicott erects a straw man of wilderness (based essentially on the Wilderness Act of 1964) that is 30

years out of date. No one I know today thinks of wilderness in the way Callicott depicts it. Every-

one with any brain knows that wilderness boundaries are permeable, that ecosystems are dynamic

entities, that humans are fundamentally part of nature (though arguably a malignant part), and that

ecological management is essential in most modern wilderness areas and other reserves if we want

to maintain biodiversity and ecological integrity. To "let

nature run its course" in small, isolated reserves burgeoning with alien species and uncontrolled herbivores is to watch

passively while an accident victim bleeds to death.



\*Editor's note: J. Baird Callicott plans to write a rejoinder to this and Dave Foreman's response for the spring 1995 *WE*.



Callicott claims that "several recent and not so recent realizations are subverting this simple philosophy of nature conservation through wilderness preservation." He goes on to provide a number of arguments in support of his thesis that the wilderness ideal is no longer useful. I will agree that "hands-off" wilderness areas in human-dominated landscapes often have minimal ecological value. But they do have some worth, for instance in serving as reference sites (though imperfect) for restoration and management experiments and as micro-refugia for species sensitive to human disturbances. It is an overstatement to claim that wilderness preservation has failed.

Indeed, one could more easily conclude from recent evidence over most of the continent that it is multiple-use management that has failed.

Multiple-use areas, which constitute the vast majority of public lands, have been degraded far more than virtually any of our Wilderness Areas (Callicott himself provides several examples from the Greater Yellowstone Ecosystem). Roads run everywhere, the last old-growth forests are being converted to two-by-fours, cows munch and shit their way across public rangelands, and "ecosystem management" propaganda is being used to justify continuation of the status quo under a new guise. This evidence only strengthens the argument that we need more—not less—area off limits to intensive human exploitation. The more degraded the overall landscape becomes, the greater the value of real wilderness, even though it becomes ever harder to protect.

Callicott is absolutely correct that biological conservation was not a major consideration in the designation of existing Wilderness Areas. The biased allocation of land to Wilderness—where areas of little economic value, except for recreation and tourism, are protected instead of more productive and biodiverse areas—is well known. That warped, unecological approach to wilderness protection has been thoroughly exposed in the technical and popular literature of conservation. Modern conservation programs, from mainstream government projects such as the National Biological Survey's Gap Analysis to avant garde efforts such as The Wildlands Project, are trying to correct this imbalance and better represent the full spectrum of biodiversity in protected areas. Callicott's criticism of the wilderness movement on these grounds is

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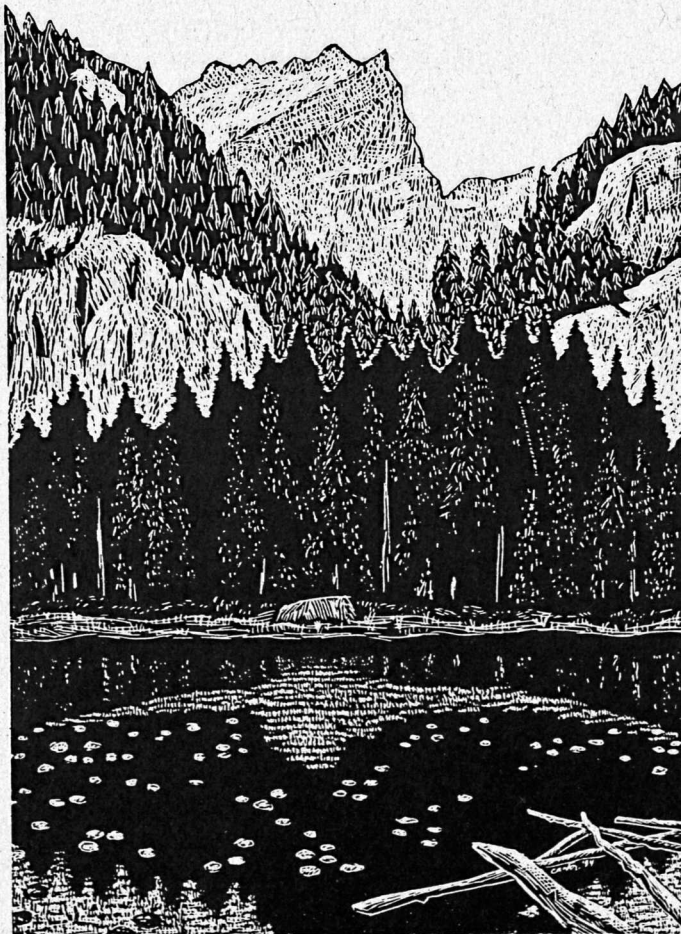
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CALICOTT.

disingenuous; we have learned and we have matured. We will no longer tolerate sacrifices of productive wildlands in exchange for a few scraps of rock and ice. Callicott's claim that wilderness preservation is purely "defensive" only reflects the assaults wild areas face everywhere. Of course we are defensive. If we did not defend the last remaining wild areas, they would soon be gone. We lose most battles as it is; if we gave up, nothing would remain for long. Anyway, the wilderness movement today is not purely defensive. Indeed, The Wildlands Project seeks to move away from defensive, last-ditch efforts, away from saying what *should not* be done toward saying what *should* be done to restore whole ecosystems in all regions.

Callicott devotes quite a bit of space in his article to the problem of excluding humans from wilderness when humans are really part of nature. I know of no philosophical problem more recalcitrant than the whole question of "what is natural?" Hell if I know. But Callicott doesn't make much headway toward resolving this issue either. I agree it was a mistake to extend the standard American model of national parks to developing countries and exclude indigenous hunter-gatherer cultures from these areas. The idea that wilderness can include all primates except for the genus *Homo* is ridiculous. It is not ridiculous, however, to exclude people living profligate, subsidized, unsustainable, industrial lifestyles (including Callicott and me) from permanent habitation in Wilderness Areas. Even to exclude "native" people from some reserves is not ridiculous when these people have acquired guns, snowmobiles, ATVs, bulldozers, and modern medicine. It is not exclusion from these reserves that separates us from nature; it is our culture and our lifestyles, which had already separated us long before we began designating Wilderness Areas. Yes, the Darwinian revolution united us with nature intellectually; but we have been trying our damndest to separate ourselves from nature emotionally and physically since Neolithic times (at least).

The problem of our estrangement from nature may lie in the increasing dominance of cultural over biological evolution in the last few millennia of our history. This cultural-biological schism also requires that we take measures to protect wild areas and other species from human exploitation, if they are to sur-

*The modern wilderness idea, as embodied in The Wildlands Project, does not say humans are apart from nature. It simply says, in line with Leopold's land ethic, that we need to impose restraints on our actions.*



vive. The adaptations of most species are determined by biological evolution acting through natural selection. Except for bacteria species and some invertebrate species that have very short "generation" times, biological evolution is much slower than cultural evolution, taking hundreds or thousands of years to express itself. Through cultural evolution humans can respond much faster than most other species to environmental change. Because most environmental change today is human generated, we have created a situation where our short-term survival is much more assured than that of less adaptable species. Some of these species are extremely sensitive to human activities. It seems to me that an environmental ethic, as Leopold, Callicott, and others have expressed it, gives us an obligation to protect species that depend on wilderness because they are sensitive to human persecution and harassment. I hasten to add that few species "depend" on wilderness because they prefer wilderness over human-occupied lands; rather, they require wilderness because humans exterminate them elsewhere. Roadlessness defines wilderness. Where there are roads or other means of human access, large carnivores and other species vulnerable to human persecution often cannot survive.

Callicott correctly criticizes the idea of wilderness as a totally "unmanaged" landscape. I differ from some modern wilderness advocates in emphasizing that most Wilderness Areas today must be actively managed if they are to maintain the "natural" conditions for which they were set aside (see my book with Allen Cooperrider, *Saving Nature's Legacy: Protecting and Restoring Biodiversity*, Island Press, 1994). Certainly native Americans managed the ecosystems in which they lived, principally through the use of fire. I think the evidence is plain that at some level of management *Homo sapiens* can be a true "keystone species" in the most positive sense, in that we can enrich the diversity of habitats and species in the landscape. We can play a role similar to that of the Beaver, prairie dog, Bison, woodpecker, or Gopher Tortoise, by providing habitats upon which many other species depend. Above some threshold of manipulation, though, biodiversity enhancement becomes biodiversity destruction. Diversification becomes homogenization. Man as part of nature becomes man at war with nature. We become too damn clever for our own good. I do not believe that human management or technology is inherently bad; but once we have crossed the threshold, we become a tumor instead of a vital part of the ecosystem. Again, this transformation provides all the more reason to set wild areas aside and protect them from human invasion. Those wild areas may very well require management, but the most positive management will usually be protection from over-use by people, restoration of structures and processes damaged by past human activities, and disturbance



management (for instance, prescribed burning) to substitute for natural processes that have been disrupted.

Callicott's straw man of wilderness reaches its zenith in his statement that "wilderness *preservation* [his emphasis] suggests freeze-framing the status quo ante, maintaining the way things were when the 'white man' first came on the scene..." While logically consistent, such an interpretation of the wilderness ideal is idiotic. No ecologist interprets wilderness in the static, pristine, climax sense that Callicott caricatures it. Nonetheless, to throw out knowledge of the historical, pre-European condition of North American landscapes would be equally stupid. Those presettlement ecosystems developed through thousands and even millions of years of evolution of their component species without significant human intervention [excepting the possible role of human hunters in eliminating many of North America's large mammals 10-15,000 years ago]. Sure, the environment in which these communities developed was dynamic, but the rate and magnitude of change was nothing like that experienced today. As ecologists Steward Pickett, Tom Parker, and Peggy Fiedler (1991, in *Conservation Biology*, edited by P.L. Fiedler and S.K. Jain; Chapman and Hall) pointed out with regard to the "new paradigm in ecology," the knowledge that nature is a shifting mosaic in essentially continuous flux should not be misconstrued to suggest that human-generated changes are nothing to worry about. Instead, "human-generated changes must be constrained because nature has functional, historical, and evolutionary limits. Nature has a range of ways to be, but there is a limit to those ways, and therefore, human changes must be within those limits."

Yes, many North American ecosystems were managed by Indian burning for perhaps as long as 10,000 years; but in most cases, the Indians did not create new ecosystems. They simply maintained and expanded grasslands and savannas that developed naturally during climatic periods with high fire frequency. Furthermore, the importance of Indian burning is often exaggerated. As many ecologists have pointed out, the natural thunderstorm frequency in some regions, such as the Southeastern Coastal Plain, is more than enough to explain the dominance of pyrogenic vegetation there. In any case, the native Americans in most cases (megafaunal extinctions of the late Pleistocene aside) clearly operated more within the functional, historical, and evolutionary limits of their ecosystems than the Europeans, who transformed most of the North American continent in less than 200 years. The modern wilderness idea, as embodied in The Wildlands Project, does not say humans are apart from nature. It simply says, in line with Leopold's land ethic, that we need to impose restraints on our actions. We need to keep ourselves within the limits set by the evolutionary histories of the landscapes we inhabit. Until we can

bring our numbers down and walk humbly everywhere, let us at least do so within our remaining wild areas.

Callicott discusses the biosphere reserve model as if it were an alternative to wilderness. I agree that the biosphere reserve model is useful—we base our Wildlands Project reserve network proposals on an extension of that model. Biosphere reserves are not, however, an alternative to wilderness. In fact, wilderness is the central part of the biosphere reserve model: the core area. Without a wilderness core, a biosphere reserve could not fulfill its function of maintaining the full suite of native species and natural processes. A wilderness core area may still require ecological management, especially if it is too small to take care of itself (i.e., less than several million acres). A healthy long-term goal is to recreate core areas (ideally at least one in every ecoregion) big enough to be essentially self-managing, areas that do not require our constant vigilance and nurturing. Those true wilderness areas will have much to teach us about how we might dwell harmoniously with nature in the buffer zones.

Callicott's alleged dichotomy of "either devote an area to human inhabitation and destructive economic development, or preserve it in its pristine condition as wilderness" is false. The reserve network model applied by The Wildlands Project recognizes a gradient of wild to developed land, but encourages a continual movement toward the wild end of the gradient over time as the scale and intensity of human activities decline. And human activities *must* decline if this earth is to have any future. Callicott's idea of "sustainable livelihood" is entirely consistent with this model. But how are we to figure out how to manage resources sustainably (while sustaining *all* native species and ecological processes) without wild areas as benchmarks and blueprints? How are we to show restraint in our management of resources in the landscape matrix when we don't have enough respect to set aside big, wild areas for their own sake?

We need no alternative to wilderness. Rather, we need to incorporate the wilderness ideal into a broader vision of recovered but dynamic landscapes dominated by wildland but complemented by true civilization. As Ed Abbey stated, a society worthy of the name of civilization is one that recognizes the values of keeping much of its land as wilderness. We need the wilderness ideal in these days of frivolous "ecosystem management" more than ever before. We need it to provide a "base-datum of normality," as Leopold put it, to give us reference sites for comparison with more intensively managed lands. We need it to counter the arrogant belief that we can manage and control everything. We need it to inspire us, to put our lives at risk, to humble us. And, more important, the bears need it too.

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# Wilderness Areas Are Vital

*A Response to Callicott*

by Dave Foreman

J. Baird Callicott is a leading environmental philosopher, a scholar, a college professor, and has a Ph.D. He's done some of the best work in the field of environmental ethics. I personally like Baird and admire most of his work. He's a nice guy.

Now, because I like him and most of his work, and because I barely got a BA from a Western cow college (my GPA hovered somewhere in the mid-2s), I am reluctant to grade his preceding paper, "A Critique and an Alternative to the Wilderness Idea." But grade it harshly I must, because it is fraught with mischief, and unschooled in its subject—the idea, history, and success of Wilderness Areas. (I will give it a high grade for provoking thought among conservationists, however. Few things need more provocation than thinking.)

In the forthcoming Wildlands Project anthology, *Place of the Wild*, edited by David Burks, I have an essay covering many of the topics in this discussion. Instead of taking that tack again, here I will simply go through Dr. Callicott's essay and respond point by point. At the end, we should have waded far enough out of the swamp to find a rise of dry ground. I hope from that view I'll have covered the major weaknesses of his paper and summarized why Wilderness Areas must be at the core of any serious conservation strategy. If that is the case, then I'll be happy, because it will mean I don't have to write any more on this topic for awhile. I also

hope that the swamp I lead us through is not too mucky, and that Baird and I both come out of it as compadres in the battle for biodiversity.

Callicott starts by highlighting the "debate *within* the community of conservationists... about the value of the wilderness ideal to the conservation of biological diversity." Actually, this is not a major debate within the conservation community in the USA. It is an off-to-the-side little fracas, at most. The majority of those criticizing the Wilderness idea who are not out-and-out enemies of conservation are well-meaning liberals without a gut feeling for "wild things and sunsets" (let's call them "en-





Wilderness from the counter-cultural environmentalism of the 1970s ff.

vironmentalists"); they would like conservationists to spend more time on what they consider more important issues—human issues—than on places uncontrolled by people. This minor argument is not new, either. Rod Nash, in the third edition of *Wilderness and the American Mind*, reviews the high points of the Garden vs. Wilderness debate stretching back to the 1950s.

Internationally, there is more debate about Wilderness; but again, it is mostly between conservationists concerned with biodiversity and environmentalists and social justice activists concerned with people, not between conservationists (though there are exceptions). It is important to note that, despite what the anti-Wilderness crowd would have us believe, Wilderness advocates are not anti-people. Most of us support campaigns for human health and for social and economic justice. Indeed, we think Wilderness is a reservoir of mental, physical, and social health for humans. Unfortunately, some social justice proponents who criticize National Parks and Wilderness are just as anthropocentric and development-driven as are fast-buck businessmen and libertarian economists. They merely want to see the supposed economic benefits from the destruction of Wilderness go to the poor and socially disenfranchised instead of to the wealthy and politically connected.

Since this is a minor brouhaha, and since most of those arguing against Wilderness have little constituency, I'm reluctant to even give it space in *Wild Earth*, because of its potential for mischief (fueling the arguments of the real anti-Wilderness yahoos), or to take the time to respond, because I have better things to do, like watching the sunset this evening with a cigar and a glass of cabernet (thereby overcoming the duality of Civilization and Nature). Nonetheless, present it in *Wild Earth* we must, and respond I must, because J. Baird Callicott is one who loves wild things and sunsets, and as a self-described philosophical troublemaker, he helps us all think more deeply about Wilderness.

Callicott says he wants only to criticize the idea of Wilderness but not on-the-ground Wilderness Areas. Uh, duh. I must be slow, because I sure as heck can't figure out how someone can pull this off. He even says that Wilderness Areas need to be multiplied and expanded. Why, then, criticize them for what they are? Philosophers might call this a logical inconsistency, or some other silver-plated term. It just makes me want that sunset and cabernet all the more.

Callicott also says he does not want to discredit Wilderness Areas or make them more vulnerable to development. But this is exactly what he is doing in his essay! He is discrediting them by attacking their justification, and others may reap the message he is sowing to try to open existing Wilderness Areas to clearcutting, roads, motorized vehicles, and "ecosystem management," and, more dangerously, to argue against the designation of new Wilderness Areas.

Callicott's grasp of conservation history is woefully weak. He writes, "After the existence of an 'environmental crisis' was widely acknowledged in the late 1960s, the benchmark of en-

vironmental quality was the wilderness ideal of pristine, untouched nature. Accordingly, the *new breed of environmentalists* believed that the best way to preserve nature, if not the only way, was to exclude all human economic activities from representative ecosystems and designate them as wilderness preserves." (My italics.) This is a complete misunderstanding of the history of the Wilderness preservation movement. The "new breed" of environmentalists who leapt out of Earth Day 1970 weren't particularly interested in Wilderness. Products generally of the New Left and the anti-war movement, they were riled up about pollution and energy waste. They worked for alternative transportation and recycling. The movement to protect Wilderness Areas originated at the close of World War One in the United States Forest Service. Those of us who fight for Wilderness trace our history back to Aldo Leopold, Art Carhart, and Bob Marshall, not to Barry Commoner, Ralph Nader, and Earth Day. (I don't recall a single Wilderness Society field representative in the 1970s who saw Earth Day as an important event in their life.)

Before a respected scholar like Callicott criticizes the Wilderness concept (even from a friendly if disingenuous point of view), he ought to become more familiar with the history of the Wilderness preservation movement. Here, and throughout his critique of Wilderness, Callicott gives no indication of having read Mike Frome's *Battle for the Wilderness*; Hende, Stankey, and Lucas's *Wilderness Management*; Foreman and Wolke's *The Big Outside*; or Stephen Fox's *The American Conservation Movement*. More important, he doesn't seem to have a personal involvement in the Wilderness conservation movement, nor even the understanding of a close observer. To appreciate why Wilderness Areas must be the centerpiece of conservation strategy, one really needs to spend time in the trenches, fighting Forest Service timber sales, going toe to toe with ranchers and loggers and snowmobilers, filing appeals and lawsuits against agency "development" schemes, and lobbying members of Congress to protect a place (and trying to figure out which arguments will work with them!).

Similarly, lesser scholars will oftentimes erect a strawdog of their opponent's argument so they can more easily demolish it. Callicott, perhaps without realizing it, has done that with what he presents throughout his paper as the "received wilderness idea." He offers six "realizations" that are "subverting this simple philosophy of nature conservation through wilderness preservation." (He says this "simple philosophy" tries to "achieve environmental preservation by zoning the planet into areas" where development would be allowed and where it would be prohibited).

First, he criticizes Wilderness Areas for having been spawned as a Muirian "psycho-spiritual resource" and not for their biodiversity value. To support this contention he quotes my calling Wilderness Areas "rocks and ice." This simplifies the situation. Yes, I've argued that the primary arguments for Wilderness Area and National Park preservation have historically been those of monumental scenery and non-motorized

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recreation. Areas of value for timber, minerals, grazing, dams, highways, and the like have frequently been stripped away from areas designated Wilderness. Ecological values have not always been foremost in selecting areas for protection.

If we have protected more alpine tundra and subalpine forest than ecologically richer areas, *the fault is with the political process of designation, not with the idea of Wilderness Areas or National Parks.* Ecological and wildlife considerations have been strong in the history of Wilderness preservation, and in the motivations of Wilderness conservationists. As Brock Evans of the National Audubon Society points out, Wilderness

*Callicott rightly describes the island condition of Wilderness Areas and laments that there is more pavement than protected Wilderness. This is not the fault of Wilderness, it is the fault of what goes on when areas are not protected as Wilderness.*

Areas and National Parks protect areas of great value for biological diversity. They are not by any means all "worthless lands" or rocks and ice. The finest remaining ancient forests are protected in designated Wilderness and Parks on the Pacific Coast. Evans offers the low-elevation ancient forests of the Suittle River in the Glacier Peak Wilderness Area, French Pete Creek in the Three Sisters Wilderness, and the Hoh and Quinalt valleys in Olympic National Park as evidence. Conservationists fought for these places for ecological reasons and won over the strident opposition of the timber industry.

The largest expanse of natural forest in the United States is in the Selway-Bitterroot and River of No Return Wilderness complex in central Idaho. New Mexico's Gila Wilderness protects the finest

old-growth Ponderosa Pine forest in the world. The best tracts of Eastern forest are in National Parks, State Parks, and Wilderness Areas. Ecological representation was an important criterion used by both conservationists and the Forest Service to select proposed Wilderness Areas during the Forest Service's second Roadless Area Review and Evaluation (RARE II) from 1977 to 1979. Wilderness Areas and National Parks do protect prime habitat for imperiled and sensitive species like Wolverine, Fisher, Grizzly Bear, Gray Wolf, Mountain Lion, and Bighorn Sheep. If it were not for these areas protected through the blood, sweat, and tears of recreational Wilderness conservationists, these species would be far more imperiled today than they are—indeed, if they existed in the lower 48 states at all.

Some of us arguing for stronger ecological criteria in selecting and designing reserves, myself included, have over-

stated the lack of ecological concern in the history of the Wilderness preservation movement. By overstating the problem, we have handed anti-Wilderness firebugs gasoline. As we seek to restore the biological richness of North America by applying the concepts of conservation biology to nature reserve design, let's not fall into the trap of dismissing existing Wilderness Areas and National Parks. They are the basis for any system of biodiversity reserves. They have worked better than anything else to save the diversity of life in the United States.

Again, the biodiversity crisis is not caused by a reliance on Wilderness Areas. That these areas have failed to fully protect biodiversity is because of the political forces working at every step of the way to weaken and pare away such reserves. The biodiversity crisis is worsening partly because not enough land has been protected as Wilderness Areas and National Parks.

Callicott's second realization is that the Wilderness philosophy is defensive and therefore a *losing* strategy. His argument here reveals a bedrock misunderstanding of the history of Wilderness preservation. Forest rangers originally called for Wilderness Areas as Henry Ford put America on wheels after the Great War. These packers and paddlers and Dutch oven wizards feared that their beloved backcountry and quality hunting grounds would disappear under standard Forest Service management. After the Second Great War, when the Forest Service began to aggressively market its big trees, conservation leaders like Howard Zahniser and David Brower called for congressional protection of Wilderness Areas to thwart standard National Forest management which had no place for wilderness. They fought to designate Wilderness Areas in National Parks in order to derail development scams and "scenic motorways" that Park Service boomers were building in the Parks. They wanted Wilderness in National Wildlife Refuges so all Refuges would not become mere duck farms. Conservation activists since then have proposed more and more areas as Wilderness in National Forests, National Parks, Wildlife Refuges, and BLM lands because Wilderness is the only workable alternative to prevent business as usual—roads, tourist resorts, clearcuts, off-road vehicles, and other dollar-driven madness that is part and parcel of land management and resource extraction.

Defensive? You bet. Without seventy years of this defensive strategy, the United States would look like Europe.

In case you haven't noticed, the political and economic kingpins of the world are scalping the land for the Last Great Barbecue. Somebody's got to play defense!

Callicott rightly describes the island condition of Wilderness Areas and laments that there is more pavement than protected Wilderness. This is not the fault of Wilderness, it is the fault of what goes on when areas are not protected as Wilderness.

Callicott's third realization, that Wilderness is a uniquely American idea and can not be universalized, begs the question of whether any land management approach can be universalized throughout a culturally diverse world. But if he thinks the Wilderness idea of places where humans are visitors who do



not remain is uniquely American, then I fear he is being ethnocentric. I know biologists and activists in Latin America and Eastern Europe with the same notion of Wilderness that I have, and they didn't learn it through diffusion from North America. Native peoples around the world protect areas where they see themselves as visitors. The Gwich'in of the American Arctic talk about going into the bear's or the caribou's home when they go on a hunting expedition away from their villages. New Guinea tribes protect areas as sacred, and prohibit entry. There are many more examples around the world. Wilderness as reality and idea is not uniquely American, nor is it especially modern. It is widespread and it is ancient. Conservationists have failed to make that point, and we have failed to gather and offer examples of it. (Wilderness needs a few good anthropologists!)

Callicott's fourth realization, that Europeans did not find a pristine landscape in America and that Native Americans manipulated the American landscape before Europeans arrived, is an overstatement. Yes, Native Americans had an impact on the land. In some cases, that impact was devastating (the Aztecs flayed the land like the Assyrians). Anthropogenic fire may have changed vegetation in some places and maintained it in others; but with only eight million people north of the Rio Grande, much of the land was lightly used and rarely visited. Just as the common wisdom once dismissed any modification of the land by Native Americans, now the exaggeration goes the other way. Vast tracts were affected primarily by the forces of nature, with the imprint of human's work substantially unnoticeable.

Callicott's fifth realization is that Wilderness Areas were established to protect climax communities. Ecology today pooh-poohs the idea of climax communities; ergo, Wilderness Areas are bogus, he believes. In fact, Wilderness Areas are entirely consistent with ecological theories of unstable and changing assemblages of species and seral stages. Wilderness Areas and National Parks, after all, were where modern ideas of fire ecology—that natural fire is a fundamental and vital part of many forest, woodland, and grassland ecosystems—were first developed into “let burn” management policies.

The root for Wilderness in Old English is *Wil-deor-ness*: self-willed land. Self-willed land has fire, storm, and ecosystem change. It has wild beasts who don't cotton to being pushed around by puny hominids. Those who want “snapshot-in-time” Parks are generally the same folks who argue against Wilderness Areas. The opponents of Wilderness, like Michael Pollan of *Harper's*, are the ones who argue against letting nature take its course, who argue that we have to garden the Earth. Alaska Governor Wally Hickel (who never saw a road, oil well, or greenback he didn't like) once said that we can't just let wilderness run wild. Wilderness conservationists have always said that Wilderness Areas should run wild. And as our ecological understanding advances, so does our Wilderness philosophy. (This is not to argue against some management in Wilderness Areas; because of profound human-induced ecological changes, we must intervene with science-based management in many cases—particularly in smaller, isolated areas—as Reed Noss points out.)

Finally, Callicott comes up with the old humbug that Wilderness Areas perpetuate Nature-Human dualism. You bet, if there were five billion elephants they would do some damage to the Earth; but there are not five billion elephants on the planet. There are more than five billion humans on the planet, because civilization, modern medicine, agribusiness, and industrial science have allowed us to escape the natural checks on our numbers—*have allowed us to temporarily divorce ourselves from nature*. The consequences of this are disastrous to all life on Earth, including present and future generations of humans.

It is civilization that has caused a Nature-Human dualism. Wilderness Areas are the best idea we've had for healing that breach, for reintegrating people back into nature in a humble and respectful way. We must realize that we can love something to death, that in possessing a place we destroy it. Wilderness Areas, where we are visitors who do not remain, bring us back into nature, nature back into us, without the destruction that permanent habitation would cause. Most of Earth's surface has been without permanent human habitation for most of our time here. There is nothing dualistic about this, nothing misanthropic. It is normal. It is even—why not say it?—natural.

With his six realizations, Callicott calls for an alternative to the Wilderness idea. He proposes Biosphere Reserves as the centerpiece of a nature conservation philosophy. Despite all the carping about the “failure” of Wilderness Areas (and National Parks), they have a track record unmatched by any other land designation anywhere in the world. Wilderness Areas have been around for seventy years and they have succeeded in protecting ecological processes and some of the most sensitive species in North America. As conservation activists, scientists, and agency managers develop greater ecological understanding, the concept of Wilderness Areas and their design and management also change. Just as ecosystems are dynamic, the notion of Wilderness is dynamic. Callicott's criticism that Wilderness does not allow human activity by native people (he uses the pitiful and questionable example of the Ik), completely ignores how Wilderness Areas and National Parks designated by the Alaska National Interest Lands Conservation Act fifteen years ago allowed for subsistence use by Alaskan natives. Today, tribal people in Alaska are among the strongest supporters of Wilderness. We didn't have to throw out the idea of Wilderness and National Parks and replace it with an untested concept like Biosphere Reserves. Conservationists and the Wilderness idea were dynamic enough to make Wilderness work in the special circumstances of Alaska.

It may be a sad commentary on modern humans, but the fact is that only carefully protected core reserves like Wilderness Areas can really maintain the diversity of life. Leading research biologists with experience from the Amazon to the Himalaya have told me that buffer zones, extractive reserves, “sustainable” use zones, and other Biosphere Reserve approaches cannot protect biodiversity without fully protected core reserves. Biosphere Reserves are a fine concept; we will see how they do in practice.



I, too, have dreams of a Buffalo Commons. One of the best places to launch the idea is on Indian Reservations on the Great Plains. We may hope to see white ranchers giving up their cows, tearing down fence, and cooperatively running Buffalo and Pronghorn and Elk. I'm afraid, though, Callicott doesn't know cowboys. I have some experience with the varmints. They don't cooperate very well. They do worship the domestic cow. They love fences. Many of them hate wolves and self-willed land.

Callicott's idea of ranchers controlling culling rights in the Buffalo Commons shows a misunderstanding of wildlife conservation policy in the United States. Allowing land owners (other than Native American tribes on reservations) ownership rights of animals goes against the grain of wildlife law and tradition in the USA, which hold that wildlife is a commons, owned by the people, held in trust by the government. It doesn't go with ownership of the land. To allow any group ownership of wildlife or special rights over them or control of hunting them opens a real Pandora's box. Working out who controls the Buffalo, Elk, and Pronghorn is the thorniest problem with the Buffalo Commons.

Callicott takes another kick at Wilderness Areas because of the supposed "either/or dichotomy": zone the land as protected Wilderness, or zone it as sacrifice zones where industrialism can run rampant. Again, he displays a poor understanding of the conservation movement. We have fought for Wilderness Areas, yes; we have also fought like hell for sensible, sensitive, sustainable management of other lands. We have fought to protect wild rivers from dams; we've also fought to protect agricultural valleys from dams. We have tried to bring scientific timber harvesting practices to the National Forests. We have tried to bring scientific livestock management to the public lands. We have fought for good management of the matrix. The reason we keep going back to Wilderness is because every reform measure, from NEPA to NFMA to RPA to FLPMA, gets gutted in practice by agencies controlled by extractive industries. We have tried, god, we have tried to get good management on the land. The reforms always fail. The latest example is Option 9 to protect the ancient forests of the Northwest—

even old-growth reserves (they aren't Wilderness Areas!) may be open to continued cutting!

The Wilderness Act was not so much reform legislation as a monkeywrench in the gears. It says, "We know you (Forest Service, Park Service, other agencies) are incapable of voluntarily protecting these values on the lands you manage. Therefore we are taking the prerogative away from you. We are tying your hands in these ways."

I agree we should continue to work for better management of the matrix, and to integrate the Biosphere Reserve idea with Wilderness Areas and National Parks. But I am far less hopeful than Callicott as to the results, for the reasons above. He argues that alternatives to industrial agriculture should be encouraged through policy changes; that urban sprawl should be controlled by planning and zoning; that National Forests should be harvested ecologically and sustainably. Good lord. Where have you been, Baird? All of that has been on the agenda of the conservation movement for decades. We've gotten our faces bloodied from running into brick walls. You think Wilderness is controversial? Try talking zoning, planning, and "alternatives to industrial agriculture" to private property rights zealots and agribiz plowboys if you want controversy.

We've been through all of this a thousand times before; we're still there as a conservation movement; we'll keep trying in the future. But sustainability is not a new idea, and it sure as hell ain't easy. Through all of this, conservation activists have learned that Wilderness Areas, however pared back and compromised they've been, work better than anything else at protecting biodiversity.

Callicott's thoughts driving through Paradise Valley match my own while driving through it a few years ago. It is a vision we should work for. That vision isn't in competition with Wilderness Areas, it's in complementation to Wilderness Areas.

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Also this why Dave's work, not limits.

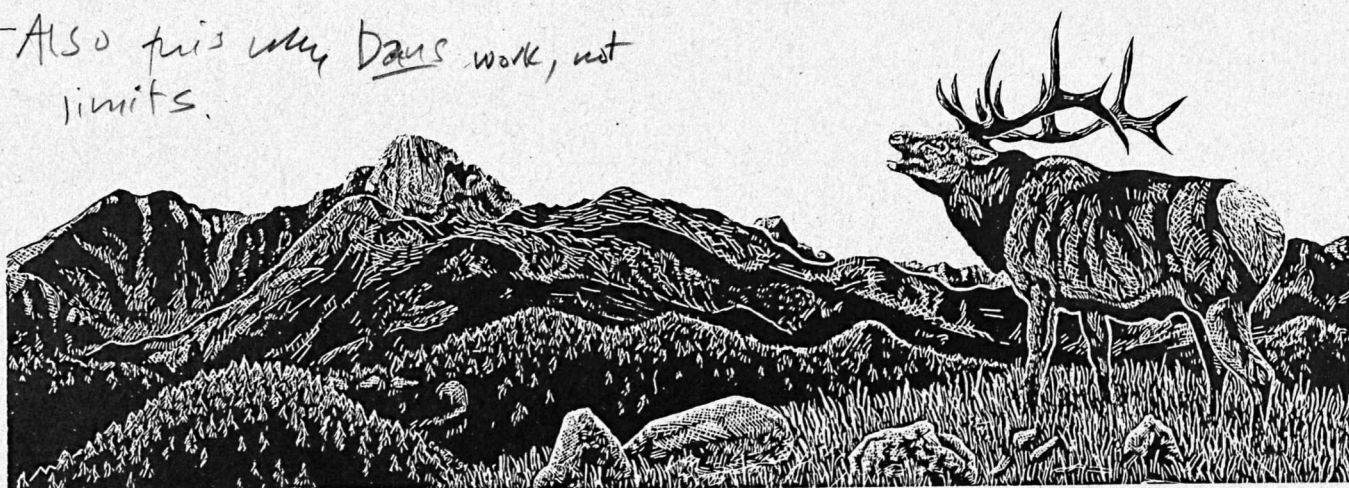


illustration by Evan Cantor





# Strange Mindfellows

*Can biophilia and technophilia coexist?*

*by Frank Waters*

Something must be wrong with me. I like to think of myself as an environmentalist, but I keep getting distracted. I am drawn to living wilderness yet, for all my green desires, I still feel drawn to the machine, the silicon chip, the internal combustion engine and the laser printer. I feel guilty. If I were truly dark green, I would feel indifferent, even hostile, to all Lear Jets, Ferraris and Sun Workstations. But alas, I find them attractive. Streamlined power is exhilarating.

Let me say at the outset that I am quite familiar with the fundamentals of ecological atrocity. I know the stupidity of using fossil fuels and producing dioxins and nuclear waste. I know about species extinction and habitat destruction. I know the pathology of maximizing power and control. And yet, I am still impressed by the latest CD ROM. I think that fiber optics and laser surgery are amazing. If I had some disposable income, I would like to ride the latest street-race motorcycle made by Kawasaki or Yamaha. The sight of a wild Grizzly captivates me, but so does the bridge of the Starship Enterprise.

So what is the problem? Perhaps I am ecologically confused or spiritually corrupt. Maybe I ought to pull myself out of the environmental movement and make way for those pure of heart and clear in vision. Perhaps I ought to retreat into the wilderness and fast until my soul is purified. Then again, maybe I am simply a normal human animal. Maybe I am a hybrid creature, part biophiliac and part technophiliac. Maybe it is human fate to have dual citizenship in the lands of eco and tech.

The internal conversation is familiar to many of us by now:

tech: "Wow, check out this new silicon-graphite device! It's fast, it's easy to use and it'll save me hours of frustrating labor."

bio: "Yeah, but think of where it came from and what it's really for. Think of all the precious resources that went into it. Think of all the habitat that was destroyed to make it. Why, it's really just another tool of human domination."

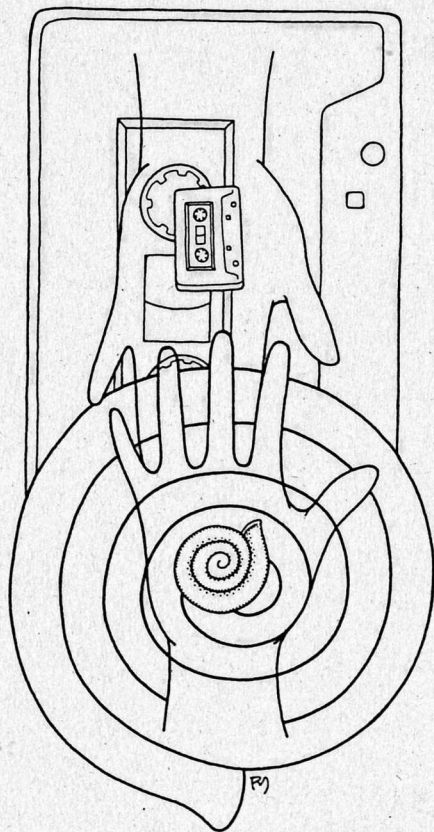
tech: "You're being ridiculous. Surely there must be some tools and machines that are reasonable and aesthetic."

bio: "Sure, but where are you going to draw the line? These instruments simply insulate you from the fabric of the biosphere. No wonder you're so neurotic."

tech: "I'm just being practical. If I can save a few hours with these things, I can devote more time to lobbying Congress and working for real change."

And on it goes, a debate that seems like it will never end.

In 1984, the great prophet of biodiversity, E.O. Wilson, presented a book called *Biophilia: the human bond with other species*. This wonderful romp through the living world was the first look at the biophilia hypothesis. By 1993, the idea began to mature in Wilson's and Kellert's anthology *The Biophilia Hypothesis*. Here biophilia is described by various authors as "the human inclination to affiliate with life and lifelike processes" and "the innately emotional affiliation of human beings to other living organisms."



If we take a panoramic view of hominid evolution, we can see clearly that evolution would have selected for biophilia in human beings. For more than 99% of human history, we have lived in hunter-gatherer bands that were intimately involved with other organisms. The depth of this intimacy is scarcely imaginable to the modern urban dweller. There was no Safeway on the Serengeti, no McDonalds at the Olduvai. In order to eat, humans had to observe the living world with great care. Which plants tasted good? Which parts? In which season? Which were poisonous? Where did the animals live? How did they behave? Such questions occupied most of human consciousness. Under these conditions, selection tended to favor those individuals and tribes who were intensely interested in natural phenomena. A tribe of keen animal and plant observers would find more food, survive more winters and leave more offspring than one that was indifferent or incompetent. Thus, we experienced a natural selection for biophilia. This

To some of us, this hypothesis sounds like an academic restatement of the obvious. Chief Seattle and John Muir would have laughed at such simple-mindedness. But from another angle, this is a revelation, and an essential one at that. For *Homo sapiens industrialis*, the idea that humans have a fundamental need to affiliate with the natural world is an enlightening new idea on a Copernican scale.

explains my visceral longing for the wild earth as well as my illness when I am apart from it.

Paradoxically, the rigors of the environment must also have selected for technophilia in human beings. Imagine again the earliest proto-humans, hunting and gathering across the land. In this situation, any improvement in stick and stone technology was likely to give the user and the tribe an enormous advantage. A tribe that invented a sharp-edged stick or stone would have been able to hunt animals and process plants with more efficiency than neighboring tribes. When winter arrived, the more inventive tribe would have laid in a good supply of meat and furs. Their shelter would also have been of superior construction, since they would have been able to cut branches and vines with relative ease. As other tribes in the region died from starvation and exposure, the mechanically inclined tribe would have survived to pass its genetic code into the future. Thus, technophilia would have been preserved.

This selective process continued beyond the age of the first chipped stones. Even a crude tool is powerful because it can be used to make other tools. Later the bow and arrow gave an advantage, as did metal and the wheel. In each case, the tribe interested in mechanical manipulation survived, while those less interested declined. This leaves us in today's paradoxical state. We are bio-technophiliacs; we are lovers of the wild Earth and of technology. Today, we have both elements in our genetic heritage; we love the natural world and we love machines, so we flit back and forth between the two realms, never quite sure where our allegiance lies.

Now some people, especially the industrially inclined, are likely to say that this gets the technophiliac off the hook. Since technophilia has been selected for in the crucible of evolution, it is "natural" and thus perfectly acceptable. After all, adaptive biological innovations are rewarded in any population—why should technophilia be any different? From this perspective, I don't feel so bad about lusting after that turbo-boasted 586 race car with dual air bags. I am just applying the same attention and intelligence of the proto-human who first lashed a piece of animal hide to a stick. Maybe I can be guilt-free at last.

Not so fast. In and of themselves, adaptations are neither good nor bad; everything depends on the biological context. A black moth on a light colored tree trunk will be more visible to birds and will be eaten. If we add air pollution from burning coal, however, the trees get darker and the moth's liability now becomes an asset. If we enact air pollution controls and restrict the burning of coal, the dark moth is once again at risk. So it is for technophilia. What was once an asset has now become a liability. In the context of a sparsely populated planet, technological attention does give an advantage, a benefit with very little cost. But in a world at the limit of carrying capacity, the very same technophilic trait can become a very serious liability. Just because a trait was selected for in one age does not mean that it is adaptive in another; we are not off the hook.

Of course, many of us are trying to have it both ways; we want to be in both worlds. So, we take a silicon-breathing lap-



top out into the forest and do spreadsheets. Or we drive a fancy 4X4 into the backcountry and experience the river with a \$1000 boron-graphite fly rod.

There can be no illusion on one score, however. Technophilia is winning. Now that we feed ourselves with factory-nurtured plants and animals, a keen sense of observation and affiliation with the living world is not really essential for short-term survival. In fact, for industrial man, survival to reproductive age now depends far more on mastery of automobiles, telephones, computers and fax machines than it does on the ability to observe the characteristics of animals and plants; you don't need biophilic skills to go through a drive-in restaurant. Furthermore, the marketplace exerts its own form of selection pressure; technophiliacs are well-paid and secure, but we rarely see a rich biologist, much less a financially secure wilderness activist. Biophilia just doesn't pay the bills.

In modern life, we tend to suppress our biophilia. Indeed, this suppression is necessary for industrial efficiency. People who revel in Nature do not make good industrial employees; they are too wild. To survive in the industrial world, we dampen our biophilia or quench the thirst with pictures of wildlife and the Discovery Channel. This temporarily satiates us, but the need goes largely unfulfilled. Living in industrial isolation, we are deprived of interaction with the living world, and our biophilia wanes. Biophilia follows that old psycho-physiological law, "use it or lose it." The more we repress our biophilia, the less we are able to exercise it and the more tech comes to dominate.

Some "back-to-the-Pleistocene" philosophers curse the technophilic impulse and say we should banish it from human consciousness forever. Their point is well taken, but it is unlikely that we could ever remove technophilia from human consciousness. In the first place, it is probably encoded into our genes; some subtle twist of the double helix generates hormones and proteins that in turn render our brains interested in tools and technique. For better or worse, this is a part of us, just as much as our love of healthy bodies and unspoiled forests. Without a genetic transformation of all humanity, we could never abolish this impulse.

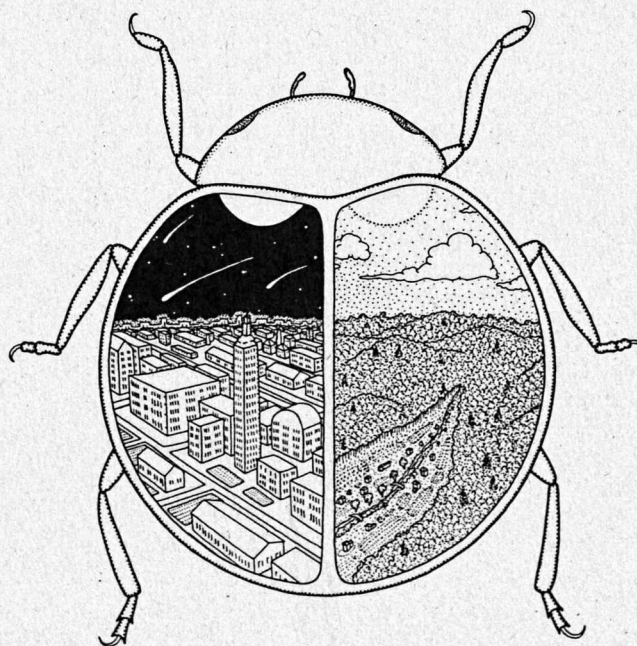
Even if we could cleanse the human genome of technophilic impulses, we might think twice. After all, we need some technological competence to redesign our tools and undo the damage we have wrought. The same brain that designed and built the bulldozer and the chainsaw can also build simple hand tools. The same brain that created fertility drugs can also create depo prevera, Norplant, and RU-486. The same brain that built Glen Canyon Dam can also tear it down. It is undoubtedly true that we need less technophilia, but it is also true that we need more intelligent technophilia. If we are going to create machines, at least let them preserve human dignity and biological diversity.

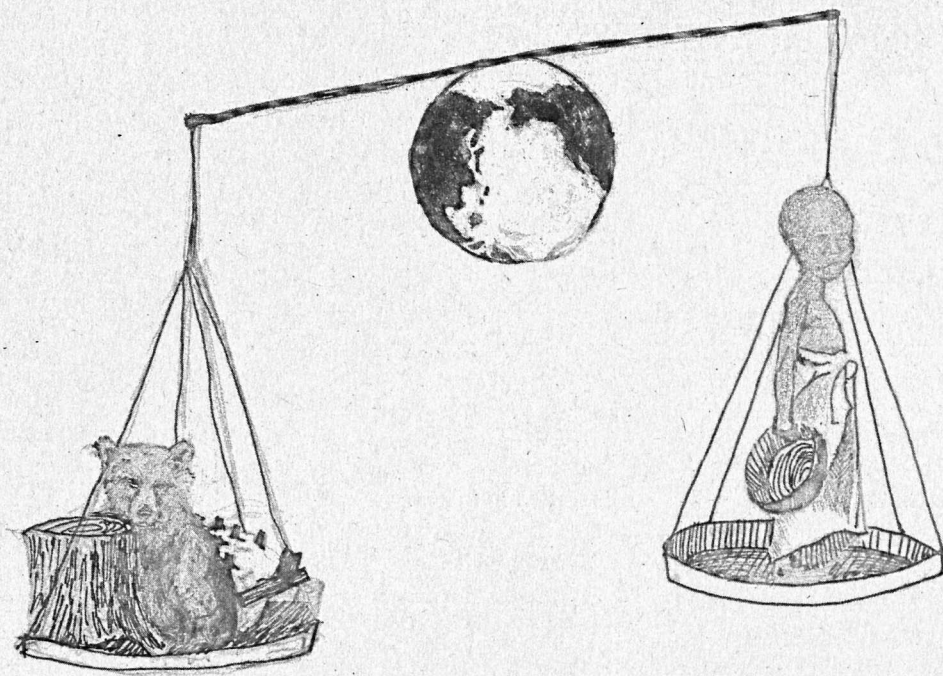
The skill here is balance. We need to dampen our interest in technology and create an aesthetically proportioned philia. We might oppose techno-lust through peer pressure, taxes, and education; but technophilia is probably hard-wired, as much a

part of us as our sexual desires. A more practical option is to promote our collective biophilia through participation in natural settings. Quality experience in the wild can rekindle the biophilic impulse lying dormant in so many of us. Participation is thus a vital social responsibility. Instead of cursing the silicon wizards, we ought to be getting out in the wild and taking others with us. Through this experience, we can help to keep the biophilic flame alive in human consciousness.

So what of my quandary? Can I create a peaceful co-existence of eco and tech? Tech is fighting for dominance, but I am on to it now. I can treat it with the respect it deserves, but by no means will I let it get the upper hand. I may still lust after a hot silicon chip on occasion, but I will give first priority to living creatures and the living earth. After all, we may be hunter-gatherers again some day, and sooner than many people expect.

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# The Cornucopia Scam

*Contradictions of Sustainable Development*

The excessive strains currently placed upon social and environmental systems result from three distinct, though interrelated, factors:

- Overpopulation: the more people, the greater the impact
- Overconsumption: the more resources each person consumes, the greater the impact
- Technology used to produce goods and services consumed: every form of technology has an impact but some have greater impacts than alternatives that could be used to deliver the same level of per capita consumption to the same level of population. (Technology is used here not just in the sense of machines and processes but also the way in which they are located and deployed.)

## POPULATION MISCONCEPTIONS

Every year, human numbers increase globally by some 95 million. Even in India's frequently praised state of Kerala, where there has been genuine social progress and the growth rate of the state's population has been cut to 1.7%, the population will still double on that basis in just 47 years. Contrary to popular perception about the leveling off of population growth in rich countries, on present trends America's population will double to around 520 million in only 63 years.

Yet there is generally a deafening silence on the issue of population growth and bitter criticism of those few who do raise the issue. None of the major environmental lobbies, for example, has produced any substantial literature or policy on the matter.

Population growth exacerbates every environmental and most social problems. Kenya's population increases by over 1600 people every day, thereby intensifying pressure on the land, eating up space for surviving wildlife, overwhelming employment and other social opportunities. Population growth also makes solutions more difficult to achieve. Take, for example, the transition to sustainable energy systems. It has been estimated that the Swiss population would have to drop to one-sixth of its present level for the country to base itself on its own renewable energy resources and maintain its present living standards.

Contrary to the famous thesis advanced by the American biologist and socialist Barry Commoner that the problem is simply 'flawed technology', all three factors—population, consumption, and technology—count together, each magnifying the effects of the other two. However, sustainable development thinking treats the crisis of overpopulation as either a non-issue or as a

## Part 2: Misconceptions About Fundamental Causes

*by Sandy Irvine*



matter of possible concern only in some 'Third World' countries. In particular, it clings to increasingly discredited theories like that of the 'demographic transition'. This theory held that population growth automatically levels off with increasing affluence. In fact, there is no such direct connection. In fact, the post-war baby boom coincided with a massive growth in per capita consumption. Subsequently, the birth rate fell fastest among the working classes, not the more affluent sections of society. Today, the birth rate is falling in countries like Bangladesh despite the absence of a general rise in living standards. In any case environmental systems simply cannot deliver the global affluence the theory deems necessary for population stabilization. This century has been characterized not by demographic transition, but by *demographic takeover* as just one species, *Homo sapiens*, appropriates for itself an enormous and growing share of the Earth's physical space and its biological production.

### THE UNSUSTAINABILITY OF INDUSTRIALIZED AFFLUENCE

At a general level, the sustainable development lobby does talk about overconsumption in the rich countries. However, the action it proposes tends to be limited. Most blame is heaped on the wastefulness of big business. Articles regularly appear, for example, brandishing the fact that household refuse is only a fraction of wastes generated in factories, farms and especially mines. Such facts, it is claimed, demonstrate corporate culpability—as if household consumption had nothing to do with all these industries.

Appropriately enough, support is given to public measures like a carbon tax and the application of the 'polluter pays' principle to the industrial and commercial sectors. Yet supporters of sustainable development are quick to attack more direct measures (e.g. domestic water metering) that also might cut down individual consumption. Such policies are rejected on the grounds of inequity and their effect on the poor (a problem that should not stop such measures but that should be addressed separately, for instance by more steeply progressive taxation).

Sustainable development thinking by and large ducks the question posed by Ted Trainer: 'How affluent', he asks, 'would we be... if each of us were not getting over 2,000 liters of oil every year (over 4,000 for Americans) when the world average is under 800 and the average Ethiopian must make do with 12 liters?'. The rich countries use about 40 million acres of Third World land just for the cultivation of the coffee, tea and cocoa they drink. Trainer rightly concludes that it is simply not possible to generalize across the globe the life-styles of industrialized countries and that the only solution is an abandonment of growth-oriented development strategies in favor of more frugal life-styles in the richer countries. By contrast, publications like the 'Pearce' report on sustainable development, commissioned by the UK Department of the Environment, maintain a deafening silence about future levels of per capita consumption in the developed world.

Looking through the literature produced under the banner of sustainable development, it seems fair to conclude that the envisaged sustainable society will not be too different from today's, in terms of consumer durable goods, gadgets and general life-styles. Certainly amongst the more public figures of the movement there seems to be little questioning of their own jet-setting from one international conference to the next. The subtitle of the best-selling *Green Consumer Guide*, 'from shampoo to champagne', revealed a somewhat limited vision of social change, while the new UK Ecolabelling Board recently awarded its first green rosettes... to dishwashers.

Across in America, the most successful book on environmental issues has been *50 Simple Things You Can Do To Save The World*, whose title reinforces the view that we only have to make minor changes to our life-styles like adapting cars to run on unleaded petrol and fitting them with catalytic converters. Generally, changes to individual consumption patterns and life-style choices are largely seen in terms of a search for more benign ways of satisfying consumer demands, rather than setting limits to them.

### LIMITS TO 'ALTERNATIVE' TECHNOLOGIES

Overpopulation, then, is a taboo subject, and overconsumption is discussed only in very vague terms. It is not surprising, therefore, that sustainable development theory concentrates on the role of technology, both as agent of maldevelopment (especially in the hands of capitalists or of other malevolent forces) and as saviour (especially when transferred to the hands of the community). Yet every unit of technology has some degree of undesirable impact; most technologies have characteristics and consequences that do not alter either with a change of owner or of use. Oil-based products, for example, are inherently based on a resource that is finite in supply and that generates dangerous emissions when burned. Nuclear power has proved to be unsafe, unreliable, and uneconomic under widely differing social, economic and political systems.

Of course, there are also many instances where less harmful technologies can replace current ones. There are also rich opportunities for cutting down needless waste of water and energy. However, more rigorous 'life-cycle' studies are beginning to show that the total impacts generated by, say, virgin compared to reused or recycled products are not quite as different as was thought originally. Moreover, even the most environmentally friendly technical innovations still consume resources: continuing growth in population or per capita consumption sooner or later will cancel out whatever benefits they bring.

True, areas with avoidable waste such as planned obsolescence offer scope for a better use of the existing throughput. Beyond that, increased productivity is possible only at the cost of extra inputs and an increase of overall entropy in the system.

On close examination, many of the ideas advocated under the name of sustainability or better resource management

turn out to be far from sustainable when assessed in terms of whole systems. 'Sustained yield' plantation forestry, for example, has had very deleterious effects on other parts of the environments it uses—through, for example, reduced biodiversity, soil erosion, air and water pollution (as well as causing serious job losses and community dislocation).

Similarly, many of the alternative energy proposals now being put forward are far from appropriate. Because of their variable and diffuse nature as well as the costs of upgrading and storage, there are very real limits to the power renewable energy sources can supply, not least as a result of the sheer physical space they demand. Powering the current American economy from direct solar sources would devour 10-20% of the land surface of that country. Hydro-electric dams have done more environmental damage and harmed more people—so far—than nuclear power. Around the world, they have flooded an area of land equal to the size of Italy and badly dislocated drainage systems, movements of silt, and downstream fisheries.

Biomass energy production is both an ancient and very modern source of fuel. Its most traditional form is wood-burning, but this presents several hazards. 'Back to the land' homesteaders with their wood burners are in places reversing the recovery of New England's forests from previous blows. Large-scale cultivation of special 'energy crops' is still more unsustainable. It would cause massive nutrient losses, drain water supplies, drive out wildlife and reduce the availability of other resources such as food, fibre and timber—costs largely ignored in the search for substitute fuels to keep industrial society on the road. The conversion of land to the production of ethanol and other biofuels is tantamount to feeding machines rather than people and wildlife. Biofuel technology only makes sense when it is based on waste residues from agriculture, food processing, and other sources and, for that reason, can only contribute modest amounts of energy.

In terms of food production, all forms of farming have adverse impacts. For example, the extension of arable production must be at the expense of woodland and wetlands, while its intensification must lead to a deteriorating quantity and quality of soil systems, even if we can avoid the problems associated with synthesized fertilizers and biocides. According to Mike Jacobs, author of *The Green Economy*, organic farming actually improves the environment; but the noted Japanese farmer Masanobu Fukuoka has shown that it still depends upon external inputs and does not close the cycle of nutrients. More paddy cultivation will increase methane build-up in the atmosphere. Increased food production via irrigation will worsen the already serious problems of salinization and water logging.

Nor would a shift from synthetic back to 'natural' fibres, such as cotton and wool, be free from problems. Cotton cultivation has exhausted soils around the world and currently the crop is the single biggest consumer of pesticides. Sheep and goats have denuded one hillside after another. The British uplands, which once were wooded, are kept impoverished by overgrazing sheep and, more recently, artificially large deer herds.

## THE SHADOW OF 'SUNRISE' INDUSTRIES

The failed promises of the 'nuclear age' and the 'green revolution' are being replaced by the proclamation of the dawn of the 'information age' and the 'gene revolution'. Some people in North America are heralding the birth of 'industrial ecology' in which growing industries will 'feed' upon their own wastes. What are often proclaimed as cleaner and leaner new technologies still, however, do not provide any free lunches. Electric cars powered from solar sources, for example, would still need roads, traffic lights, garages and so on, all of which come at the expense of the environment.

The exploitation and manipulation of genetic coding is the most dangerous form of industrial rearmament. It is colonialism taken to its greatest extreme. The disruption of ecological checks and balances by the introduction of genetically engineered organisms could bring about the pollution of evolution itself. Given their capacity to multiply, mutate, and migrate, the potential for wreaking ecosystem havoc is no science fiction fantasy. The safety of gene-splicing depends upon impossible levels of perfection in environmental understanding, design, manufacture, and use, as well as total freedom from accidents and acts of malevolence.

Microelectronics provides yet another example of fool's gold. Both unrepentant supporters of business-as-usual and advocates of sustainable development are jumping on the bandwagon of computerization. Even outside big business and the political establishment, sustainable development thinking is, by and large, blinded by the promise that computerization will liberate us from the polluting smokestacks of old-fashioned industrialism. Jonathon Porritt's book, *Saving The Earth*, hails the fusion of communications and computing technologies as one of the 'tools for sustainability.' Some of the claims made for the various technologies underpinning this alternative vision of a decentralized and environmentally friendly information society might be true. The big picture, however, reveals once again an expensive lunch, with the bill being paid by the poorer sections of society and the deterioration of the social and environmental fabric of life accelerating.

There is no intrinsic virtue in greater volumes of information or its speedier processing. The binary yes/no logic of computers and their reduction of information to numbers is singularly inappropriate to social and environmental systems. In such infinitely complex entities, the 'whole' is more than the sum of its parts and, within them, causes and effects interact in ways that are often unique, irreversible, and contrary to expectations (making the technological interventions recommended by computerized studies a bit like poking inside a watch with a screwdriver). Behavior inside living systems can be modeled mathematically only at the expense of other parts of reality—that which cannot be measured is either ignored, simplified to make measurable, or simply aggregated into macrostatistics.



Some technophiles look forward to the development of whole new computer technologies such as virtual reality and artificial intelligence, hailing it as a new and progressive stage in evolution, even more significant than the first use of fire. In fact, it will be a great step backward. It will deepen the dangerous separation of people from the real world of flesh and blood, air, water and soil.

The real cutting edge of computerized society is not in industry but in education. Here, even some environmental organizations are jumping on the bandwagon, producing software programs on green issues for schools and colleges, for example. In reality, these new teaching methods are not being introduced because they produce better learning. Their attrac-

*Computers, E-mail, video-conferencing and the like will join forces with television to induce more passivity and unresponsiveness, cutting deeper the human connections that once bound people together into living communities.*

tion is that they make teachers redundant and cut costs. The consequence back in the classroom (sorry, 'learning resource center') is likely to be a new banality of learning, in which things might be learned, as by rote, from the computer screen but with little deep understanding and even less diversity of thought. In effect, the computer remodels information about reality to fit its own operating requirements; and this distorted framework of perception will constitute the fundamental lesson learned from the computer. In Jeremy Rifkin's words, 'once our children are comfortable with the idea of thinking of nature as "systems of information," they are all but ready for the task of programming nature by computer design.'

Others see computers as the means by which we can do more research, more monitoring, and more modeling. One environmental organization argues that only in the early 1980s did it become possible, thanks to powerful new computer simulations, to predict with confidence how global climatic patterns may change due to increasing carbon dioxide emissions. Yet many people remain unconvinced by such projections. Beneath these disagreements lie fundamental differences in beliefs and value judgements, not to forget short-term self-interest, differences that will be resolved through political struggle, not the accumulation of more data. Of course, friends of the Earth need to make their evidence and arguments as detailed and robust as possible; but they should realize that even the most computer-refined presentation is likely to leave their opponents unmoved.

Many things might be done faster and more efficiently in a computerized society, but that, too, can be dangerous. The accumulation of data may serve repressive functions, keeping citizens under the baleful eye of security services and other agencies free from public scrutiny and accountability. The cen-

tralization of power will proceed apace. As Jerry Mander argues, 'computers not only aid today's multinational corporate enterprises, they make them possible.'

The notion that the new technology will use resources frugally and generate far fewer pollutants represents another bad case of the age-old fantasy that the laws of thermodynamics and ecology can be cheated. Like any technology, computers use energy and raw materials as well as emit pollution in their manufacture and operation, before their final disposal. Pollution around manufacturing plants is particularly serious. California's 'Silicon Valley', birthplace of the computer industry, has the highest concentration of hazardous waste sites in the US.

Computer technology is a voracious consumer of energy. In a typical new American office, computers account for some 25% of electricity consumption. The new industries also consume land. Computer manufacturers have taken some of the best farming country, as in Silicon Valley, arguing that such prestigious businesses need new and spacious business parks (usually remote from the very places where jobs are most desperately needed). The high obsolescence rate of computers further undermines any notion about their frugal use of resources.

Computers, E-mail, video-conferencing and the like will join forces with television to induce more passivity and unresponsiveness, cutting deeper the human connections that once bound people together into living communities. Communal life and communal power, the only effective power to limit consumption, pollution, and degradation of nature, will be weakened yet further. The much heralded 'networked society' will be a poor substitute for real community and communal responsibility.

### FLAWED FIXES FOR POLLUTION

The potential of pollution control technology is also exaggerated. It only shifts pollutants from one form, place, or time to another. The only way to reduce the more serious pollutants is to generate less of them in the first place. Many pollutants are too dissipated to catch and contain—for example, carbon dioxide, fertilizer run-off, and methane from cattle and paddy cultivation. In the case of pollutants amenable to capture and treatment, there is still the cost of making and using the necessary gadgetry. The cost of installing full-scale tertiary treatment of the existing 'throughput' of sewage is likely to be astronomical.

Already, great damage is being done producing the raw material for pollution abatement techniques, not least limestone mining and the production of lime for desulfurization. Similarly, the manufacture of equipment like catalytic converters causes resource depletion and more pollution. At the end of the pipe, there are still waste residues, often highly toxic.

Perhaps recycling is the most popular technological fix. People get enthusiastic about recycled paper, as if paper fibre



no longer wore out and trees no longer will have to be cut down. Technological euphoria is driving out more sober thought based on physical actualities. Entropy dictates that material usage must lead to some material dissipation. The phosphate put into washing powders and the zinc used in manufactured items end up in a myriad of locations, for example.

Of course, much can be recycled. It is scandalous that globally some 66% of all aluminium and 75% of iron and paper is simply dumped on the environment after use. Yet, we must not ignore the serious pollution around some recycling plants. Recycling does not challenge the processes by which human society creates rising piles of waste. Indeed, to some extent, it legitimizes profligacy.

Technological recycling cannot underwrite open-ended physical expansion. Recycling should be the last consideration after, in order of rising importance, reuse, repair, reduction and, first and foremost, a rejection of unnecessary or harmful goods and services.

### THE LIMITS OF ORGANIZATIONAL CHANGE

Most contributors to the sustainable development debate assume that, in hand with new technologies, reforms to the existing institutional framework can push back any limits to growth. Sometimes, the creation of new and powerful governmental departments and intergovernmental commissions is advocated, backed by remote satellite monitoring systems and other technological support. Yet the record of the major example to date of such a strategy, the USA's Environmental Protection Agency scarcely inspires confidence. The bureaucratic sclerosis and occasional corruption that afflict many of the European Union agencies should also serve as a warning that large new organizational structures can create more problems than they solve. The United Nations Environment Programme also has been something of a failure, with expensive conference jamborees and fine-sounding declarations not matched by actual achievement on the ground.

Like pollution, the problem is not simply a few bad apples—it is the inherent weaknesses of large bureaucracies, public or private. Big organizations like the World Bank are incapable of dealing with the mass of small-scale projects, run by and for local communities, that would be the main plank of sustainable social and economic reconstruction. Even if all these

constraints could be overcome, any gains are still likely to be canceled as other and longer-established sections of the same administrative machinery pursue unchanged goals—highway departments, economic development units, agriculture ministries, foreign offices ... The transition to a sustainable society will need considerable coordination, not least at an international level. But a very realistic assessment of the limits to institutional effectiveness is needed, contrary to the romantic dreams of a United Europe or World Government, which seem to underlie much writing on sustainability. The dream of a world government is as naive as its antithesis, namely the foolish notion that individual communities can solve all their problems by simply going it alone.

### ENVIRONMENTAL ECONOMICS?

Sustainable development proponents put hope in the efficacy of various economic tools to clean up the economy—harsher fines, pollution levies, tradable pollution permits, and such. These policies flow from the polluter pays principle. As a foundation for action, it has many limits. First, it assumes that humans fully understand the workings of environmental systems. Yet much pollution is a combination of substances from diverse sources. Second, it assumes that there is such a thing as an 'optimal' pollution level, even though we do not know what are 'safe' levels of toxic and radioactive substances—if safe levels exist—or what quantities of non-toxic pollution ecosystems can absorb.

The polluter pays principle also assumes that pollution is a form of mismanagement which can be corrected by financial incentives, rather than an inevitable result of entropy. It focuses upon the wrong end of the production/consumption cycle—outputs, rather than the amount and kind of inputs fed into the cycle. In any case, it is grossly unjust to permit people to continue environmentally destructive activities simply because they are prepared to pay for the privilege (as in the case of tradable pollution permits). Human health and the continued existence of other species should not be for sale.

### LIMITS OF REDISTRIBUTION

Sustainable development theory places great hope on the potential of using resources differently and redistributing





wealth. Such reforms can buy vital breathing space, but they do not make the limits to growth disappear. Reallocations of resources do not lead to automatic decreases in environmental destruction. Though health spending is doubtless more beneficial to humanity than arms expenditure, ambulances and armored cars still clock up the same debts in thermodynamic and ecological accounts. Nature does not distinguish between artificial fertilizers spread on golf course lawns and those used on farms. All the while, on-going expansion must eat up the benefits from a sharing of wealth. Studies of countries like Guatemala, for example, show that the benefits of land redistribution would disappear within a generation simply because of population growth and increased demand for land.

It is often claimed that more production is needed to raise the living standards of the poorer groups. Yet, economic growth and 'technological transfer' have not alleviated inequalities or reduced the sum total of human misery. In Brazil, for example, years of economic expansion have left the poor absolutely and relatively worse off. Far from trickling down, any increase in national income has stuck to the fingers of the already rich. In Asia, any benefits from use of high-yield hybrid plants or from rural electrification have gone to the prosperous. Large-scale electrification usually has powered further mechanization and expulsion of people from the production process.

Generally, 'modernization' has been a veil for more sophisticated but no less brutal patterns of inequality and exploitation. At an international level, the gap between rich and poor has widened. A hundred years ago, the difference between per capita income in Europe and India was 2:1, while today it is nearly 70:1. In the more generally affluent countries like the USA and UK, an impoverished underclass grew in tandem with the boom years of the 1980s. No matter how reformed or regulated, growth will not cure poverty.

### NON-PHYSICAL GROWTH?

Finally, there is the argument that more 'development' does not necessarily mean more physical growth. For example, the International Union for the Conservation of Nature has provided what is perhaps the most sensible definition of sustainable development so far: 'improving the quality of human life while living within the carrying capacity of the supporting eco-

system' (1991). Yet 'quality of life' (as well as 'expansion in choice', another variant on the same theme, this time from the UN *Human Development Report*, 1980) still depends upon physical production.

Even the most cerebral activity depends upon the availability of clean air, nutritious food, potable water, heat and shelter. Most activities, from the development of artistic skills to simple pursuits like rambling, require some kind of technology, from paint palettes to walking boots, whose increased provision cannot be created out of nothing. In some parts of West Africa, for example, even the manufacture of traditional musical instruments has become a significant cause of deforestation. More generally, the one thing that most people equate with a better quality of life—increased free time—often brings with it an increased demand for all kinds of leisure products and recreational facilities, most of which are now causing great environmental damage. Growth in the quality of life or the expansion of choice, then, is limited.

### OVERDEVELOPMENT

Today's problems, in short, are symptoms of not only *maldevelopment* in specific areas but also of general *overdevelopment*. The problem is growth *per se*, not just misdirected growth. Humanity has reached the point where further attempts to extend and intensify human production systems, no matter how well regulated or technologically sophisticated, must undermine the long-term capacity of environmental systems to sustain life.

Perhaps the most telling statistic is that alone our species is consuming or has destroyed some 40% of total terrestrial photosynthetic production. (The oceans are thought to be less productive, yet we're expropriating growing amounts of their biomass, too.) No wonder other species of plants and animals are becoming extinct at the rate of around 50 each day (though one estimate by Professor Jared Diamond suggests the casualty rate might even be 17 every hour).

Once assumptions of global equity are included in the calculations, the extreme state of overdevelopment in the rich countries becomes starkly apparent. Taking, for example, the calculations of the Intergovernmental Panel on Climatic Change and making their recommendations more globally fair, it seems





that the average citizen in rich countries will have to cut the carbon dioxide generated by his or her life-style over 80% if potentially disastrous climatic changes are to be averted.

The prospect is not significantly improved even if anthropogenic global warming doesn't happen or is balanced by cooling factors (recent volcanic eruptions have been a counter-balancing force, though they are no cause for complacency). Even if the picture is confined to food supply, the symptoms of overdevelopment are clear. At present, it takes about two hectares to cater for the typical diet in a rich country. To furnish this pattern of consumption for the six billion who soon will be alive would require 12 billion hectares—roughly eight times the amount of available cropland, most of which is showing signs of serious stress. Popular criticism of European Union 'food mountains' and 'wine lakes' misses the key point: they are only temporary surpluses since the production system is eroding its own resource base.

Of course, food is only one human need and many other environmental conditions and resources are required for sustainable living. The state of the Earth's tree cover is probably the most critical indicator. Before the birth of agriculture, forests clothed over six billion hectares. Since then, the Earth has been scalped of two-thirds of its original forest, half the loss occurring between 1950 and 1990. China was once 75% forested; now most has been destroyed, with 20 million hectares deforested in the 30 years after the Communist revolution in 1949. In just 100 years, Ethiopia's forests have declined from 40% to only 3% of the land.

The 'new worlds' have fared little better. In the last 200 years, Australia has lost half its tree cover; while in the USA, over 90% of old-growth forest has been felled. Tropical rainforests have suffered similarly, with 45% destroyed in the past 30 years. Where tree cover has expanded, it has been in the form of biologically impoverished plantations. Germany's old-growth forests were mainly deciduous, but now, just one conifer, Norway Spruce, accounts for some 40% of a shrunken 'forested' area.

Air pollution is killing forests and lakes around the world. Across 15 European countries, 27,000 square miles are showing signs of 'forest death'. In southern Norway, all lakes in a 13,000 square kilometre area are devoid of fish. Chongging in

China is perhaps the acid rain capital of the world, the rain there sometimes being so acidic it can dissolve steel.

Human activity is adding chemicals to the environment whose systems have not been 'equipped' by evolution to absorb their impact. Some 2.5 million tons of synthetic pesticides, for example, are sprayed annually, mainly in the rich countries, though 'Third World' use is rising dramatically. In the USA, such chemicals are partly responsible for some 20% of the list of endangered species.

Parallel to reckless alterations to the Earth's chemistry is the introduction, sometimes accidentally but often deliberately, of exotic species of plants and animals into environments with which they have not co-evolved and with equally devastating effects. Again the problem is growing, despite the lessons of past disasters like the introduction of rabbits into Australia. The release of genetically engineered organisms could amplify all these problems.

Another symptom of overdevelopment is the covering over of land with roads, buildings, and other infrastructure. It sterilizes the environment buried beneath whilst creating problems like excessive water run-off. In the USA, some 526,000 hectares of countryside, mainly good farmland, is paved over every year.

Environmental ills are paralleled by social and economic ones—crime, unemployment, deteriorating schools and other services... There are also direct and thoroughly unsustainable interactions between out-of-town sprawl and inner city decline. While many urban areas have been allowed to decay, urbanization has been permitted to engulf huge chunks of the countryside.

Violence against the environment is mirrored by disorder and conflict within human society. Here, too, as with environmental destruction, we seem to be approaching a crossroads where continuation of current trends could wreak global chaos, the easing of the American-Russian 'cold war' notwithstanding.

The research group World Priorities estimates that 23 million people have been killed by war since 1945. In 1992 almost 500,000 people died in a rash of conflicts that are tearing apart many parts of the world. In 1993, 29 wars were being fought and the potential for more is clear. Many governments will attempt to solve increasing social, economic and environmental problems by seizing other countries' resources (e.g.,





oil or water) or by an intensification of 'internal imperialism' (e.g., the Indonesian government's onslaught on Borneo and East Timor). Preparation for war is costing us many of the things we need to defend. Each day, the world spends some \$2 billion on arms.

Wars are largely responsible for unprecedented numbers of refugees in the world. However, for the first time in history the major cause of involuntary population movement is environmental degradation coupled with the exodus caused by development projects. In China, for example, the Three Gorges dam scheme, if completed, will flood out some 3,300,000 people. In India, an estimated 20 million people have been driven off their land by dams built since independence.

Insofar as there is any discussion of overdevelopment in sustainable development circles, it is largely in terms of countries like the USA. President George Bush, for example, was used as the fall-guy for the Earth Summit: disappointment with the conference's outcomes was often channeled against the Americans and their refusal to reduce the profligacy of their life-styles. It is indeed true that a small percentage of the world's population consumes a grossly disproportionate share of the world's resources; but this fact is being used in ways that distort the whole picture. Politicians from the 'Third World', for example, angrily attack plans to conserve 'their' forests on the grounds that they should not sacrifice the sovereign right to exploit such resources simply to supply carbon sinks so that western consumers can continue to drive their carbon-emitting cars. Yet the political and business elites in the Third World live life-styles little different from those they denounce. They surround themselves with massive military forces, while irresponsibly promising affluence to every household in their countries.

Many of these leaders have followed the path of the already industrialized countries, with the construction of brand new capital cities, big airports, nuclear power plants and the other symbols of 'modernization.' From the introduction of Canadian-style wheat farming in Tanzania to Indonesia's transmigration programme, there are plenty of examples of ecologically disastrous projects backed by Third World governments, often with considerable popular support. The destruction of local wildlife is perhaps even more enthusiastically supported.

In Thailand, for example, Tigers are threatened with extinction simply so that East Asian consumers can enjoy the delights of tiger penis soup.

More generally, the environmental impact of the world's poor, compared to that of the rich, tends to be underestimated in the sustainable development literature. A lot of the destruction in the 'Third World' takes place outside the formal economy as with tree felling for fuel and new farm land. Such activities tend not to be as accurately recorded as, say, petrol and electricity consumption in the industrialized parts of the world. More important, however, is that even a small increase in per capita consumption—especially with fossil fuels—in a populous country like China will have a disproportionately large impact, given the size of its population. The sustainable development lobby seldom faces the brutal truth that the 'developing' countries will never be developed in any conventional meaning of the word if global sustainability is to be attained.

The fundamental reason why claims for the productivity of 'alternative' land uses and technologies cannot deliver the output their advocates often claim, and why truly sustainable systems will only accommodate limited demands, is simple. Any system, be it a human body or an ecosystem, uses a lot of the resources available simply to maintain and repair itself. The surplus yield is necessarily small if the 'producer' is to function sustainably. The introduction of high-yield hybrids, for example, means that more is taken out of the soil (necessitating more fertilizer use), more water is required (leading to expensive irrigation and possibly problems of water-logging and salinization), and resistance to pests and disease is reduced (with attendant need for more biocides).

This 'think shrink' orientation is not an attempt to 'pull up the ladder' so that the poor cannot join the rich. In fact, abandonment of the goal of global affluence offers the best hope for those being crushed under the wheels of industrial expansion. Across the 'Third World', outside the citadels of western-style luxury, the people with secure food supplies, clean water, and social stability tend to be those living in regions not yet harnessed to the treadmill of development. Indeed, many 'backward' societies offer sophisticated and practicable models of sustainable living.





## BLAMING THE SYSTEM

The question of why the world is in such a parlous state still remains. The literature of sustainable development tends to be divided about the underlying factors. Sometimes, as in books like *The Gaia Atlas of Planet Management* and in the stance of more 'respectable' lobbies, these problems appear as pure phenomena, separated from any causation—they simply happen.

More radical commentators and organizations do point the finger of guilt at various vested interests which, it is claimed, thrive at the expense of the common good. Often the whole 'capitalist' system is held responsible (though the term 'capitalism' is not used with any conceptual consistency). Due to poverty, unequal access to land, and other forms of inequality, it is argued, individuals and groups are left with little choice but to pursue courses of action harmful not just to others but also to their own long-term interests.

On the surface, there seems to be much evidence to support this perception. Operating behind several cloaks of secrecy and protected by a legal system loaded in their favor, the rich and powerful—as individuals and as corporate entities—make the rest of society pick up the bills for their selfish activities; the rules of the game are rigged so that more money, power and status accrue to them. Often they deny the existence of the problems they cause; they block alternative technologies and economic reforms. Many employ the best advertising agencies and professional lobbyists to ensure that neither public opinion nor the legislature demands actions that might threaten their interests. The 'Blame The System' Theory, then, does contain much truth, but it is a limited and limiting way of understanding what is wrong with the world.

## THE TRAGEDY OF COMMONPLACE DECISIONS

There can be no lasting cure unless a fuller diagnosis is developed. Some of our worst problems started life with the best intentions. The scientist who bears the dubious honor of developing CFCs did so to improve matters, not make them worse. Similarly, Norman Borlaug's work on high-yield hybrids, for the 'green revolution' in farming, was part of a drive to feed the world, not starve it.

For all kinds of reasons—convenience, laziness, comfort, entertainment, safety, security—things are done whose bottom line is resource depletion, pollution, and the exter-

mination of wildlife. A major driving force in overpopulation, for example, has been humanitarian attempts to reduce infant mortality, extend life spans, and overcome limits to child-bearing.

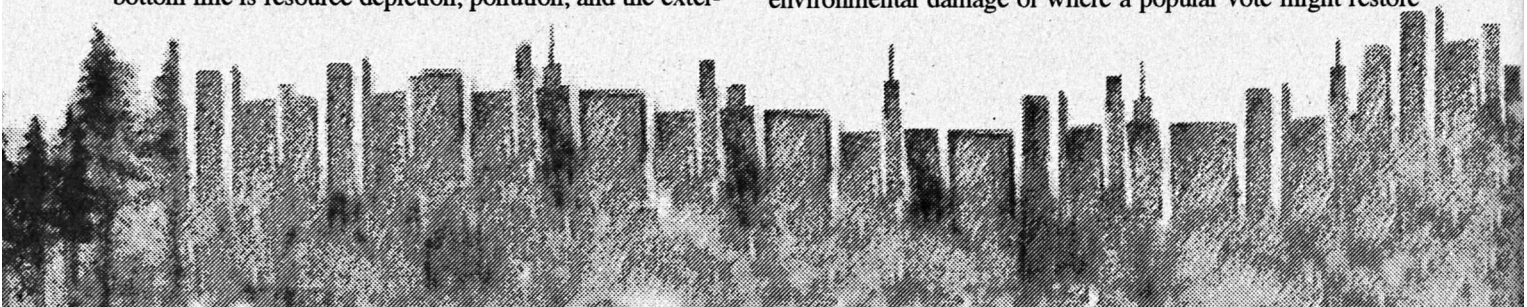
Central to a more rounded analysis are concepts like the 'tragedy of the commons' (most associated with the writings of the American biologist Garrett Hardin) and 'social traps' (see, for example, the work of another American, Robert Constanza). They spotlight the way individual actions do great damage simply because lots of other people are making the same decision. Shared resources such as air, water and migratory wildlife frequently suffer from overexploitation even in the absence of harmful intent. This is especially the case when the controls usually exercised in small-scale communities are no longer present.

The long-term cumulative impact of all the little decisions each of us makes every day, most of which are harmless in themselves, can be huge. Especially in the short term, there is often a conflict between the good of the individual and that of the collective as a whole. Heroic surgery to prolong the life of the old and seriously ill, for example, might be very desirable for those individuals who otherwise would die and for their loved ones; but for society as a whole, such medical 'advances' are creating massive demographic and economic problems.

In business circles, this dynamic will reduce to the lowest common denominator attempts to green production systems. In particular, the principle of BATNEEC (Best Available Technology Not Entailing Excessive Cost) will become the practise of CATNIP (Cheapest Available Technology Not Inviting Prosecution) since enterprises in the commons of an open market will be forced to act on the assumption that rivals can gain a competitive edge if financial costs are not kept to the minimum. Similarly, planners usually consent to one more bit of development because the perceived gains outweigh the predicted costs: the loss of just a few acres of open space, after all, won't bring the ecosystem crashing down.

Private individuals make destructive choices every day. Many people, for example, choose to drive to work instead of catching the bus, even when there is a perfectly good service. They gain the convenience of their own vehicle while the pollution its use causes scarcely registers on any environmental scale. Similarly, the biggest source of oil pollution on beaches is the ordinary household. It is easier to pour old oil down the drains; and such a few drops, it seems, cannot do any harm.

Unless such factors are taken into account, policies of popular 'empowerment' conceivably could make matters worse. There are plenty of cases where increased public access has led to great environmental damage or where a popular vote might restore





some destructive practices. But most advocates of sustainable development have little to say on the subject, preferring the romantic vision that The People will be good once their chains have been removed. Indeed, Garrett Hardin's writings on the tragedy of the commons are often singled out for denunciation in magazines like *The Ecologist*, despite the essential truth they contain. The cult of localism, prevalent in some quarters, foolishly downgrades the role of international action, including the role of bodies like the United Nations. Artificial dichotomies drawn between, on one hand, the 'grassroots', and on the other, national and international initiatives, can only hinder the delivery of effective solutions.

### LORDS OF CREATION?

Supporters of sustainable development show a collective reluctance to explore the deep implications of what might be called a Sustainable Earth Society whose members include more than the human race. Many reject, for example, concepts like carrying capacity (it implies limits on human numbers), or values like the inalienable right of other species to flourish (it implies limits on human activities). Ecological systems are still treated as just one issue amongst many, not the precondition for the lasting satisfaction of all other goals.

Sustainable development theory is still trapped in a perspective which Canadian author Neil Evernden has christened 'resourcism'. This may be due to the influence in some academic circles of a diluted but still aggressively human-centered Marxism or perhaps it reflects the equally aggressive contempt for 'abstract metaphysics' among some scientists and environmental economists. Resourcism perceives the Earth's diversity of life- and land-forms primarily as supplies to be used as humans see fit.

The land use planning systems found in many countries also embody the same orientation. Basically, they exist to plan for growth, not against it. Techniques like environmental impact assessments are being used to facilitate further exploitation of the environment, assessing how far it can be stretched; they are not about reducing human impacts or about environmental restoration.

Just as there is no deep questioning of the basic growth orientation of industrial society, so too the 'anthropocentrism' of its major value systems goes unchallenged. Indeed the very phrase 'Our Common Future' seems to apply only to people: other species are left out of the equation, except when they constitute a useful resource. Mrs. Brundtland's foreword to the WCED report defines human well-being as the 'ultimate goal'.

The Brundtland Report specifically advocated greater use of pesticides and more ranching, the consequences of which can only be less wildlife.

Many supporters of sustainable development support further environmental manipulation, often under the guise of 'stewardship'. Some still talk about 'spaceship earth' as if it were a giant machine, in need of better engineers. Particularly among 'new age' devotees, there is great enthusiasm for technologies like genetic engineering which, some even claim, can replace extinct species. More generally, they argue that people are part of nature so that everything people do is, by definition, natural.

The more extreme proponents of this view seize upon the writings of people like Buckminster Fuller and Teilhard de Chardin, proponents of a vision of humanity at the tiller of creation. Nature, once wasteful, disorderly and treacherous, will be transformed by the guiding hand of science and technology. Such opinions only take to their logical conclusion the anthropocentric and utilitarian values that pervade most decision-making and theorizing about sustainability.

Many supporters of sustainable development explicitly nail their colors to the mast of UNCED's Agenda 21. Yet this programme endorses the process of GATT-led world trade liberalization, even though critics, including the dissident millionaire Sir James Goldsmith, have shown that it will tear apart local economies and environments. In particular, it will devastate wildlife, as shown by the moves to 'free' tuna fishing from measures designed to protect dolphin and other populations threatened by 'wall of death' trawling techniques.

Human 'chauvinism' underlies most documents and declarations on the issue of sustainability. The IUCN definition of sustainable development cited above, for example, still treats 'carrying capacity' in an anthropocentric way. Such an approach actually invites a further erosion of biodiversity. Moreover at the crudest level, some people might define their 'quality of life' as access to cheap, readily available meat and other animal products, which at present will mean the maintenance of factory farming. They might want to wear furs, use drugs tested on animals, and consume other products that have been widely indicted for their cruelty. All these activities conceivably could be classified as 'sustainable'.

However, this problem goes deeper. Ecosystems sustain themselves partly by virtue of the fact that many of their constituent 'parts' are redundant, i.e. the overall system could survive their loss. From a purely human perspective, then, it may be possible to manage without many of today's species. Obvi-



ously, ecological simplification is an inherently risky business, not least since one 'cost-free' extinction can justify yet further extinctions until a point is reached where human interests are directly and irreparably damaged. Nevertheless, in the short term, it is seldom clear that the loss of one more species will reduce human carrying capacity. The defense of biodiversity really depends upon a new ethic that treats other species as beings of intrinsic value.

So far, most supporters of sustainable development have not made the transition to an Earth-centered value system. There is no deep sense of caution and modesty about the power of human intellect and technological prowess. There is no recognition of the intrinsic rights of other species nor of the wisdom contained in the millennia of evolution. As G. Tyler Miller puts it, 'our task is not to learn how to pilot spaceship earth... It is to give up our fantasies of omnipotence. In other words, we must stop trying to steer.'

To be sure, the sustainable development lobby is concerned about limiting some harms to the environment (on which we all can work together), but it is not about design and decision-making for the environment. Part 3 of this article will explore decision-making for the environment. **WERE**

*Sandy Irvine (Environmental Policy Unit, University of Northumbria, 22, Ellison Place, Newcastle Upon Tyne, NE1 8ST) is working on secondment as the Environmental Curriculum Development Officer at the University of Northumbria, seeking ways to introduce green issues into the curriculum. He co-authored A Green Manifesto (London: Optima, 1988) and subsequently wrote Beyond Green Consumerism (London: Friends of the Earth, 1989). He co-edits a quarterly ecological and political magazine, Real World, and is an associate editor of The Ecologist.*

## I want comfort

My mother says  
we shouldn't worry. Ozone  
is like corn after a fire;  
it will grow back

I like to imagine it,  
sprouting.  
I like to think of it  
as if it were water  
that had no choice  
but to flow,  
to encroach  
over this city's smoggy shore.

I wish I could have the hope  
of letting my son go outside  
with no hat, no shirt, no pants, no sun-  
screens

I want to bottle the comfort, and cage it  
for daily use  
as a moisturizer

for these cracked hands.

—Linda Young

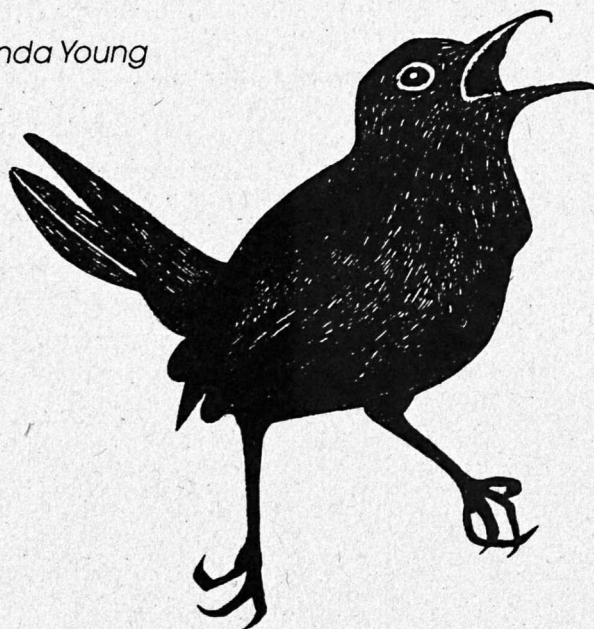


illustration by Susan Pedicord



## TALKING ON THE WATER: Conversations about Nature and Creativity

by Jonathan White; San Francisco: Sierra Club Books; 1994; \$15; 271 p.

Jonathan White agrees with Gregory Bateson, one of the outstanding thinkers of this century, when he says the most important task facing us is to "re-insert humanity back into nature." To begin this process, White takes small groups of people and seminar leaders on his 65-foot wooden boat, *The Crusader*, through the wildest part of Southeast Alaska. For this book he has chosen 13 of the seminar leaders during the last ten years.

No one has ever before tried this combination. *The Crusader* glides noiselessly through the abundant wildlife of these waters—eagles on icebergs eat fish just three feet from the boat, Humpback Whales do their seldom seen "bubble dance," porpoises play off the bow of the boat... Limited space allows me to go into only four of the interviews.

Gary Snyder in his interview, "Hanging out with Raven," remarks: "When we come to some place like Alaska, we think, 'Oh, this is fantastic.' But it is *normal*. It's the way the rest of the world was. And so we can look at this and remind ourselves that this is how it's supposed to be...It touches some kind of archetypal chord that goes beyond mere reason. This is not something fantastic; this is a kind of goal for our future planet."

In his introduction to James Hillman's seminar, "Animal Presence," White quotes Michael Ventura: "Hillman's the most inspiring and disruptive thinker at work now in our country." I agree; although few know of the deep changes Hillman has brought about. His book *Revisioning Psychology* (1975) showed the importance of the

many gods and goddesses—long before the current "new age goddess craze." (Without his book, I could not have done my first book, *Earth Festivals*.) Hillman spent 20 years in Zurich directing the C.G. Jung Institute, then returned to the US in 1979 and founded the Dallas Institute of Humanities and Culture.

Hillman says: "I've talked about animal images in dreams for thirty years, and given seminars in many, many places and this is the only place where it's really appropriate. Because the animals are right there. You have to be careful you don't say something stupid, because the animals are listening." White asks him about the common error psychologists make of saying animals in our dreams are aspects of ourselves. Hillman replies: "Yes, they teach us something but they are not part of us." He talks about a bear dream one man had which corresponded to the man's own earthy, shaggy nature. "That bear is not his own shaggy nature. That reduces the bear to just a piece of himself and insults the bear." Hillman concludes his explanation by asking Jonathan, "Do you remember how everyone on board was imitating the movements of the porpoise—jumping up and down, laughing, being playful?...Why not imagine there's a correspondence between the joy we're feeling and what the porpoise is feeling?" They talk of respect for the animals and Hillman quotes Santayana: "To my host, the world."

The most outstanding woman in the book is Lynn Margulis, best known as contributing to Lovelock's Gaia Hypothesis. Actually, she put his atmospheric concept back down on the ground and under the ground. Margulis has published 140 scientific articles pertaining to Gaia. Concerning her importance, White quotes William Irwin Thompson: "If you wish to carry on as a 'child of Gaia' or a 'healer of the planet' then hold

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Reviewed in this issue:

*Talking on the Water*

*Justice and the Earth*

*Wild Forests*

*The Power of Trees*

*The Comforting Whirlwind*

*The Last Panda*

*The Law of the Mother*

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on to your environmentalist virginity, cross your mind, heart, and thighs, and don't read Margulis... But if you want to understand the intricate, fundamental systems by which life creates and maintains itself, then you just might find Margulis the right place to start all over again: from the ground up." What delights me is her outspokenness. When White asks her about a *Science* article that said she was a fervent supporter of the Earth as a single living organism, she replies: "This kind of thing makes me angry because I never say the earth is a single, live organism. Lovelock might, but not me. It's a bad metaphor." Lovelock, she says, is "a brilliant mischief maker, and realizes that people respond more sympathetically to the image of a living planet than to a term like ecosystem." Margulis ends the interview by saying: "The earth will live on until the sun dies—it's just a question of whether we'll be a part of it."

Paul Shepard's interview is outstanding. One sentence in particular shows the depth of what he covers: "We are Pleistocene beings living in an impoverished culture, one that no longer offers us the diversity that our genetic makeup expects in order to grow up in a healthy fashion." Everyone who cares about the earth should read this essay; Shepard goes to the heart of the problems we face.

"Mountains Constantly Walking" is the title of Jonathan's interview with me. During this interview I realized the enormous study and understanding Jonathan brings to each of these encounters. Aided by his adroit questioning, I was able to give a succinct definition of deep ecology. When Jonathan asked me about the criticism of deep ecology "for its anti-human position," I replied: "Deep ecology is not anti-hu-

man. It's larger than human. It includes humans within the whole of life, not setting them apart from life or above life."

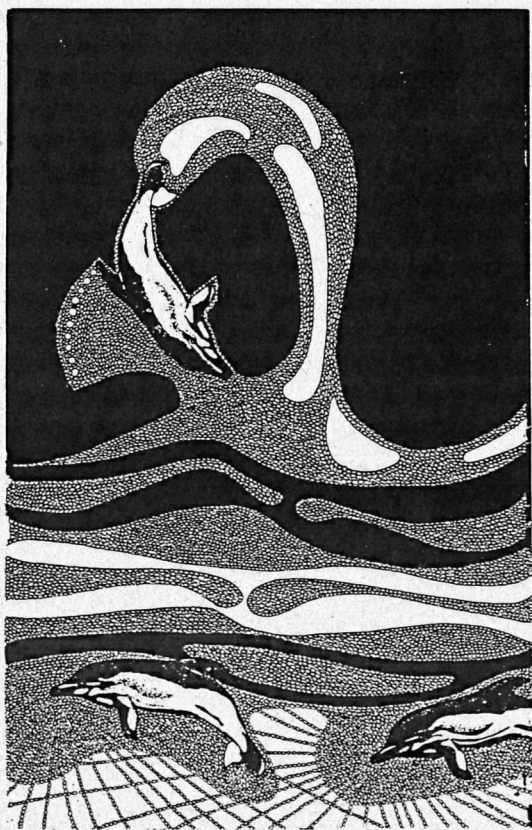
One of the most intense moments on board during my seminar was when we were watching the porpoises play off the bow of the ship and I remembered a piece I had quoted by D. H. Lawrence in my book, *Sacred Land*. One of the voyagers on my seminar had a copy of the book, so I asked him to read this aloud as the porpoises continued their play. Lawrence was on a ship going back to Europe to die of tuberculosis; he dictated this to his wife as he watched the porpoises: "Mingling among themselves in some strange single laughter of multiple consciousness, giving off the joy of life... This is the purest achievement of joy I have seen in all my life... What civilization will bring us to such a pitch of swift laughing togetherness as these fish have reached?" That is the wonder of these voyages on *The Crusader*—the fullness of nature all around you and close at hand the best nature writing to help one go even deeper.

From there our conversation went into Bateson's work on the nature of consciousness and mind: "The lines that we draw between us and the environment are artificial. They are not boundaries of the thinking system." Mind is not just within the human skull; it is the inter-relationship of all in the environment. Human mind is only a subset of this larger mind. Our conversation next went into ritual as a technique for reaching this larger mind in any particular ecosystem, and how I got into ritual from mountaineering and deep powder skiing.

Jonathan asked his last question: "I can see how the life-centered perspective is both radical and all-encompassing. Have you ever encountered anything that doesn't fit?" I explained: "I used to think many things were disparate until I let go of the idea that I needed to give them meaning. When you practice this approach, you discover it is not you that gives meaning to life. As the Japanese Zen Master Dogen says, 'That the self advances and confirms myriad things is called delusion. That myriad things advance and confirm the self is enlightenment.' Once you understand this, there's really no reason to go on talking."

The other interviews in *Talking on the Water* are with David Brower, Gretel Ehrlich, Matthew Fox, Ursula Le Guin, Peter Matthiessen, Janet McCloud, Richard Nelson, and Roger Payne. ■

*Reviewed by Dolores LaChapelle, author of Earth Wisdom, Sacred Land Sacred Sex, and other books available from the Way of the Mountain Learning Center (POB 2434, Durango, CO 81302).*





### JUSTICE AND THE EARTH: Images for Our Planetary Survival

by Eric T. Freyfogle; New York: The Free Press; 1993; 203 p.

The Anglo-American legal tradition casts a long shadow over modern environmentalism. In this country, we have shaped public policy toward land, air, and water based upon that tradition and its burnish of legal principles about property that goes back to the Middle Ages. Nonetheless, aside from Christopher Stone's *Should Trees Have Standing* which appeared in the early 1970s, legal scholars and environmental writers alike have for the most part ignored the shortcomings of property law in dealing with modern environmental problems. In *Justice and the Earth*, Eric Freyfogle, himself a law professor, attempts to remedy this intellectual lethargy.

*Traditionally, the law gives landowners plenty of privileges but few corresponding responsibilities when it comes to caring for the land.*

According to Freyfogle, our interactions with nature—whether good or bad—always depend upon simplifications, which he calls “images.” Until recently, our culture thoughtlessly clung to an image of nature as pure economic resource. With environmental outrages occurring daily now, this gilded mercantile view has lost much of its sheen. So too, argues Freyfogle, have traditional notions of “owning nature.”

The language of property law defines property owners' rights as against other people and the state. We value the individual rights these principles embody, as indeed we should. However, Freyfogle points out, this system of abstract, all-encompassing rights ignores the tangible, variable world of wetlands, creeks, meadows, and other habitats that make up the living tapestry of nature. Traditionally, the law gives landowners plenty of privileges but few correspond-

ing responsibilities when it comes to caring for the land. Writes Freyfogle:

*Property norms today reflect virtually no understanding of how one acre is naturally linked to the next and how conduct on one acre inevitably concerns all others. Our property rules focus on privacy, security, and zones of influence to the exclusion of natural communities, natural links, and land health.*

Freyfogle consciously avoids the politics behind this narrow view of property. His argument would have benefitted from a less diplomatic approach. While ecological ignorance may explain the shape of property law in the past, recent assaults on land use restrictions come from a less innocent conservative agenda involving what might be called “property mysticism”—the belief that property rights come from on-high, rather than from social institutions. Skewering property mystics would have

intensified Freyfogle's thesis that environmental progress will come when institutions embrace new, more informed “images” of nature. It could also have been entertaining.

Freyfogle concludes that property law based on a stewardship image of nature should impose ecological responsibilities to land ownership. The particular demands of the specific ecosystem will define those responsibilities.

Freyfogle leaves many questions open. Who will determine these new ecological responsibilities? How will they affect our industrial economy? What will we do with the Constitution's Fifth Amendment “takings clause”? The book's moderate tone belies the snarl of political controversies Freyfogle's stewardship view of property would likely provoke if put into law. Nonetheless, *Justice and the Earth* provides some thoughtful context for a future debate. ■

*Reviewed by Christopher Manes, lawyer and author of Green Rage: Radical Environmentalism and the Unmaking of Civilization.*

### WILD FORESTS: Conservation Biology and Public Policy

by William Alverson, Walter Kuhlmann, & Donald Waller (foreword by Jared Diamond); Island Press (1718 Connecticut Ave NW, Suite 300, DC 20009); 1994; \$49.95 hard, 29.95 paper; 300p.

*Wild Forests* is an excellent and needed synthesis of ecology, law, and politics pertaining to forests. Authors Alverson, Kuhlmann, and Waller describe what damage Euro-American civilization has wrought upon America's forests—especially the transition forest of their own bioregion, the Upper Midwest—and contrast this with how the forests might look once more if we learned the good sense to let them grow wild again. This is a very well written and researched book, but I do want to offer a few complaints before declaring it essential reading for all conservation activists.

My specific criticisms almost all stem from my one fundamental criticism: The authors are too moderate and mainstream. (No doubt they'll hear the opposite charge from most critics.) They cautiously critique but do not offer a wholesale indictment of the Forest Service. They call for much greater allocation of public lands to wildlife, but do not call for an end to commercial exploitation of public lands. They call for Diversity Management Areas of 20,000 hectares or more, but not for Wilderness Cores at least an order of magnitude larger. They call for protection of minimum dynamic areas but do not (it seems to me) fully account for the needs of all native predators (some of whom would likely want much more than 20,000 ha). They call for rethinking—not abandoning—the multiple-use concept. They emphasize information shortages; yet (again, in my view) ignorance is not the primary problem. Our lack of knowledge of natural systems is profound, yes, but more fundamental are human overconsumption and overpopulation, which are only in small part attributable to our ignorance. (We do need to know more about ecosystem recovery processes,

original species distributions, and the like; but essentially, we know how to restore biodiversity: Remove modern human technology and infrastructure, eliminate exotics, and let Nature grow wild. The noble quest for knowledge reflects our love for and curiosity about Nature, I hope, not an absolute prerequisite for ending our war on the natural world.)

Notwithstanding these minor complaints (which, truth be told, I offer partly to goad them into responding in *Wild Earth*), *Wild Forests* is extremely valuable—necessary even—for all friends of forests (activists, biologists, benign politicians ...). Few if any other books so skillfully summarize and interweave forest ecology, policy, and legal issues. Together, with another superb new Island Press book, *Saving Nature's Legacy* (by Reed Noss and Allen Cooperider), *Wild Forests* provides conservation activists with the knowledge they need to effectively defend wild habitat.

The authors of *Wild Forests* are able to make this mix so well because they combine professional and extracurricular experiences in biology, law, and policy. The three have spearheaded a potentially precedent-setting effort by the Wisconsin Forest Conservation Task Force (possibly the most erudite of new conservation movement groups, with supporters including EO Wilson, Paul Ehrlich, Reed Noss, Jared Diamond, Dan Janzen, Peter Raven, Steve Solheim ...) to force the FS to protect big parts of Wisconsin's Nicolet and Chequamegon National Forests as Diversity Management Areas. So far, the US government has ruled against them (at the appeals level, then-FS chief Robertson; at the lawsuit level, federal district court), but they have heavy hitters on their team and will likely at least force minor reforms on the FS before going down.

The authors teach key lessons about forest recovery and existing laws pertaining to wildlife. They suggest passive restoration for most situations. They suggest NEPA (National Environmental Policy Act) is adequate for its limited purposes; the ESA (Endangered Species Act) is not, for its more ambitious purposes; and NFMA (National Forest Management Act) has several potentially liberating provisions.

Despite my fear that the authors too automatically repeat conservation biologists' truthful but overwrought claim that we need more information, I feel they are much more forthright than most in stating that political considerations may speak for moderation in new land allocations for wildlife, but biological considerations do not. They may have had New Perspectives champion Sal Halwasser in mind when they wrote this:

*It is one thing to argue that land allocations for such new biological reserves will be difficult for political reasons (Harris 1984; Thomas and Salwasser 1989) but it is something very different to argue that reserves are unnecessary from a scientific viewpoint....*

To conclude, *Wild Forests* is essential reading for all forest defenders. Ask your library to order it, your bookstore to sell it, your Congressional representative to read it, and your Forest Service supervisor to implement it. ■

*Reviewed by John Davis.*

## THE POWER OF TREES: The Reforesting of the Soul

by Michael Perlman; 1994; Spring Publications (POB 222069, Dallas, TX 75222); 265p.

Great is *The Power of Trees*. Michael Perlman has crafted a work of lasting value for ecologists, conservationists, psychologists, sociologists, and combinations thereof. Perlman manifests on these tree sheets an arborial/anthropoidal relationship—of likeness and distinction, intimacy and estrangement—that has shaped world history for millennia. Perlman artfully sketches the paradoxical relation between humans and trees: We venerate them even as we slay them. They intimidate us even as they offer us succor.

In short, Perlman shows in these pages that humans need trees for emotional and psychological, as well as ecological and utilitarian reasons. Trees speak to us—figuratively, metaphorically, mythologically ... and literally.

*The Power of Trees* joins *The Biophilia Hypothesis* as a work of primary import for those who want to help restore in their fellow humans a love for the natural world. Perlman in this recondite yet readily readable work helps move ecopsychology to the forefront of the movement to renew a wild world.

Perlman points to numerous word works—fictional and scientific—in which trees have been key symbols or metaphors. These include writings of novelists Zora Neale Hurston and Annie Dillard, psychologist Carl Jung, essayist Wendell Berry, poet WS Merwin, theologian Martin Buber, conservationist Aldo Leopold, and of course the creator of Middle Earth and its Ents—JRR Tolkien. Indeed, Perlman shows, the metaphor of the tree is central to science, as in Darwin's evolutionary tree (though neo-Darwinist Stephen Jay Gould suggests the bush as a better metaphor) and the different branches of science. Naturally, dendritic patterns appear in fields other than scientific as well.





Perlman discusses also arboreal contributions to language.

Perlman suggests we look to one of the trees' original mammalian denizens, the tree shrew, putative ancestor of primates, for a role model as we ponder humanity's relations with Nature and evolutionary processes. Similarly, he suggests the myth of Aphrodite to inform our dealings with forests. As an enticement to *The Power of Trees*, have a glimpse why:

*In this book I try to remain close to the perspective of a spirited little varmint from the forests of the Mesozoic era, whose descendants now inhabit forests of Southeast Asia—a type of tree shrew that appears to be an important mammalian ancestor. Approximately squirrel-sized, tree shrews related to this Mesozoic forebear “can and do move freely between ground and trees,” as F.A. Jenkins says. They are not arboreal or terrestrial but both....(p.13)*

*...The tree animal's physical being evolved in the context of, and is sensitive to, various surfaces and textures of the forest, on all its levels. It is in that sense ancestor to Aphrodite's feeling for surface, texture, and form; and for the more general role aesthetic attentiveness to trees has played in human evolution, culture, and ecological concern.(14)*

The Aphrodite myth calls forth the one assumption of the author that I would challenge: Perlman uses the myth to support his view of the potentially complementary relationship between the natural and the technological. Indeed, Perlman even suspects trees are using technology to communicate to us—through photographs of clearcuts, for instance. Though Perlman is extremely truthful and persuasive, he did not shake my faith in the superiority and distinctiveness of the natural.

Other readers will likely agree with him here, though; and most of us will agree that *The Power of Trees* is extremely helpful for friends of the natural world. With this work Michael Perlman earns a prominent place in arboreal history. ■

*Reviewed by John Davis.*

## THE COMFORTING WHIRLWIND: God, Job, and the Scale of Creation

by Bill McKibben; Wm. B. Eerdmans Publishing Co. (255 Jefferson Ave. SE Grand Rapids, MI); 1994; 95p.

In the Bible, Job endured suffering beyond what most of us can imagine. According to the orthodoxy of the day, God rewarded the good and punished the wicked. Thus Job's friends reasoned that he had been a bad, bad man. The problem was and is that Job clearly was a fine man, faithful to God and quick to do good works. In a clever examination, Bill McKibben compares the dilemma of Job to that of our present day wrestling match with a flawed orthodoxy. Regardless of the increasingly problematic facts of lost species, global warming, and a thinning ozone layer, the human species continues to cling to the promise that economic growth and increased personal wealth and convenience lead to happy, fulfilled lives.

In previous works McKibben issued a wake up call to those who believe that the natural world can survive any blow delivered by the human hand (*The End of Nature*), and lamented the replacement of information from the patterns and shifts of nature people once understood with the information we pipe into our cozy homes via television (*The Age of Missing Information*). In *The Comforting Whirlwind* McKibben perceptively views the significance of the natural world from yet another angle.

McKibben argues that our economic actions have spiritual consequences. “Since God appears to few of us in tangible form and the pages of the theologians are not a strong enough foundation for many of us to erect our faith upon, building a God-centered life depends on the evidence of the divine we find around us.” (p.83) Our unwillingness to observe limits and exercise self-restraint is creating a world where evidence of God is being usurped by evidence of people. What does finding

twenty-seven shopping malls nearby inspire us to worship? McKibben warns that as we continue to believe the politicians and economists who tell us that new technologies will make all well, and we continue to sacrifice the natural world for suburban comforts, our souls as well as our habitat will suffer.

The Bible tells us that we are created in God's image; this idea, McKibben writes, has fed our belief that as God created the world, we are creating a better world: we are trying to outdo

## We live under the rule of a damaging orthodoxy.

God. Like the people wandering the earth in the time of Job, we live under the rule of a damaging orthodoxy. We have built our lives on the belief that God, by creating us in His own image, has rendered us limitless. McKibben offers a wise and refreshing alternative to this approach:

*When God tells us we are created in His image the only thing we know about God is that He finds creation beautiful — “Good. Very Good.” Perhaps that is a clue as to how we should see ourselves. Humans—the animal that appreciates. Appreciates each other, loves each other, protects each other from harm. Appreciates the rest of creation, loves the rest of creation, protects the rest of creation. (p.88)*

The book portrays an afflicted Job refusing to believe lies, and searching alone for the truth behind his situation. It is written in the hope that readers will become as intrepid as Job in their refusal to embrace today's sweeping but ruinous orthodoxy, and it proposes the above as a reconciliation between God, people and creation. *The Comforting Whirlwind* is excellent reading for religious persons seeking to make room in their faith for environmental activism, and for activists seeking to deepen their activism with a spiritual model of humility. ■

*Reviewed by Wendy de Forest*

## THE LAST PANDA

by George B. Schaller; Chicago and London: The University of Chicago Press; 1993, \$24.95; 277p.

*To convey what happened with fidelity, I have to discuss panda politics as much as the pandas themselves. A conservation project is always divided between politics and science, and any book about such a project ought to reflect the constant interplay between the two.*

So George Schaller prefaces his remarkable account of his efforts to study the rare and legendary Panda in China. He writes not only of the plight of the Panda in the wild, plagued by poaching and habitat destruction, but of the five-year political struggle between the Chinese government and World Wildlife Fund International (now World Wide Fund for Nature) in conducting the Panda Project.

The Panda Project began in 1980 as China was slowly emerging from the Cultural Revolution. With foreign contacts still feared and mistrusted by the Chinese, Schaller, along with his wife, Kay, went to the mountains of the Sichuan province to teach his Chinese co-workers new technologies and research methods. "I had never been where relations were so cordial yet inarticulate, where my freedom to do even the simplest task or veer even slightly from a rigidly prescribed course was so restricted, where all my actions were so unrelentingly scrutinized and reported, and where my presence was treated with such wariness." This added to the fundamental barrier in comprehension between the aims and methods of the Chinese government and WWF. A clash of western and eastern ideals overshadowed the project: conservation was WWF's primary goal, and construction of a status-related research center was China's.

Yet extinction of the species continued to loom nearer. An estimated 1100 Pandas existed in China at the onset of the study. Considered a national treasure in China, the Panda's own popularity contributed to its decline. Poaching was the most

urgent short-term threat to the species. Impoverished villagers hunted to feed their families, and Panda furs and organs generated gross sums of money when sold illegally in Hong Kong and Japan.

A main problem for Schaller and his colleagues was China's lack of legislation to protect wildlife. A mere two year prison sentence hardly deterred poachers and did not even apply to marketers of furs or organs. Habitat destruction posed a further threat. Panda populations were small, isolated, and confined to high ridges. The forests of the Sichuan were rapidly decreasing due to farm conversion, government timber operations, and illegal cutting by local people. Fragmented habitats may have diminished the genetic diversity needed to keep the species viable. The destruction of China's bamboo forests depleted Pandas' food supply, as these bears subsist solely on bamboo.

Although hindered by politics, the Panda Project achieved much success. Schaller and his co-workers, the first to conduct a long-term study of Pandas in the wild, focused on behavior, habitat, reproductive needs, food requirements and habits, and bamboo growth and regeneration. They documented the gentle and mysterious creature in its native state, and drew public support to its cause. Cultural differences, though irreconcilable, were accepted. Most important, a master plan for Panda conservation was developed.

Schaller brings the Panda to life through his eloquent writing. His adoration of and dedication to the Panda adds hope to the story. Indeed, this book may create the awareness needed to protect the species. Schaller believes the species can endure, but only with proper conservation efforts:

*Unless sound planning and vigorous law enforcement are soon initiated, all the field research, impressive laboratories, educational campaigns, public appeals, and legal assaults will be of no avail in saving the panda. To let the species slip quietly into oblivion would be hope's final betrayal. ■*

*Reviewed by Erin O'Donnell, WE staff*

## THE LAW OF THE MOTHER

edited by Elizabeth Kemf; Sierra Club Books (100 Bush St. San Francisco, CA 94104); 320 p. inc. 64 color photos

The national park idea, which began with Yellowstone in the United States, has become the paradigm for natural area protection throughout the world. The Yellowstone model defines a natural area as largely untouched by human exploitation. But what do you do if someone is living there? Is it appropriate to incorporate indigenous peoples into protected areas? The conclusion of most of the authors of this anthology is an overwhelming yes.

The subtitle of *The Law of the Mother* is "protecting indigenous peoples in protected areas." An anthology written in conjunction with World Wildlife Fund and the International Union for the Conservation of Nature, it explores the concerns of native peoples that currently conflict with the designation of nature reserves and national parks in places where people still live. The 36 case studies describe people as diverse as the Shimshali in Pakistan and the Inuit in Canada, and propose solutions to conflicts.

A major point made by many of the authors is that preserving the rich cultural diversity of indigenous peoples is as important an aspect of conservation as preservation of plants and animals. Many of the authors argue that true conservation should include people as part of the formula since indigenous people reflect the landscape and human interaction with it.

Depending upon the area and the people, this might entail continuation of traditional resource extraction such as hunting, trapping, and fishing within protected areas. It might involve providing economic opportunity for indigenous people either within or outside a reserve. Indeed, most of the authors in one way or another argue that if parks are to succeed, local people must glean the economic benefits from them. Most also argue that local people should be involved in park establishment and management.



## Readings

Nonetheless, good as it was in describing the conflicts in protected areas designation today, I still found much of the book lacking in perspectives and written from an anthropocentric position. For example, in one description of Zimbabwe, the authors describe how elephants had trampled the field of a villager. They conclude there are "simply too many elephants in the region." Never considered is that too many people may be encroaching upon the habitat of elephants. I am not implying that the plight of a villager who loses his sole food source to elephants is not tragic, but the "too many elephants" conclusion is entirely anthropocentric.

In addition, underlying this book is an assumption that the only reason parks are established is to benefit people—tourists who come to view the landscape and local people who might garner some income from the tourists. I found the book to be unabashedly biased toward human concerns, forgetting that parks are the only home left for many species that lack the flexibility and adaptability of humans. Parks would not exist without human support, and they are commonly enacted on the basis of their presumed economic benefits to society; but these anthropocentric justifications should not be their main purposes or the philosophical reasons for their existence.

Many of the authors repeat the old mythology that native people "lived in harmony" with nature. The assumptions are that indigenous people did not cause species extinctions or significantly alter their environment—both clearly flawed assumptions. Lacking is a critical look at the role technology plays in human ability to degrade natural areas. It is assumed that because a particular group lived in an area for "thousands of years," they must intuitively know how to live in a "harmonious" manner with nature. No doubt, rituals and cultural attitudes do play roles in human self-restraint, but these acted in the context of low human population density and limited technology.

Most of the authors imply or state that native people should be permitted to continue whatever activities they have



traditionally practiced—even if the tradition has been significantly modified by modern technology. For example, Alaskan natives have hunted whales, Caribou and seals for generations; but they did not formerly do so with all-terrain vehicles, snowmobiles, outboard motors and modern boats, high powered rifles, spotting scopes and other equipment that gives humans a tremendous advantage over native species. If the last Bowhead Whale dies at the hands of an Eskimo instead of a white whaler, is that any consolation to the whale? Does a wolf feel any less pain if it is shot by an Alaskan native?

I sense that many of the authors lack a strong background in ecology. Many of the authors are attracted to "halfway technologies"—which to students untutored in ecology appear to offer the "win-win" solutions everyone seeks today. Some of the authors argue for "multiple use" of the landscape, where indigenous people continue to modify the environment, but with an eye toward protecting at least a small percentage of the landscape for native creatures. In Khunjarab National Park in Pakistan, where grazing of domestic livestock threatens the indigenous Marco Polo Sheep, the proposed solution is to continue grazing livestock, but under "controlled" management so that "range resources would not be destroyed by overstocking of animals and wild species would not be dis-

rupted." This sounds a lot like the happy rhetoric we hear in the United States with regards to "multiple use" on public lands. It will not work any better in Pakistan or Kenya than here.

I share the concern of one author who argues against the "perils of romanticism." He insists that indigenous societies probably were not and are not either significantly better or worse than European societies at preserving their environments: "Indigenous tenure systems are not panaceas for environmental degradation." He further notes that, "Indigenous tenure systems operate today in vastly different economic and political settings than in the past."

If one bears these admonishments in mind, one can read *The Law of the Mother* as an effective challenge to the environmental movement to recognize the potential contribution indigenous peoples can make in conservation strategies, and the expanding role they must play in future protected areas management. As a springboard to the larger issue of the role of humans in the environment, this book offers much food for thought. Even if you disagree with many of the authors' statements, as I do, the book is worthwhile reading for the important issues it raises, which will no doubt become focal points in future conservation strategies. ■

Reviewed by George Wuerthner  
(Box 3975, Eugene, Oregon 97403)

## Other Recommended Titles

**THESE AMERICAN LANDS: Parks, Wilderness, and the Public Lands**, Revised and Expanded Edition; by Dyan Zaslowsky and T.H. Watkins; 1994; Island Press (1718 Connecticut Ave NW, Suite 300, DC 20009) in cooperation with The Wilderness Society; \$45 hard, \$22 paper; 420p.

This should be a standard text for all public land proponents. It provides histories and current day acreages for America's federal land systems: National Wildlife Refuges (US Fish & Wildlife Service), Natural Resource Lands (Bureau of Land Management), National Parks and Monuments (National Park Service), National Forests (Forest Service); and overlying or intersecting small parts of these federal land categories, the National Wilderness Preservation, National Wild & Scenic, and National Trails Systems. It analyzes threats to these lands and outlines The Wilderness Society's agendas for reforming the agencies and curtailing the abuses. TWS's proposals are neither sweeping nor drastic enough, in the view of new conservation movement activists who favor abolishing commercial exploitation (the most pervasive forms of which are logging, grazing, and mining) on public lands; but they would be big steps in the right direction. Perhaps the strongest suggestions are those offered for the Wild & Scenic River System, particularly the call for a five year halt to development along rivers while a nationwide river inventory is conducted to see which might be eligible for Wild, Scenic, or Recreational status. —John Davis

**VOICES FROM THE ODEYAK**; by Michael Posluns, foreword by Pete Seeger; 1993; NC Press Limited; 223 pp; \$17.95; Order from University of Toronto Press, Order Fulfillment, 5201 Dufferin St., Downsview, Ontario Canada M3H 5T8.

*Voices From The Odeyak* is a compelling account of the Crees' and Inuits' determination to preserve their land and their cultural traditions. It is also an example of grassroots organizing at its best. The author tells the story of a 24-foot freighter canoe, the *Odeyak*, built by the Cree and Inuit people to carry a crucial message to the citizens of New York and New England on Earth Day in Times Square, 1990.

The *Odeyak* arrived in Manhattan after a five-week journey from the mouth of the Great Whale River. The message delivered by the two First Nations of the northern wilderness was heartwrenching: The Great Whale Hydro-Electric Project, the first part of the James Bay II project, would destroy the natural economy and their way of life. Do not buy its power.

The *Odeyak*'s message was carried to every town along its route and drew support not only from environmental organizations, but from community and religious groups. *Voices From The Odeyak* is based on interviews with Cree and Inuit members, environmental activists, and citizens involved with the *Odeyak* along its journey. The book is written in their voices, and thus presents diverse perspectives on the cultural, environmental and political struggles associated with Hydro-Quebec's efforts to dam the rivers flowing into James Bay. —Erin O'Donnell

### Music

Soundings of the Planet celebrated its 15th anniversary with the release of the *Soundings Sampler*, a collection of the independent label's best recordings. The *Soundings Sampler* represents the company's vision of "Peace through Music." Soothing musical compositions featuring the flute, cello, piano, harp and synthesizer blend with natural sounds to create comforting scores such as *Ocean Dreams* and *Wind Dancer*. The company donates some Soundings recordings to environmental groups for fundraising.

For more information contact: Soundings of the Planet, POB 43512, Tucson, AZ 85733; 1-800-93PEACE. —Erin O'Donnell





## Announcements

### Headwaters Conference

The grassroots conservation group Headwaters is holding its fourth annual West Coast Ancient Forest Activists Conference on 13-16 January at Southern Oregon State College in Ashland. Upwards of 400 forest activists are expected to convene for education, inspiration, strategizing, networking and fun. Several pairs of high school students, invited to attend as representatives of the first of the next seven generations, will personify the increasing diversification of the environmental movement along race, gender, and class lines. Confirmed keynote speakers include Native American activist Winona La Duke, and Carl Anthony, Director of Earth Island Institute's Urban Habitat Program. Entertainment features Irena Ferrara and her Tropical Band. A Sliding scale Conference fee (\$50-\$100) includes seven meals. For information, contact Chant Thomas at (503) 899-1712.

### Ocean Futures

A California-based environmental group, Ocean Futures: Divers United to Preserve the Oceans, is fighting to save Garibaldi fish from commercial collecting by the pet trade. The Garibaldi is ostensibly protected by Fish and Game Department regulations, yet continues to be sold in pet stores. California is the only state in the United States where the Garibaldi live. Members of Ocean Futures want the Garibaldi declared California's Official State Marine Fish and a six-year moratorium placed on its collection while scientists study the impact of commercial collecting on the fish. To help, contact Ocean Futures, Suite 603, Box 2705, Huntington Beach, CA 92649.

### Deep Ecology Anthology

*Deep Ecology for the 21st Century*, edited by George Sessions, is a comprehensive and wide-ranging anthology that offers a new vision of humankind's relationship with nature. The book (to be reviewed in an upcoming issue of *Wild Earth*) contains almost forty articles by leading writers and thinkers in the field. Topics explored range from the basic philosophy of deep ecology to the social and political implications of deep ecology for the twenty-first century. For information contact Jennifer Puesley at Shambala Publications (617) 424-0030.

### The Forest Commons

Appalachia-Science in the Public Interest (ASPI) is sponsoring a land-use ethics conference 31 March-1 April at Eastern Kentucky University in Richmond, KY. The conference will explore ways to preserve forest on private lands. For information contact ASPI, Rt.5, Box 423, Livingston, KY 40445-9506; (606) 453-2105.

### Heartwood Citizens' Guide

Heartwood, a coalition of organizations and individuals working to protect the native forests of the Central Hardwood Region, has published a "Citizens' Guide to Protecting Your National Forest." It provides simple instructions on how to become involved in the decision-making processes surrounding your local public lands. Write Heartwood, RR 3, Box 402, Paoli, IN 47454.

### Wolves and Humans 2000

The International Wolf Center and the University of Minnesota Duluth Center for Continuing Education will present "Wolves AND Humans 2000," a scientific conference addressing the critical issues of wolf management in our future, 9-12 March 1995 in Duluth. The conference will focus on wolf recovery and reintroduction, non-lethal methods of wolf control, and the Alaska wolf control controversy. For more information contact: "Wolves AND Humans 2000," Continuing Education & Extension, University of Minnesota Duluth, 316 Darland Administration Bldg., 10 University Drive, Duluth, MN 55812-2496; (218) 726-6819.

### Thinking Green

A new video, "Thinking Green," offers an introduction to the Ecofeminist and Green movements in the United States. Produced by independent videographer and Associate Professor Greta Gaard, the video presents interviews with activists and scholars discussing their views of the current social and ecological crisis, and their plans for social transformation. "Thinking Green" is the first of three documentaries in a series. A second video focusing on Ecofeminism and a third exploring the roots and growth of the Green movement in the United States will follow. For more information contact: Dr. Greta Gaard, Dept. of English, 420 Humanities Bldg., University of Minnesota, Duluth, MN 55812.

### Talking Leaves

*Talking Leaves* journal, published by the Deep Ecology Education Project, is now accepting submissions of articles, art and poetry. On the leading edge of spiritual ecology and direct activism, *Talking Leaves* covers model projects and individuals making a positive difference around the globe. DEEP, a non-profit organization, is dedicated to protecting intact ecosystems. The goal is to give people the information they need to participate in positive change and to take more informed action. Send your submissions to: the Deep Ecology Education Project, 1430 Willamette St. #367, Eugene, OR 97401. Or call us at (503) 342-2974.

### Call To Action...

*Call To Action ... A Digest of Urgent Environmental Issues and Actions* is a new newsletter dedicated to raising issue awareness and encouraging readers to take action. The newsletter briefly outlines current environmental issues and events and includes a *What You Can Do* section with each story. It is published every two to three weeks as needed. Subscriptions are \$10 a year. Contact Call To Action, POB 15, Budd Lake, NJ 07828.

## ABOUT SUBMISSIONS

**Artwork, articles and letters** should be sent to the Art Director or Editor at our main address (POB 455, Richmond, VT 05477). *Wild Earth* welcomes submissions of original illustrations or high-resolution facsimiles thereof. Botanical/zoological/landscapes are eagerly sought, with depictions of enigmatic micro-flora especially prized. Representational drawings should include common and scientific names.

Articles and letters should be typed or neatly hand-written, double-spaced, and include a return address and word count on the title page. Those who use a computer **should include a copy on disk**. We use Macintosh (3.5" disk) but can usually convert from PCs. Writers should enclose self-addressed stamped envelopes. Deadlines are two months before the changes in seasons (e.g., 10-20 for winter issue). *Wild Earth* has a large and growing backlog of accepted articles. Thus, unfortunately, authors of lengthy articles must expect a delay of a year or more before their article sees print, even if it is accepted.

**Poems** should be sent directly to our Poetry Editors, Art Goodtimes (Box 1008, Telluride, CO 81435) and Gary Lawless (Gulf of Maine Books, 61 Maine St, Brunswick, ME 04011). Poets should realize that we receive scores more poems each quarter than we can publish.

Articles, if accepted, may be edited down for space or clarity. Articles with significant scientific content (e.g., most biodiversity reports and wilderness proposals) will be reviewed by our Science Editor for accuracy and clarity. Wilderness proposals will also be reviewed by our Executive Editor, and controversial or complicated pieces may be peer reviewed. Lengthy biologically-based articles generally should include literature citations.

*Wild Earth* occasionally reprints articles; but due to the surfeit of submissions we receive, reprints will usually be low priority. If an article is being submitted to other publications as well as *Wild Earth*, the writer should indicate so. We usually try to avoid duplication. We generally welcome other periodicals to reprint articles from *Wild Earth*, provided they properly credit the articles.

In matters of style, we follow the *Chicago Manual of Style* loosely and Strunk's & White's *Elements of Style* religiously. Also, we suggest that authors remember several basic rules when writing for *Wild Earth*, since we always have far more material than we can print and we expect our writers to be lucid, perspicacious, and ineffably winsome.

1. Eschew surplusage (Twain 1895).
2. Do not affect a breezy manner (Strunk & White 1959).
3. Watch your antecedents (Davis 1988).
4. Thou shalt not verbalize nouns (Abbey 1988).
5. Include a goddam floppy (Butler 1992).
6. Mix drinks, not metaphors (Davis 1993).

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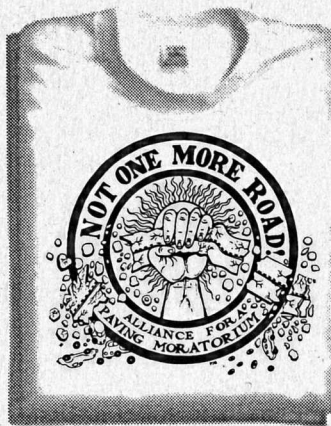
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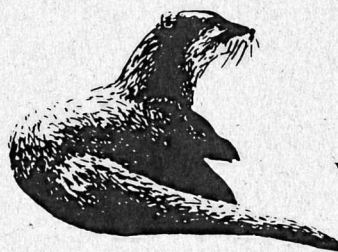




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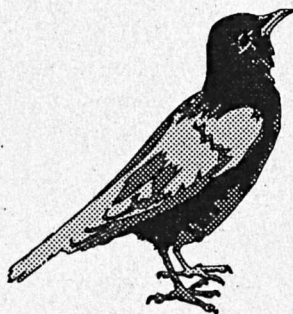
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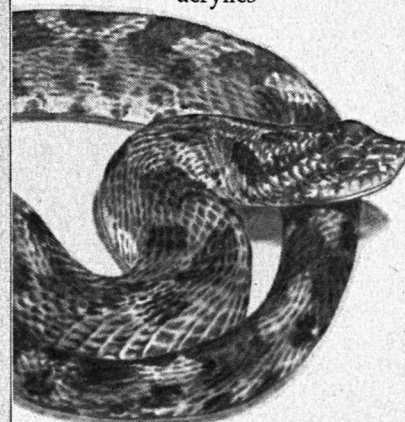
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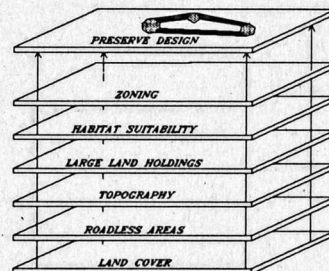
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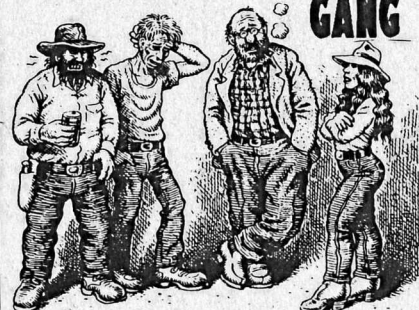
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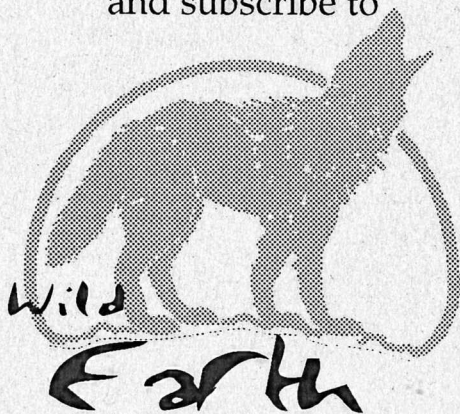
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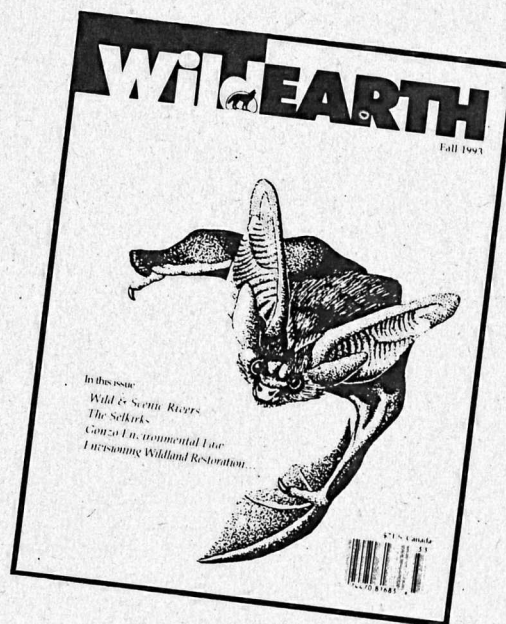
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Mountain Lion (*Felis concolor*)  
linoleum block print by Amy Grogan



*Felis concolor* needs no introduction—augmentation maybe, but even that grows ever more questionable as increasing numbers of Cougar sightings occur in the one large part of its former range from which the multitudinously named Moun-

tain Lion was supposedly extirpated, the eastern United States. Indeed, hundreds of Cougar sightings have been reported in the East in recent years, particularly in the Adirondacks, northern New England, and the Southern Appalachians. State and federal wildlife managers have been quick to dismiss reported sightings, lest they be forced through the Endangered Species Act to manage for this imperiled cat. (The US Fish & Wildlife Service lists the Florida Panther as Endangered, and thus needing protection; but lists the Eastern Cougar as extinct, and thus irrelevant in management decisions.) Conservation activists, in contrast, have been perhaps a bit overzealous in upholding the veracity of reported Cougar sightings.

Likely, the truth lies somewhere between the two camps. Some—but by no means all—of the sightings seem nearly incontrovertible. Three Catamounts in Vermont have recently been tracked and confirmed by DNA analysis. The October 1994 issue of *BBC Wildlife Magazine* shows a photo taken in Maine in 1993 of a Cougar being hounded by two dogs. Predictably, game

managers attribute solid sightings of *Felis concolor* in the East to escaped pets or circus animals. However, as one Cougar pundit in New Hampshire wryly asked (after hearing this explanation many more times than circuses had appeared in Coos County), where

are the escaped Giraffes? (See Cougar article in the latest issue of *Northern Forest Forum*.)

Notwithstanding all the debate about whether Cougars survive in the East and whether they are truly wild, this much is clear: The Eastern Cougar needs protection—road closures, termination of commodity extraction on public lands, wilderness recovery... Given its need for large wild expanses, truly protecting the Cougar would mean protecting most other wide-ranging predators. Though the imagery evoked by the biologists' terms seems incongruous, if not mutually exclusive, *Felis concolor* is both a "flagship" and "umbrella" species. As the Western Hemisphere's widest ranging predator (from Alaska to Patagonia, from the West Coast to the East Coast) and largest of Earth's 28 species of small cats—able to casually out-jump the world's greatest human athletes, and sever an Elk's spinal chord with one mighty chomp—*Felis concolor* stands for integrity, health, predation, and pure, unmitigated wild power. —JD

Artist Amy Grogan (1035 E. 4th Ave., Durango, CO 81301) is a relief printmaker who trained in Chicago at the School of the Art Institute. Her woodblock, linoleum block and collagraph prints focus primarily on wildlife and landscapes. She shows in exhibitions regionally, and is represented by Golden West Gallery in Telluride. Her "Whooping Crane" appeared on the fall 1994 WE cover; Grogan's work can also be seen on p. 52 of this issue. —TB



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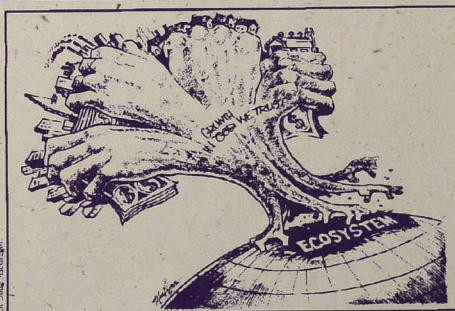
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Vol. 4, No. 4

April 1994



### Sustainable Growth: An Impossibility Theorem

by J. Herman E. Daly

**I**mpossibility statements are the very foundation of science. It is impossible to travel faster than the speed of light; create or destroy matter-energy; build a perpetual motion machine, etc. By respecting impossibility theorems we avoid wasting resources on projects that are bound to fail. Therefore economists should be very interested in impossibility theorems, especially the one to be demonstrated here, namely, that it is impossible for the world economy to grow (a way out of poverty and environmental degradation). In other words, sustainable growth is impossible.

In its physical dimensions the economy is an open subsystem of the earth ecosystem, which is finite, nongrowing, and materially closed. As the economic subsystem grows it incorporates in ever greater proportion of the total ecosystem into itself

and must reach a limit at 100 percent, if not before. Therefore its growth is not sustainable. The term "sustainable growth" when applied to the economy is a bad neologism—self-contradictory as precise and unevocative as poetry.

#### Challenging the Economic Oxymoron

Economists will complain that growth in GNP is a mixture of quantitative and qualitative increase and therefore not strictly subject to physical laws. They have a point. Precisely because quantitative and qualitative change are very different it is best to keep them separate and call them by the different names a ready provided in the dictionary. To grow means "to increase naturally in size by the addition of material (through assimilation or accretion)." To

Continued on page 2

### Call To Action!

#### 1994 Legislative Update

The 1994 session of the 103rd Congress is now considering a number of bills and reforms with important carrying capacity implications. One of the most significant concerns legislation to slow U.S. population growth by addressing one of its major components: immigration. Largely as the result of past Congressional action that drastically increased immigration far above historical averages, over half of U.S. population growth is now due to immigration. Rep. James H. Bliley of Nevada has introduced a House version of Senator Harry Reid's Immigration Stabilization Act (H.R. 3326/S. 1391). A key component of these bills is an absolute cap on total number of immigrants, refugees and asylees at 300,000 for the Reid bill and 360,000 for Bliley's version. While even these levels of immigration would promote significant growth over the next 50 years (about 300,000 would be the replacement level of the U.S.), the other provisions of these bills represent a much needed comprehensive reform of U.S. immigration law. For more information contact: Population-Immigration Balance, 1825 G St.,

#### Inside...

The Best Way to Stop Population Growth

The *Clearinghouse Bulletin*, CCN's monthly digest of news and information from a carrying capacity perspective, provides the up-to-date details activists need to stay informed on a variety of population growth and environmental issues. Besides receiving the *Clearinghouse Bulletin*, participation in CCN offers the potential for wider publicity and coalition building, as well as access to our speakers/writers bureau, our resources bank, and our toll free number.

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