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WILDEARTH



Spring 1995

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Prairie Dog Ecosystems



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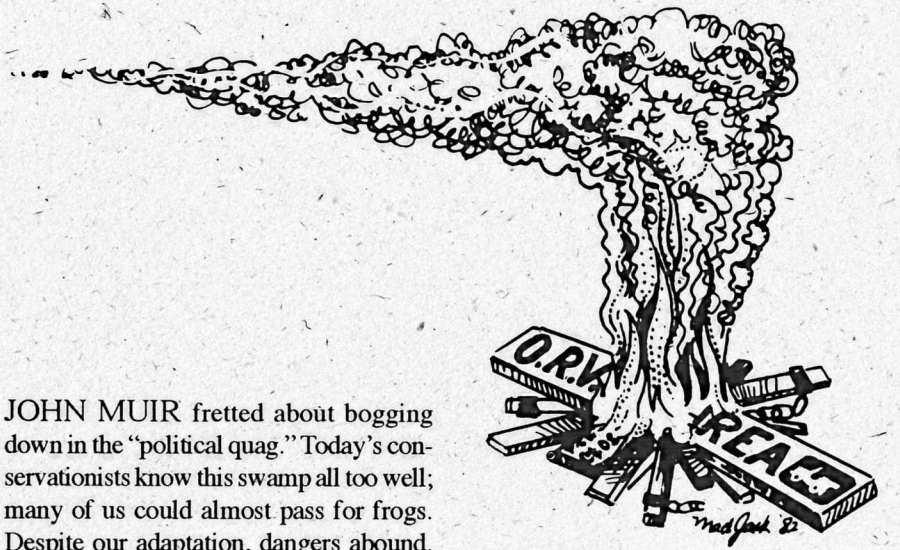
Free Marketeers vs. Traditional Enviros

Central Hardwood Forests

Minnesota Biosphere Recovery

and much more...

Around the Campfire



JOHN MUIR fretted about bogging down in the "political quag." Today's conservationists know this swamp all too well; many of us could almost pass for frogs. Despite our adaptation, dangers abound. We constantly risk becoming so mired in the muck that we can't see any farther ahead than the rich organic matter on the end of our noses. While I would be the last to suggest that we leave the swamp for higher ground, we must constantly check our position in the political marsh, pick out the dangers around us, and reconnoiter our route through. (Oscar Wilde once noted that we are all lying in the gutter, but that some of us are looking up at the stars.)

Following an ecologically dismal 103rd session of Congress and then last fall's election which gave the GOP control of both houses of Congress, it is even more important to figure out where we are in the political quag and how we might better maneuver through it in the future. I see two bogs here: the larger political world, including the public arena where we push our agenda; and the much narrower, explicitly political world of electoral politics. I'd like to nose around the electoral swamp here. (I'll return to the big swamp in a future Campfire.)

We conservationists only recently dove into the electoral quag. The first election in which conservationists and environmentalists became actively involved was the presidential election of 1976 (though a Republican at the time, I was New Mexico Chairman of Conservationists for Carter). During the last couple of decades the League of Conservation Voters (LCV) and the Sierra Club Committee on Political Education (SCOPE) have rated candidates, endorsed candidates, donated money to candidates, and organized volunteers for candidates. Whether this has been wise deserves discussion. I'll put that judgement on hold for now; what follows assumes that some conservation groups will continue to be involved in elections.

I see several obvious problems with engaging in electoral politics:

1) Conservationists and environmentalists are increasingly identified as just another liberal political interest group under the broad umbrella of the Democratic Party. Our enemies are successfully portraying us as proponents of regulation-heavy big federal government, and as ivory tower elitists who think they know what's best for everybody else. We appear to be pro-bureaucracy, anti-property, anti-gun, and anti-business.

2) Members or leaders of conservation groups working for particular political candidates develop loyalties to those candidates (usually Democrats) which begin to transcend their loyalty to conservation issues or their conservation groups. In some states, conservation leaders double as Democratic Party activists; it can be argued that certain groups have become appendages of state Democratic parties.

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WILD EARTH



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Cover art: Prairie Dog *by Robert M. Smith*

Clinton is a disaster. The man does not have any honest commitment to public lands, endangered species, or other conservation issues. The Big Outside is where he hits little white balls or what he runs through on his way to McDonald's.

3) Too often conservationists endorse the lesser of two evils in fear of an egregiously anti-conservation candidate. We don't look very good, however, by endorsing and working for a candidate with a weak conservation record. If that candidate is elected, he or she tends to take us for granted (after all, we sold our support cheaply). Bill Clinton is a textbook example of this.

4) Conservation issues become blurred with environmental issues (and even peace and social justice issues). The LCV lumps votes on environmental issues with those for conservation issues when they rate members of Congress. I think some of the environmental votes in the LCV ratings are pretty questionable. (If I were a member of Congress, I doubt I would receive a 100 percent LCV rating.)

○

Given these pitfalls, how might conservationists who wish to remain in the electoral quag better operate? Following are some modest suggestions. All are based on a fundamental principle—regardless of what our individual positions on other issues may be, when conservation groups engage in electoral politics, they should be single-issue proponents. A candidate's conservation record should be the only measure. It's fine for in-

dividuals to mix issues in determining how they vote; conservation organizations should not. With that in mind, I offer the following...heresy?

1) DUMP CLINTON. Lunatic Republicans (and some Democrats like Billy Tauzin) in Congress are planning major assaults on the Endangered Species Act, Wilderness (extremely weak bills with hard release in Idaho and Utah, and oil drilling in the Arctic National Wildlife Refuge), and National Parks (declassification of some existing Parks). I'm told by conservation lobbyists in Washington that we cannot depend on Bill Clinton to veto such legislation. Conservationists must send an unmistakable signal to Clinton that we will not support his reelection if he does not veto bad bills.

Even apart from this, I think Clinton is a disaster. The man does not have any honest commitment to public lands, endangered species, or other conservation issues. The Big Outside is where he hits little white balls or what he runs through on his way to McDonald's. He has a backbone of tofu; he cannot be depended on to stand up for us on any issue. He is incompetent as President of the United States. He is a textbook example of the Peter Principle—someone who has risen to his or her level of incompetence. He may have



untitled painting (acrylic) by Bill Amidon

mastered the art of governing Arkansas, but he is over his head in Washington. The same is true for Secretary of the Interior Bruce Babbitt, who was the most capable governor Arizona ever had but who has been as inept as James Watt as Secretary of the Interior (though their policies are very different).

Conservationists should begin talking to potential Democratic challengers to Clinton like Senator Bob Kerrey of Nebraska, and to *any* potential Republican presidential candidates who are not utterly beyond the pale. I don't know who they might be. Lamar Alexander? William Weld? James Baker? By doing so, we may accomplish two things—scare Clinton enough so that he will go to the mat for us with the veto on key issues, and gain influence with those who might topple him in 1996.

2) MAKE CONSERVATION BIPARTISAN AGAIN. Republican conservationists must make their voices heard once more within the GOP.

Let's not treat Newt Gingrich as the beast. He has supported Wilderness in the past, he was a Sierra Club member, and as a college professor he started an environmental studies program. Gingrich clearly has more of a personal commitment to conservation and environmentalism than does Bill Clinton. Conservation groups should not demonize him; they should attempt to develop some lines of communication with him. Properly approached, he might derail some of the more egregious anti-conservation measures being bandied about by the lunatic right. Prominent Republican conservationists should be encouraged to try to work with Gingrich.

Many Republican voters are not anti-conservation. They are opposed to big bureaucratic government and high taxes. Arizona, while voting strongly Republican in the last election, voted down takings by a near-landslide and outlawed trapping on public lands. Albuquerque's yuppies didn't vote for Republican Gary Johnson for governor because he wanted to give the national forests to the cowboys, but because he was for lean efficient government. These

folks are not voting for virulently anti-Wilderness and anti-Endangered Species Act candidates because of their "War on the West" rhetoric, *but in spite of it*. The same is true in other parts of the country. We need to encourage Republican (and Democratic) primary candidates for all elected offices who support public lands, wilderness, and endangered species, *and* who favor fiscal responsibility, lean efficient government, and reducing dependency on government handouts. Such candidates would run well in many areas that now elect the worst of the anti-conservation crowd.

3) REMEMBER THAT ELECTORAL POLITICS IS NOT ALL OR NOTHING. There are levels of involvement. First comes a non-judgemental presentation of candidates' votes or public stands on issues. Second is a rating of candidates based on their votes or positions, but without any endorsement. Third is an endorsement of a candidate. Fourth is a contribution of money and staff to a campaign. Endorsements and financial support should be given only to those candidates who are proven conservationists and whom we can count on. Endorsements should not be given in the hope that a candidate will pay us back by being better in the future; a rock-solid commitment on specific issues should be negotiated in such cases. Similarly, conservation groups should never endorse the lesser of two evils—that should be shown by simply rating candidates. Many candidates endorsed by the Sierra Club in the last election did not deserve an endorsement. Our support should be dear. We cheapen ourselves by endorsing fair weather friends.

4) DEFINE THE TERMS OF THE DEBATE. The conservation movement needs to undertake an in-depth analysis of how to better present our point of view. We must capture control of the debate from masters like Tush Humbug, Chuck Cashman, and Billy Tarzan. The public supports conservation; but that support is a mile wide and an inch deep. We have to figure out how to get our message to the public and then get public opinion to the politicians. I'll tackle this question in a future Campfire.

5) Finally, and most important: MOBILIZE MEMBERS OF CONSERVATION GROUPS TO EXPRESS THEIR OPINIONS TO POLITICIANS. I've discussed that in the past and will continue to harp on it.

If we're going to inhabit the political quag, we might as well be alligators instead of frogs.

Happy mud bogging.

—Dave Foreman, with the crocodiles in Mexico

PS—I'm currently working with Thomas Kolenka, a conservationist in the Eastern European country of Slovakia (formerly part of Czechoslovakia and now independent), and Mikhail Blinnikov, the US representative of Russia's Biodiversity Conservation Center, to raise money for conservation libraries in both nations. Conservationists in Slovakia and Russia need conservation books, but the money to acquire books is nonexistent in both countries. *Wild Earth* is establishing a special fund to buy books for conservation libraries in Slovakia and Russia. Please send your tax-deductible contribution to *Wild Earth* earmarked for the Slovakia and Russia library project. Make your check out to *Wild Earth* and send it to POB 455, Richmond, VT 05477. Thanks much.

Some thanks are in order. Many thanks to the Underhill Foundation and the Foundation for Deep Ecology for seeing *Wild Earth* safely into 1995 with two very generous grants. Thanks also to the many people who responded to our year-end fundraising letter. We are grateful for your financial support and for the information offered on the reader survey. In the summer 1995 issue, we will report on the results of the readers survey.

For the WE board and staff,
Marcia Cary, Development Director

The Wildlands Project Update

by David Johns

ONE OF THE BIGGEST CHALLENGES we all face as a conservation movement is the lack of any ready-made strategy for reversing the extinction crisis. We have techniques for organizing and mapping, but there is more to strategy than that. Without an already proven strategy we must invent as we go along.

Most models for action suggest ways to work within the realm of what is commonly considered politically practical or possible. But as conservation activists we know that recovery and protection of North American lands and oceans—and their species, systems, and processes—means changing what is possible.

Creating a new strategy has involved hundreds of you over the past several months in the course of thirteen workshops. These workshops were held to either initiate or further wildlands reserve design work in regions from Alaska to the U.S. gulf plain, and from the Arctic Ocean to the Sonoran Desert. In the course of the workshops, and in other meetings with you, we have been thinking through the next steps on the path ahead.

In November 1994 the Wildlands board met to take stock of our work so far. With what we have learned from the hundreds of you who have literally breathed life into the project, the board discussed ways to focus staff work to better meet our goals for a rewilded North America.

Vision mapping was the subject of much discussion because of the concerns raised by many people and changing perceptions of its usefulness. As originally conceived, vision mapping was intended to develop—with regional input—a concept map displaying the principles of The Wildlands Project, wedding ecocentrism and conservation biology. The concept map would then be used to take the project's mission to a wider audience to inspire and involve thousands in the effort to design a wildlands system.

As the workshops proceeded, several problems emerged. The first had to do with the difficulty in achieving consistent results. Trying to think ahead several decades is problematic given the many directions the future can take.

Other problems followed on the first. Could we revise rough vision maps in the space of a few months? How would consistent criteria be applied across the continent? How would the pieces fit together? Should the vision map try to depict a comprehensive biodiversity and wildness goal, or something more limited? And how could such a map be defended? Though it be labeled a concept map only, some felt it would not be taken that way. Even with very general boundaries and at the scale of a poster depicting all of North America, some felt there had to be minimum scientific justification for even a general designation of reserves and corridors. Technical issues also emerged: could we produce a poster size map of North America conveying the principles and mission of the project? Or would something at that scale obscure more than it revealed?



The Wildlands Project will be featured on a Web of Life documentary on biodiversity, scheduled to be aired on PBS, Monday night, April 3, from 9 to 11 PM.

After discussing the concerns and needs of participants—expressed both during and following workshops—the board found that we could not produce a vision map that would meet original expectations. In place of the vision map, staff will work on developing a series of educational posters, using powerful graphics, that convey our mission and principles. The posters will combine a sense of our continental vision with insets of more advanced regional reserve design work. The first poster will be out later in 1995 and will be followed by others at regular intervals. Each will emphasize work in different regions while keeping a North American and landscape level focus. These posters will be developed in cooperation with the regions.

While the vision mapping part of the workshops did not produce the map we thought it would, participants agree on the value of the process. By mapping “out loud”—like thinking out loud—we were able to work at the landscape level and get beyond political boundaries. Enormous amounts of information were generated as we put pencil to paper and then described what we had drawn and why. It helped us determine what we do and don't know. And it provided a regional forum for updating each other on what else was happening in our regions. In evaluating the workshop process, the staff recognized many things it could do better, among them: giving participants a better notion of what to expect and bring (maps and data), and defining the criteria for the exercise more clearly.

Future workshops will continue to have a mapping component that will focus around the purposes participants have found most useful—furthering the science-based reserve design process, as a basis for talking about the project with others in the region. Staff will continue digitizing the regional maps produced at the meetings, and will return them for use by workshop participants.

The basic mission of The Wildlands Project remains to inspire, encourage, and provide coordination and other support to the regions in designing wildlands reserve networks that will protect/recover all native species, represent all ecosystem types, accommodate all ecological and evolutionary processes, and provide for resilience. The spirit of wildness cannot be reduced to any simple measure of these, but they are essential elements we can use to help determine what life must have to flourish.

The process I outlined in the fall 1994 issue of *Wild Earth* remains a guide to the process with the exception of the vision mapping portion. At the local, regional and continental level we will be working to educate the public about the need for wildlands and waters networks that are based on the needs of all life, not simply our species, and to reshape the very framework within which our society makes choices.

Over the next several months Wildlands staff and regional participants will follow-up on the workshops. The only way successful regional proposals can be developed in the next three

to five years is from the ground up. Each region will need to undertake the work necessary—it cannot be done from the top down. North America is too big, too varied, too complex for any such centralized (and bureaucratized) effort. The workshops identified three near-term tasks:

- 1) Creation of committees in each region to coordinate the work of reserve design, monitor its progress, channel resources to people and groups working on reserve design, and integrate the pieces into a consistent, high quality regional wildlands reserve design. Each committee would direct support provided by Wildlands Project staff. Our small staff is unable to work directly with 300 or more groups; we can only be effective working in conjunction with the twenty regions.

- 2) In cooperation with all those committed to creating a wildlands network design, each coordinating committee will develop a plan to guide participants in the reserve design process, including a time line for accomplishing steps in the process. Project staff will provide support for this and facilitate inter-regional sharing of experiences.

- 3) Raising initial funds for at least a part-time staff person in each region to undertake further fund-raising, organizing, and implementing the tasks set by the coordinating committee. The greatest obstacles to progress at the local and regional levels are the limits of money and staff. In addition to providing scientific, mapping and other support, Wildlands staff will work with the coordinating groups to raise money. Wildlands work cannot go ahead at the expense of other existing advocacy work.

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LightHawk and The Wildlands Project are cooperating to provide needed assistance to regional groups working on Wildlands reserve design. Groups wanting to undertake cooperative work with LightHawk should contact The Wildlands Project and LightHawk. LightHawk applies the power of flight to environmental advocacy and works with groups to scout wildlife corridors from the air, to undertake aerial reconnaissance of threatened lands, to do high quality aerial photography, and to design projects that incorporate a new remote sensing technology, the multispectral imaging system. For a flight request or to discuss more comprehensive projects, contact LightHawk at POB 8163, Sante Fe, NM 877504-8163; 505-982-9656.

Animals Wild and Domestic

A Comment On Ratios

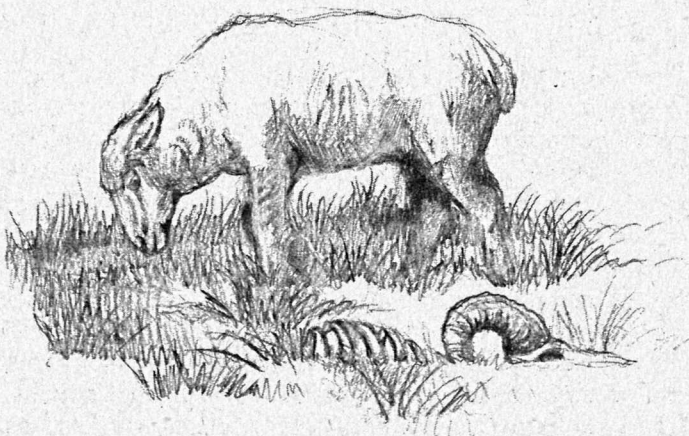
The deceptiveness of the multiple-use "philosophy," and the degree to which the livestock industry influences the administration of public lands, are revealed when you look at the ratios of large domestic to wild mammals in a given situation. The Yellowstone Ecosystem offers a particularly good example, because it is considered by much of society to be the premier wilderness of the lower 48 states and a model for the rest of the world to emulate. The US Fish and Wildlife Service (FWS) has published population statistics in connection with their wolf reintroduction program that allow for some startling comparisons.

The following data were taken from *The Reintroduction of Gray Wolves to Yellowstone National Park and Central Idaho: Summary*, a 22-page document produced in 1993 by FWS (and presumably still available through their office at POB 8017, Helena, MT 59601). In the document, the Yellowstone Ecosystem is listed as consisting of 16,000,000 acres of which 76% is federal land (nearly all of it in Yellowstone National Park and the seven surrounding National Forests) and 21% in private ownership. On Forest Service lands, the numbers of domestic livestock of all ages grazed from May to October were as follows:

Cattle.....	145,658
Sheep.....	265,152
Horses.....	1,270
Total.....	412,080

Compare this with the data for native hooved mammals (after hunting season):

Elk.....	56,100
Deer (Mule and White-tailed).....	29,500
Moose.....	5,800
Bighorn Sheep.....	3,900
Bison.....	3,600
Mountain Goat.....	"few"
Pronghorn antelope.....	400
Total.....	99,300



by Bill Willers

With regard to the figures for the native species the authors stated the following in a footnote: "Including only ungulate herds at least partially associated with Yellowstone National Park. Estimated over twice that number using public and private lands in overall Yellowstone area."

Therefore, if we double 99,300, we get 198,600 wild native ungulates for the entire Ecosystem, versus 412,080 domestic ungulates for Forest Service lands *alone*: a ratio of 2.07 domestic animals to one wild animal. The figures for domestic livestock are for only the National Forests; so if one were to compare numbers of livestock to native animals in the National Forests, the ratio favoring livestock would be significantly greater than two to one.

More startling is a comparison of domestic to wild sheep. Historically, Bighorn Sheep fared very badly with the introduction to the West of domestic sheep, succumbing in huge numbers to introduced parasites and diseases. If you estimate the Ecosystem's population of wild sheep at 7800 (by doubling the figure of 3900) and compare that to the 265,152 domestic sheep, you arrive at a ratio of 34 domestic sheep for each wild sheep.

A hundred miles to the east of the Yellowstone Ecosystem lies a mountain range known as the Bighorns, which contains a National Forest with the same name. On the western slope of the Bighorn range, in Shell Canyon, is a Forest Service visitor center of the sort one sees throughout the West. In recent years the center has sported a large display that boasts of the wonders of multiple use, the principal message being that everything is balanced and fair. One of the facts revealed at the Shell Canyon display is that the Bighorn National For-

est grazes 52,500 domestic sheep annually. At the visitor center's tourist shop is a glass case containing the skulls of two Bighorn Sheep. This summer when I asked I was told that about 80 Bighorns are thought to survive in the Bighorns. If there are in fact that many it yields a ratio of 656 domestic sheep for every one of the wild creatures after which, ironically, the mountain range was named.

For anyone who frequents the public lands of the West these facts should not be surprising—neither the hordes of livestock nor the governmental campaign to sell the multiple-use concept to the public. The situation in Bighorn National Forest is typical. In such situations wild creatures become mere guests in their own homes, outnumbered by domestic beasts that are foreign to the landscape, unsuited to it, destructive of its habitats, but nevertheless maintained for the economic benefit of a small but vocal minority of individuals who believe that the rest of the Nation has an obligation to maintain their "way of life."

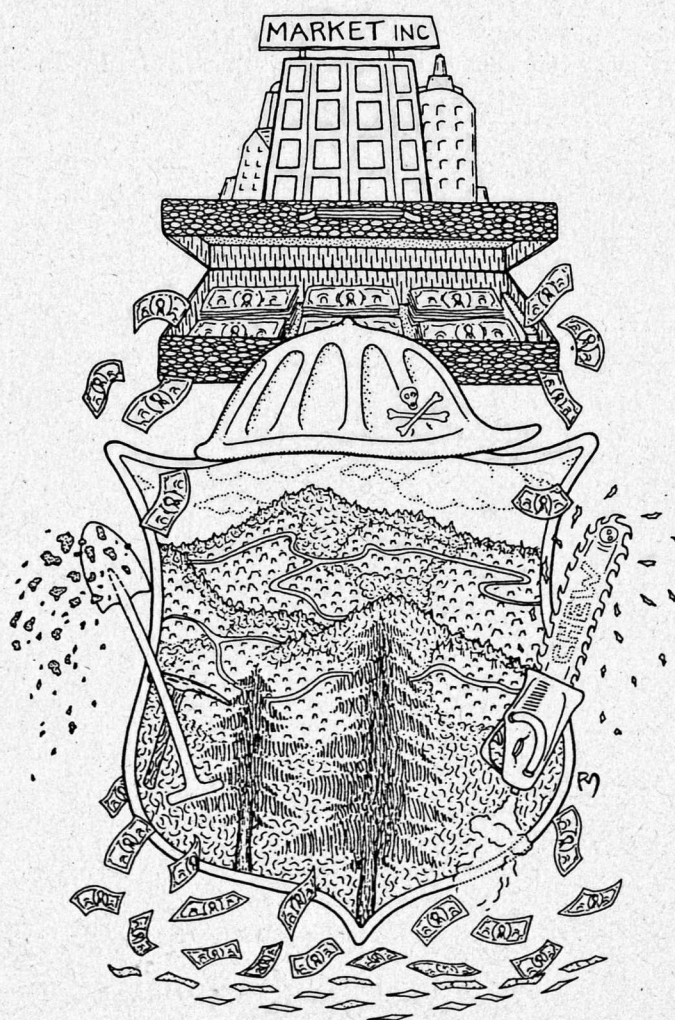
Native species are integral parts of their environments, the results of eons of evolutionary and interactive processes. They belong. To the extent that the public lands have been converted to pasturage for domesticated aliens, the entire environment has been diminished, including such natives as have been allowed to remain on the scene.

Bill Willers teaches biology at the University of Wisconsin-Oshkosh (b'gosh), and coordinates the Superior Wilderness Action Network (SWAN c/o Biology Dept., University of Wisconsin-Oshkosh, Oshkosh, WI 54901).



The Free Marketeers Cross Swords With Traditional Environmentalists

by Christopher Manes



LIKE SOME TRIUMPHAL PIZZA franchise, the theory and practice of laissez-faire has sprung up in the most improbable places, from Red Square to China's Guangdong province to the Chelsea, Massachusetts school district. You might expect the environmental movement, at least, to look askance at the giddy promises of free marketeers. Conservationists have fought a century-long struggle against the commercialization of nature; and since the 1970s, the best instincts of mainstream environmentalism have stood up for such unmercantile values as the public interest and respect for the wild.

But in an age when rock-n-roll sells cola and poets hawk blue jeans, market theory has trickled into even the most steadfast environmental organizations. Under the name of "free market environmentalism" or "New Resource Economics," voices within traditional and nontraditional ecology groups now advocate private property rights and market forces, rather than government regulation, as the most promising basis for protecting the environment. In the moody hangover of Reagan/Bush's Mad Hatter Party, this message appeals to more than just the conservative chic.

Free market environmentalism first took shape, aptly enough, in the deregulation-crazed early 1980s with the publication of *Bureaucracy vs. Environment* by John Baden and Richard Stroup. The book scrutinized government management of natural resources and concluded that special interests, particularly resource industries like timber and oil, have perverted the original mission of regulatory agencies and seduced the federal government into subsidizing the abuse of the environment. With this much, traditional environmentalists might agree. But the solution Baden and Stroup offer seems less palatable: replac-

ing environmental agencies, branded hopelessly corrupt, with competitive markets. The idea is that those who use resources—whether loggers, miners, or recreationists—would treat the environment with more care if forced to bear the real costs of their activities.

Though enamored with the economics of growth, Baden represents the more pragmatic wing of free market environmentalism. He readily admits that markets are no panacea, and that “some things should not be for sale,” including wilderness and national monuments, though he would prefer ownership by nonprofit land trusts, in the manner of The Nature Conservancy, to government control.

Not all proponents of New Resource Economics are as discriminating. In *Free Market Environmentalism*, Donald Leal and Terry Anderson advocate privatizing most natural resources and abolishing all regulatory agencies, other than the common courts, that enforce environmental protection. Anarchy for rich people and their lawyers is the best description of this credo.

Still other free market environmentalists reflect concerns curiously akin to the more visionary schools of environmental thought. In *Visions Upon the Land*, for instance, Karl Hess Jr. argues that creating an ecologically sound society requires people to take responsibility for their immediate environment at a community level against both bureaucratic and corporate folly. I know Hess to be both a scholar and a friend of nature. But like all aspiring postmodern Jeffersonians, including myself, he has yet to offer a realistic solution to the obvious dangers of governmental decentralization in a world filled with money, guns, and real estate developers.

In addition to these true believers, a hodge-podge of academics, effervescing in conservative think tanks, extol New Resource Economics as an expedient to promote their homilies to industry and the godlike Milton Friedman. As Hess himself laments, “there are some people who use the free market idea to water down environmental progress altogether.”

A few themes emerge from this mixture of the innovative and the inane: distrust of public institutions, even (especially?) democratic ones; faith in markets to be both rational and fair; a desire to decentralize; an almost mystical belief in private property rights. Perhaps at the heart of this view lies a uniquely American approach to problem solving: if you really want something run your way, just buy it.

Whatever the mix, free market environmentalism has become immensely influential. Over the last decade it has produced enough books and articles to generate a bibliography that fills a small volume. While I was an editor at *The Ecology Law Quarterly*, I estimate a third of the articles that crossed my desk included some degree of New Resource Economic analysis. Its principles have entered

the curriculum of at least one environmental management program, at the University of Washington, where Baden teaches.

Free market environmentalism is also being translated into government policy. The agenda of the Western Governors Environmental Policy Council, a group of state executives that convenes to discuss environmental strategies, is

heavily flavored with the language of privatization. On the national level, free market environmentalism achieved its crowning glory in the “market incentive” provisions of the 1990 Clean Air Act. One of these provisions is the brainchild of the economics guru of the Environmental Defense Fund (EDF), Joe Goffman, which allows utilities to buy the right to emit sulphur dioxide (a precursor of acid rain) from other utilities that reduce this pollutant below statutory levels. The Environmental Protection Agency has plans to expand this approach to other pollutants.

Most important, free market environmentalism is having a profound, if ambiguous, impact on the environmental movement. The free market position has been embraced by one mainstream group, EDF, while The Wilderness Society and others flirt with it. Some nontraditional groups, such as Trout Unlimited and the North American Elk Foundation (probably the fastest growing environmental group in America), promote private ownership of wildlife habitat as their main selling point.

In the September 1993 issue of *The Atlantic Monthly*, an article entitled “Can Selfishness Save the Environment?,” by Matt Ridley and Bobbi Low, argued before a national audience that New Resource Economics represents the future of the environmental movement. Amid their Sturm und Drang about the hegemony of economics and selfish genes in human affairs, Ridley and Low answer their title’s rhetorical question with an emphatic “yes” and urge that environmentalists’ new task should be to “rig economic choices” that promote better resource use among the congenitally self-centered plebeians. While more than adequately misinformed about environmentalism to meet *The Atlantic’s* usual coverage of the subject, the article caused a stir, including dedication of an entire issue of *Human Ecology Review* to Ridley and Low’s manifesto of ecological bean-counting.

Under the name of “free market environmentalism” or “New Resource Economics,” voices within traditional and nontraditional ecology groups now advocate private property rights and market forces, rather than government regulation, as the most promising basis for protecting the environment.

Less dogmatically, Mark Sagoff, a professor at the University of Maryland's Institute for Philosophy and Public Policy, hopes to see an "intellectual partnership" form between New Resource Economics and traditional environmentalism. He bases this hope on the fact that both camps oppose the collusion between federal agencies and commodity interests, such as the logging industry, in exploiting public resources for private profit. New Resource Economists like Randall O'Toole, author of *Reforming the Forest Service*, have indeed been among the first to expose the economic dementia of the Forest Service, Bureau of Land Management, Park Service, and other agencies that subsidize environmental damage for the benefit of influential industries.

Free market environmentalism also has some of its artillery pointed at the Wise Use movement, the resource industry's front organization, which uses violence, threats, and badly written books to try to intimidate environmental activists. The popular press sometimes confuses Wise Use with free market environmentalism, perhaps because they both employ an anti-government vocabulary. Baden, however, bristles at the suggestion: "the Wise Use people claim to be fiscal conservatives, but basically they are milkmaids on the public teat who want to maintain federal support of resource exploitation for themselves."

Jibes like this may warm the heart of any true blue conservationist. Many of the solutions advocated by New Resource Economics also strike a cord. If timber or grazing rights are going to be sold at all, a competitive market is more likely to set a price that reflects the reality of diminishing resources than is a government agency subject to the hallucinogen of industry lobbyists.

But one reaches the nether regions of good judgment when trying to put a market price on less tangible values, like natural beauty, solitude, biodiversity. Values like these are the objects of a diffuse, but no less real, public interest, which lacks the organization of commodity interests to register accurately in the marketplace.

The most disturbing aspect of New Resource Economics, however, is not its proposals—which contain a mixture of good and bad—but rather its monomania. Free market environmentalism often replaces vision with programs, the labor of cultural change with anti-government bravado. Don Snow, editor of the Western environmental journal *Northern Lights*, points out that many environmental organizations have a perverse culture of growth at any cost. "Free market environmentalism plays into this," he says, "because it tells corporate America, give us your support, we aren't the enemy, just look at our program." As a result, environmental organizations like the North American Elk Foun-

ation that use market devices as a selling point have grown astronomically, while traditional groups languish in post-Reagan *tristesse*.

Not surprisingly, market-oriented environmental organizations scrupulously avoid raising embarrassing questions about the role of consumerism in our society. New Resource Economics has its roots in the classical liberalism of the Enlightenment, making it long on criticism of government power, but eerily silent on the power of private institutions, such as corporations. Yet, in modern America, MicroSoft and Coca-Cola surely play a bigger role than the Department of Interior in producing the images and symbols that define the values of the modern consumer who is defoliating the world. Some free market environmentalists, such as Hess, are beginning to address this issue. But as Snow suggests, criticism of this type is unlikely to become the working vocabulary of organizations bent on growth and bigger budgets.

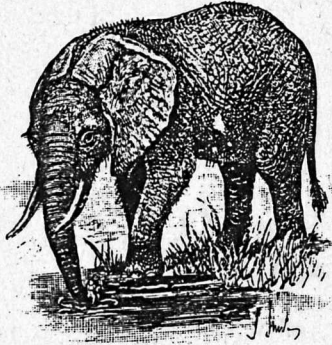
Finally, there is something insular, almost churlish, about free market environmentalism. For environmentalism to count for anything, it cannot stand by itself, but must be part of something broader, the empowerment of the citizenry, the enhancement of democratic institutions, good old-fashioned love of country. Some free market approaches have arisen simply because we lack the backbone to solve certain environmental problems in a public forum. Protecting old-growth forests or banning pollutants requires *sacrifices* by us all, yet that word has dropped out of the vocabulary of the modern politician. Squeamish of politics, free market environmentalists have walked away from the dirty, cranky democratic process—the Gibbonesque plaint against "corrupt" public institutions runs through their discourse like an evangelist's obsession with fornication. It is easy to share that disgust, but markets make a poor substitute for self-governance.

Granted, environmentalists need hard-headed, economic thinking to deal with a world of profit and loss. But we also need vision and activism and a sense of community. These have always been the special province of grassroots environmentalism. After all, environmentalism involves more than just making the trains run on time; it means changing the way we look at the world. Who else is there to carry out such a crazy, impossibly necessary task? Not Louis Rukeyser.

Christopher Manes (34542 Paseo Real, Cathedral City, CA 92234) is a lawyer and writer. His published works include Green Rage: Radical Environmentalism and the Unmaking of Civilization.

Regarding the Callicott Critique of Wilderness

In the Winter 1994/95 issue of *Wild Earth*, Baird Callicott critiqued the wilderness concept. His article was followed by responses from Reed Noss and Dave Foreman. Without dealing with issues already covered by those responders, I would like to comment briefly on several of Callicott's arguments.



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.

Callicott states that Darwin has made us "...a part of nature (with) a rightful place and role in nature no less than any other creature (so that) 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." He then elaborates with an illustration: Whereas five billion elephants would cause an ecological crisis (as we humans are presently doing), a biomass of certain insects equal to the present human biomass has a positive effect on the biosphere. This leads him to the conclusion (presented as a question), "Why can't the impact of human activities be good as well as bad?"

An answer to that might be as follows:

a. Elephants lack the human capacity to modify environments in order to favor their own species. Therefore, the system would experience enough decline to bring the elephant population under control long before such numbers were reached.

b. The immense biomass seen in insect populations exists because it enhances the global ecosystem. Indeed, it makes up a substantial portion of the "fabric" of the biosphere.

c. The manipulative capability and inclinations of the human species are unique. Moreover, they are enhanced by the preeminent

global culture with the result that the integrity of the biosphere as a whole is threatened. Those who study the characteristics of complex systems of interdependent parts tell us that the maximizing of any variable can be accomplished only at the expense of other components and, therefore, at the expense of the overall system. This is what is taking place within the biosphere and what will continue to take place given the values of the emerging New World Order. The history of land management shows that, time and again, plans conceived with the best of intentions have been perverted so as to serve profiteers. Callicott's blueprint, with its "invasive human management," "ranchers' cops," and "harvest quotas," would clearly be an easy target. In any case, it is no alternative for wilderness.

It seems that individuals or groups hostile to wilderness sooner or later use the Indian-as-manipulator-of-the-environment argument for their projects. Callicott, to support his idea, claims that it is "...more or less the way the Indians—bonafide Americans if anyone is—did it. Each group had a territory, the property rights to which they claimed and enforced." But this ignores the scale factor. Even high-end estimates for pre-contact North Americans (25-30 million) place their total population at about a tenth of today's. That, com-

bined with the relatively gentle impacts of their technologies, as well as the abundance of unoccupied lands between clusters of settlements, yields an overall picture of islands of human activity in an essentially unbroken framework of "self-willed" lands in which selection was natural rather than by human design.

Wilderness preservation is not intended to "freeze-frame" existing conditions but to allow for self regulation. Even as he makes reference to "nature's inherent dynamism" Callicott reveals a lack of understanding that nature operates at its own pace according to internal dictates. Any management scheme, whether due to the design of a James Watt, a J. Baird Callicott, or any board of experts, constitutes an interference with self regulation and therefore with "nature's inherent dynamism."

—Bill Willers, Biology Dept., U of WI—Oshkosh, Oshkosh, WI 54901

I don't mean to pile on Baird Callicott, but Dave and Reed missed an important point. Callicott states that "at the political level, the wilderness preservation philosophy... ultimately represents a losing strategy." He seems to believe that the biosphere reserve model would win us more and better acres (even if not absolutely pristine acres).

Yet if you want to see dinosaur legislators jump, just mention "biosphere" in Congress. Like "ecosystem," the word implies that humans are just part of the scene (unlike wilderness, which has an

inside that we choose to leave alone, and an outside that we consume.) This means social planning, which is tantamount to communism! Worse yet, the biosphere reserve concept is tainted by its United Nations association. The biosphere reserve model has a lot to offer, but political consensus is not part of the package.

Where I live, the extreme right is going crazy over our idea for a Cascades International Park. John Birchers and LaRouchites see it as an international plot to put the UN, and ultimately British elites, Elvis, or space aliens, in charge. At their organizing meetings, which are what the Scopes Monkey Trial must have been like, agitated people pass around flyers of the mission statement of the Olympic Biosphere Reserve, with notes like "this is real!" and "the first step in the erosion of US sovereignty" penciled in the margins.

Which brings to mind another point. Biosphere reserves in the U.S. (such as on the Olympic Peninsula of Washington) are far short of an ecological success story. The only Man and the Biosphere Program presence in the Olympics is a few information kiosks. Clearcuts border on national park and there is no rural buy-in to forest protection. The lasting success on the Peninsula is not the biosphere reserve, but the designated wilderness within Olympic National Park. And while, as Dave pointed out in his rebuttal, American conservationists will (and must) con-

tinue to beat our heads against the wall over everything from county zoning to better snag retention in clearcuts, legislated Wilderness protection of biologically valuable acres is our most important goal.

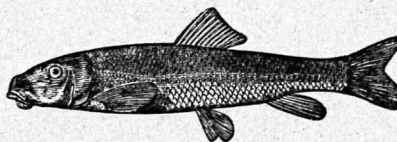
—Mitch Friedman, Greater Ecosystem Alliance, POB 2813, Bellingham, WA 98227

Attention to Fish Overdue

The article on fish stocking by Michael Murray (Fall 1994) is long overdue. Groups like ICL (mentioned in the article), Wilderness Watch, and the Utah Wilderness Association are waging lonely efforts to protect aquatic biodiversity.

In particular, I'm familiar with the work of the UWA to create a refuge for the rare native Colorado cutthroat in streams while also maintaining/restoring lakes for their native fauna, which usually did not include fish. This courageous effort is being undertaken in the High Uintas Wilderness, nearly a half million acres in size, but it is being met with strong resistance from the Utah Division of Wildlife Resources and complacency from the Forest Service bureaucracy. UWA can be contacted at 455 East 400 South #205, Salt Lake City, UT 84111 (801-359-1337) for a copy of their proposal.

—Gary MacFarlane, Taylor Ranch Research Station, Frank Church-River of No Return Wilderness, HC 83, Cascade, ID, 83611



Ecofeminists Not Anthropocentric

I have picked up your journal from time to time, and with each issue wanted to lend a hand, to be a part of the tremendous energy you are putting toward restoring wilderness. But each time after reading, I set the volume down, disappointed to feel excluded from your vision.

A standard critique of the left is that we can never seem to agree on priorities or strategies long enough to work together. Now, in the radical ecology movement, the same problem is occurring. I would like to believe that the various groups are not as polarized as described in the letter from Ken Wu (Summer 1994), where I was appalled to read ecofeminists and eco-anarchists being described as part of a "radical anthropocentric environmental movement." As an ecofeminist, I would like the opportunity to correct that misrepresentation.

From an ecofeminist perspective, the environmental crisis we are all concerned about is a product of unjust social relations. Attempts to preserve wilderness not coupled with attempts to restructure the very society that is destroying it will ultimately be futile. The biggest enemy of wilderness and of social justice alike is industrialized capitalism and the international agreements which further its interests, namely the North American Free Trade Agreement (NAFTA) and the General Agreement on Tariffs and Trade (GATT). We cannot ignore the political context of environmental degradation,

which includes the various forms of social injustice (racism, sexism, classism), and simply focus on wilderness preservation if we are to succeed. This is not "anthropocentrism"; it is attention to context.

Similarly, we cannot ignore the social and political contexts of overpopulation if we truly wish to solve the problem (note that I am acknowledging that population is a problem). But too often discussions of overpopulation focus on the Third World, when in fact a single person in the First World consumes 300 times as much as a citizen of the Third World. Such a focus is both racist and classist: it serves to protect those in the First World from having to look at our own overconsumption and the unequal distribution of wealth globally. An integral component of reducing population is reducing the overconsumption of the First World, which relies on the population of the Third World to satisfy its excessive demands for products and resources.

In conjunction with reducing consumption, then, we must work together to reduce population. When women the world over are assured of jobs which provide a basic standard of living throughout their lives, and especially in their old age; when maternal and infant health care is provided so that a family need not produce ten children in the hope that two of them will survive to maturity; when women have socially valued, economic options outside of marriage and motherhood (also known as compulsory heterosexuality); when safe, effective methods of reproductive control, includ-

ing abortion, are available without social or economic cost; and most importantly, when masculinity is redefined in ways other than the fathering of many sons—then we will see a genuine solution to the inextricably related problems of overpopulation and overconsumption.

It is too easy to feel paralyzed by the overwhelming power of a dominant culture intent on annihilating the planet. I am thrilled that you are doing something to fight on behalf of this wild earth and the species which inhabit it. Activists in the ecofeminist movement, the Green movement, and the movement for environmental justice are focusing our efforts toward transforming the social and political institutions which seem to be intent on destroying all of us.

I invite deep ecologists and those involved with *Wild Earth* and The Wildlands Project to consider the enormous potential of seeing our movements as allied in struggle. Rather than prioritizing the efforts of any single group, I would like to see our different forms of activism as a division of labor within a larger movement for social and ecological justice—a movement in which all of our efforts are equally valued, equally necessary. The future earth we all envision has room for big wilderness and sustainable, democratic human societies—indeed, I would argue that one will not be possible without the other.

—Greta Gaard, Associate Professor, Editor, *Ecofeminism: Women, Animals, Nature*, 420 Humanities Building, 10 University Drive, Duluth, MN 55812-2496

Work More on the States

I would highly encourage that you pursue more articles on the issues raised in George Wuerthner's "State Complicity in Wildlife Losses" in your Winter 1994/95 issue. The item by Richard Chamberlin on needed changes in Wisconsin forestry laws is also worth follow-up. Especially in light of the national election results, steering government in the direction of supporting more biocentric policies will depend to a larger degree than ever before in getting enlightened responses from state governments and state natural resource agencies. If you could get more biocentric action out of these state agencies, you could make much more progress in protecting and restoring habitat.

Mr. Wuerthner hits the nail on the head when he notes that the actions (or non-actions) of state fish and game agencies are largely an extension of where they get their money and the types of constituencies to which they must answer. The Boards or Commissions that set the policies at these wildlife agencies commonly *do not* include any representation from urban areas or from interest groups sensitive to such issues as biodiversity or non-game species. In many states, a combination of revenue from in-state hunting and fishing license fees and the state share from the federal taxes on hunting and fishing gear just about pays for the entire agency budget.

The agency will not even seek any state appropriations, which makes the agency essentially immune from ordinary legislative

oversight. At times, living on such earmarked money and the autonomy that goes with it is nice; but if the policies such sheltered agencies pursue are 50 years behind the times, then seriously addressing biocentric goals can become an exercise in frustration. This sort of anachronism finds parallels in the local manifestations of such national groups as the National Wildlife Federation. NWF chapters are often dominated by the "shoot 'em in the head and hook 'em in the lip" crowd.

With state forestry agencies, the obvious problem is that many (maybe most?) have nothing in their mandates requiring attention to issues like species diversity. In all too many cases, the main objective is to maximize the short-term income flow to help things like public schools (in fact, many state forestry programs are simply a variant of the sorts of School Lands Commissions that typically graze non-timbered state lands to death). Other blind spots in fundamental mandates plague state Water Resources agencies, where dewatering streams is perfectly legal.

Until you get some reform in the anachronistic policies of these state agencies, you will be significantly hampered in getting the maximum mileage out of federal laws or the actions of federal natural resources agencies. Running some articles on the thankless work faced by local groups in reforming their 1920s-vintage state natural resources agencies would be extremely timely.

—William S. Cooter, 12013 N. Exeter Way, Raleigh, NC 27613

Questions and Thoughts in Response to Dave's latest "Around the Campfire"

After reading Dave Foreman's "Around the Campfire" essay "Back to the Basics" in the Winter 94-95 *Wild Earth*, I realized how passive I have become in my reaction to many of the environmental issues I should be making noise about. One of the problems is a feeling of general helplessness (despair?) which has overcome me since the November elections. As usual in our congressional district, Republican pork prevailed. However, now my two senators are borderline fascists. So when I see a call for letter writing campaigns, I'm not sure what exactly is my best course. In past years, I have written probably a hundred letters on environmental issues to my representative in the House, an NRA and wise use redneck. He doesn't even bother to answer my letters anymore and has probably written me off as some kind of one-issue crazy. The slimers "representing" me in the Senate are just as bad. Another problem is that I live in the east and most of the issues of national concern (old growth, mining, grazing, water rights, etc.) are seen as "western" issues which my congressmen don't see as important to their constituency.

So what is the most effective way for my opinion on these issues to make a difference? Should I continue to write to my non-responsive congressmen? Write to congressmen in other districts who seem to be more open to reason? Write to congressmen in areas of more "criti-

cal" concern? Should I rent a PO box in Montana? Send letters with the names of fictitious and/or dead people? I'm not being facetious here, I'm just wondering what the most effective use of my letter-writing time would be.

Thanks for all the work on *Wild Earth*. It's indispensable.

—Louise Young, RD 2, Box 72, Tioga, PA 1694

Dave's call to revive our organizing efforts across the land is a refreshing, positive, and empowering idea, written with a necessary sense of history. I read this after reading the latest issue of *Wild Forest Review*, which left me dismayed at its divisive rhetoric.

I have been involved in "conservation" causes all over the west for more than 20 years. Like Dave I have seen the public lands movement shrinking, not for lack of vision but because of the withering influences his essay cites. With the spectacular rise of the wise abuse movement and the corresponding success of the new right in the Republican party, I share a feeling of foreboding that millions of other people must be sharing. While I hear leaders of big environmental groups anticipating big donation increases like they got in the Watt years, I know that will not solve the problem even if they do materialize.

I teach environmental law at a branch campus of the University of New Mexico. I have a class full of students in their professional years, and I have been astounded by the ignorance of this group

which I believe is representative of middle America. Not only did this group, three of whom have Ph.D.'s, not know where salmon live and why they are endangered, but they are unclear on the concept of public lands in general. Further, I find them quick to respond with wise use type rhetoric when I ask their opinions. These people do not work in resource extraction industries. They are urban.

Against this backdrop we need to understand the generational change that has happened in America. When I attend environmental meetings in the Santa Fe area, I see a sea of salt and pepper or gray hair. At 37 I am one of the youngest people at most meetings I attend, and this was also true when I lived in Eugene, Oregon, unless I was on campus. The generation that did not experience the environmental revolution of the 60s and 70s has not been taught about those events in school. And from my observations teaching at UNM and the University of Oregon, they have not been taught the basic science that would lead them to perceive or value biodiversity and its place in wild nature.

So while I strongly endorse Dave's encouragement that we return to basic organizing skills on the grassroots level, I urge that an equally strong effort be made to invite younger people into the movement so it doesn't die with the baby boom.

To do this we need to draw people outdoors. Field trips to *feel* the wilds are needed. Field trips where people can learn camaraderie and irreverence and find the



richness of nature that transcends any ideology. Field trips that focus on diversity of life, sensation and experience in nature rather than purely on science and reductionism. Let there be music, poetry, and complete tolerance for the diversity of views we find in young people today.

It is not knowledge that we need to convey to the young, but ignorance. We need to help them see that humans really know almost nothing of the workings of nature and even less about its origins. With this understanding, people can begin to sense the arrogance of science, economics, and religion that compel us to destroy a complex of ancient, startling miracles for short term and selfish gain.

By offering education, in whatever form, to young people, and drawing on the middle and older age members of "our movement," we can bring ourselves together again and more importantly convey the spirit of selflessness and altruism that lies at the heart of environmentalism. I believe many new members of our causes, both young and old, will find our unselfish care for other species and wilderness powerfully refreshing, especially when they contrast it to the narrow deceptiveness of our enemies.

I suggest that every environmental organization and disorganization use the coming spring and summer to dream up new education and organizing opportunities, preferably outdoors. Imagine new pretenses and forms for slide shows, music in the woods, readings, hikes, beer

parties, or whatever to revive a sense of wilderness among people mired in purely human perspectives.

I believe we can revive our movement by getting to know ourselves again and broadening our base among those who don't understand us and have been deceived by others about our motives. Funding for education efforts is relatively abundant and by broadening our base, we will revive our own basic commitment and add to our own energy.

—Tom Ribe, POB 789,
Los Alamos, NM 87544

Response to Tony Povilitis

I would like to acknowledge the cognitive dissonance picked up by Tony Povilitis (summer 1994 issue of *Wild Earth*) in my article (winter 93-94 issue) on a Rocky Mountain National Park (RMNP) reserve proposal. Yes, I do refer to the proposal as being based on scientific principles and, yes, I do later describe it as falling far short of meeting conservation biology goals. What I tried to make clear was that the proposal represented the first step, not final stage, of a science-based reserve proposal.

According to the Reed Noss model, step one in designing a reserve system is to identify roadless and protected areas, while step two is expanding and adding to these areas until they include all native vegetation types and can support all native species. While our RMNP proposal includes both roadless core reserves and core reserves in need of restoration, the latter are based only

on minimal wildlife data.

Stymied until now by a lack of landscape-wide vegetation and other data, we are finally beginning to factor in data on species habitat, old growth, watersheds, fisheries, and vegetation. Target species for the proposal include black bear (stressed in this region due to loss of low-elevation habitat), pine marten (sensitive to habitat fragmentation), wolverine, wolf, and lynx (overall roadless area potentially large enough to support recovery), elk (well-documented; migration corridors may serve other wide-ranging species), and flammulated owls (depend on old growth ponderosa pine). This new data will allow us to come closer to meeting the reserve design goals.

Another limiting factor is that this stage of our proposal deals only with public lands, since it is being submitted to the Arapaho-Roosevelt National Forest for consideration in the forest plan revision. This means it is restricted to higher elevation, primarily roadless public lands, which tend to be dry, steep ridges or canyons. Almost all low-elevation, more biologically productive river corridors, grasslands, and ponderosa forests are heavily roaded and/or in private ownership. This makes it impossible, in the short term, to capture the amounts and types of habitat needed to support wide ranging species such as wolves and wolverine and many low-land species such as bison, mountain plover, and burrowing owls. This inverse relationship between the biologically desirable and the politically

feasible is the dilemma faced by all of us who are trying to match political realities with biological ones.

After completing this proposal for Forest Service lands alone we will proceed with a more sweeping proposal incorporating river corridors, other land jurisdictions, and key private lands. Meanwhile, the proposal serves yet another purpose—defending the last pockets of roadless habitat on Colorado's front range from a seething wave of development. As motorized trails, mountain bikes, snowmobiles, horses, dogs, and just plain people surge into every nook and cranny of these granite foothills, our reserve proposal—delineating as it does the region's last roadless areas—is a first line of defense, a line drawn in the sand between preservation and development beyond which we say no. Already the mapped proposal is being used to oppose motorized trails, snowmobiles, and other imminent threats to landscape integrity.

So Tony is right when he says the proposal falls short of protecting a full range of diversity. But it is a first step and is needed now both to stake out our vision with the Forest Service and to stake out a defense against overwhelming development.

—Roz McClellan, Southern Rockies Ecosystem Project, 483 Marine, Boulder, CO 80302



Chipping Away the South

by Mary Byrd Davis

Ninety percent of the forested land in the southeastern United States is privately owned, a situation that makes regulation of logging in the region difficult. To take advantage of this situation, timber companies, long ensconced in the deep South and in North Carolina, are expanding into Tennessee, Kentucky, and adjacent states for chips to make pulp and paper and for strips to make laminated strand or oriented strand construction materials.

A single high-capacity chip mill devours 600,000 tons or more of timber a year. To obtain a maximum amount of fiber for the mills at minimum cost, the forests are often clearcut. Millions of acres of forests in the southeastern US (as well as forests in the northern US, midwestern US, much of Canada, parts of Australia, huge areas in southeastern Asia...) are threatened by existing or proposed chipping operations. Forest advocates with Tennesseans, Alabamans, and Georgians for Environmental Responsibility (TAGER), Native Forest Network (NFN), Broadened Horizons, and other grassroots groups are working to stop the mills.

Tennessee River Watershed

In 1989-90, 17-24 sites on the Tennessee River were reportedly under consideration for chip mills. Under pressure from citizens, the Tennessee Valley Authority (TVA) prepared an environmental impact statement (EIS) on three of the mills proposed for 12 miles of the river in Tennessee. Citing "cumulative localized impacts and the risk of significant harvesting-related impacts," TVA, along with the US Army Corps of Engineers (USACE), in 1993 denied the needed permits.

This denial, plus the defeat of a proposed chip mill by residents of Lyon County, Kentucky, halted requests for chip mills on the Tennessee and Cumberland. Nevertheless, industry is far from stymied. Champion in 1993 purchased an already permitted chip mill site on the Tennessee River; and in mid-1994 bought nearly 100,000 acres north of Knoxville. It plans to build a chip mill near the acreage and to ship the chips to its pulp and paper mill in Canton, North Carolina. Champion and other companies ship whole logs south to mills on the Tenn-Tom Waterway (an artificial link between the Tennessee River and Mobile Bay). Mississippi and Alabama each boast four chip mills on the waterway.

A Mannington Wood chip mill at the Port of Epes, Alabama, for example, receives whole logs from several facilities on the Tennessee, and ships at least 450,000 tons of chips a year to Japan. Mannington illegally operates one of the export facilities, a loading dock at a port near Perryville, Tennessee. The port, owned by Tinker Sand and Gravel, requested from TVA but never received the 26a permit modification necessary for construction of the log loading facility.

Within a 75-mile radius of the Perryville port are six permitted whole-log loading facilities, the permitted chip mill site purchased by Champion, and clearcutting operations to feed a Champion mill in Alabama. If TVA reevaluates the Tinker Sand and Gravel Permit, the agency will have to stop the export of whole logs, because of the cumulative impact of logging in the area. TVA has never consulted the US Fish and Wildlife Service as required due to the numerous Threatened and Endangered species inhabiting the facility's sourcing area.

The code of the USACE states that the public may request a reevaluation of an existing permit by presenting new information not considered during the original permitting process (33 Code of Federal Regulations 325.7). USACE reviews have never considered the cumulative and secondary effects of the clearcutting that takes place to feed facilities. Concerned citizens are writing to the Corps requesting that it reevaluate all existing chip and whole log permits in the watershed of the Tennessee River to take into consideration off-site impacts. TVA's EIS on the three proposed mills is a precedent for such consideration.

Encroachments Farther North

Kentucky has a pulp and paper mill, Westvaco, on the Mississippi River. In eastern Kentucky, near Hazard, Trus Joist MacMillan is completing a laminated strand plant. The firm, a partnership of Trus Joist International of Boise, Idaho, and MacMillan Bloedel of Canada, is receiving state aid through the Eastern Kentucky Development Corporation. After the initial logging, hardwoods grown on a short rotation will feed the plant.

S. I. Transports has proposed building a chip mill at Shawneetown, Illinois, on the Ohio River; and Parker Towing is interested in siting



Biodiversity

a chip mill at Cape Girardeau, Missouri, on the Mississippi. Georgia Pacific, Weyerhaeuser, and Trus Joist MacMillan are each constructing or planning to construct an oriented strand board or laminated strand plant in West Virginia.

Near Huntington, West Virginia Parsons and Whittemore, a British-based multinational, intends to build a massive pulp and paper mill, Apple Grove. Following appeals from environmental and labor groups, the West Virginia Environmental Quality Board late in 1994 suspended a permit from the West Virginia Division of Environmental Protection (WVDEP) that would have allowed the mill to dump dioxin-contaminated waste into the Ohio River. The US Environmental Protection Agency (EPA) had urged WVDEP to conduct additional tests, as the agency incorrectly assumed that the Ohio did not already contain dioxin. Environmentalists are now asking the EPA for a comprehensive EIS on the pollution from the proposed mill.

Addresses

On the Tinker Sand and Gravel whole log loading facility, write letters to Kate Jackson, Vice President of the TVA Resource Group, and to Craven Crowell, TVA Chairman, both at 400 West Summit Hill Drive, Knoxville, TN 37902-1499, with a copy to Eric Rauch, Vice President TVA Land Management, 17 Ridgeway Road, Norris, TN 37828-1612.

The USACE office concerned with the reevaluation of existing permits in the Tennessee River watershed, is that of Col. J. David Norwood, USACE, POB 1070, Nashville, TN 37202.

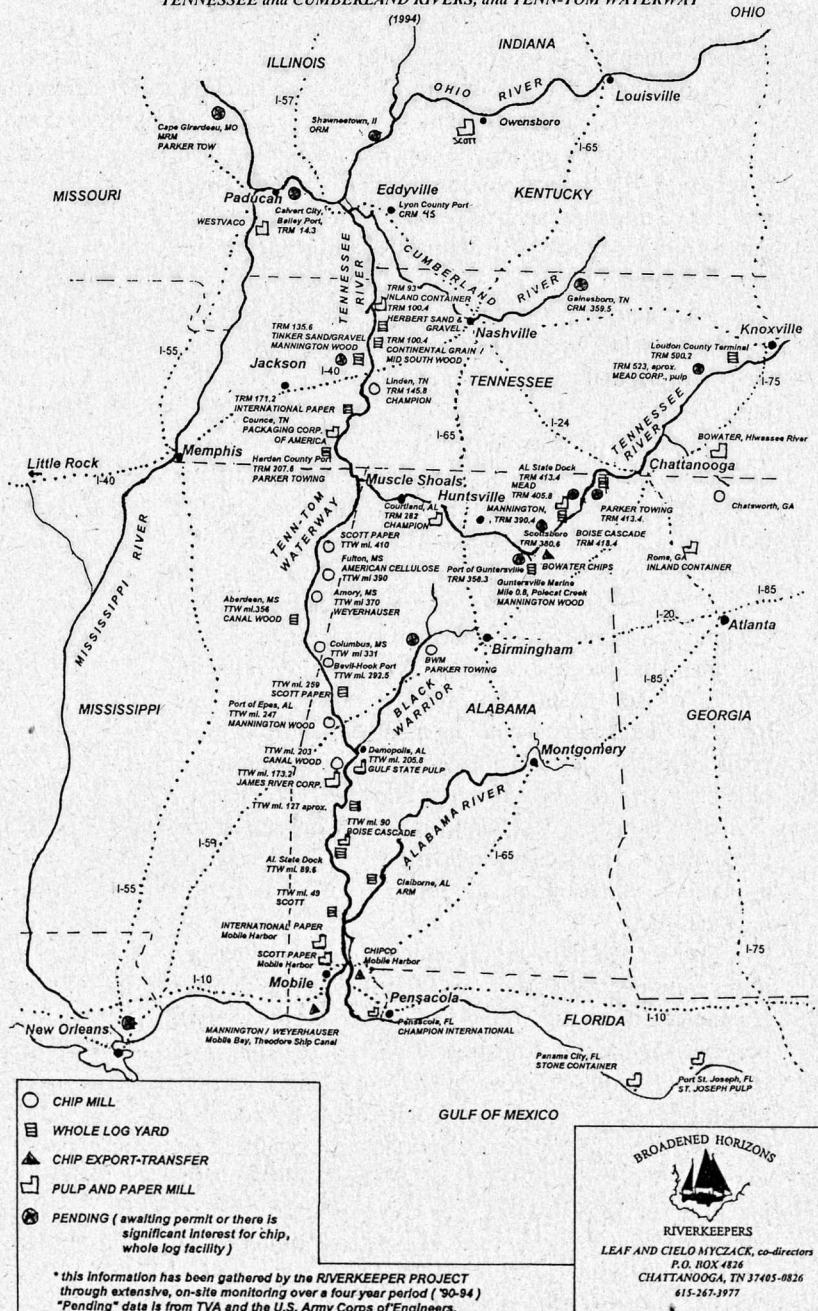
The EPA administrator with jurisdiction over West Virginia is Peter Kostmayer, Regional Administrator, US-EPA Region III, 841 Chestnut Building, Philadelphia, PA 19107.

Broadened Horizons, POB 4826, Chattanooga, TN 37405-0826 (615-627-3977), a major source of information for this article, monitors developments in the watershed of the Tennessee.

TAGER (POB 764, South Pittsburgh, TN 37380) would welcome your help in the campaign against the chipmills. For more information on the larger, global chipping threat contact NFN (POB 57, Burlington, VT 05402) and Rainforest Action Network (450 Sansome, Suite 700, San Francisco, CA 94111).

Mary Byrd Davis would welcome additional information on mills and related facilities in the Southeast (Ygdrasil Institute, POB 131, Georgetown, KY 40324).

CHIP MILL AND WHOLE LOG "DRAINAGE BASIN" MAP
TENNESSEE and CUMBERLAND RIVERS, and TENN-TOM WATERWAY



COUNTY FUNDS PREDATOR KILLING

Humboldt County in northern California (known for being home to Headwaters Forest owned by MAXXAM Corp.) is one setting for a struggle being waged in many rural California counties and all over the West. County residents have signed over 700 protest petitions to end the county's unholy alliance with the USDA's Animal Damage Control program (ADC) to kill predators for the benefit of a handful of ranchers.

About 200 ranchers run some 23,000 beef cattle and 13,000 sheep here on private and public lands. Some of them never use ADC services, protecting their stock with proven preventive measures such as personal attention, herding, guard dogs and other guard animals, electric fencing, and lambing sheds.

Our county is broke and has eliminated or curtailed many essential services. Yet, under pressure from cattlemen, woolgrowers, and the Farm Bureau, it doubled the killing budget for FY94/95 to \$75,000.

Large California landholdings enjoy tax breaks under the state Williamson Act. The county rebates part of the property tax; the state reimburses the county, which incorporates the funds (\$210,000 in FY93/94) in the county general fund. When our county agriculture commissioner contracts with the ADC, in effect, a federal agency is paid county funds to kill predators for the financial benefit of a few ranchers.

The ADC focuses entirely on killing wildlife, paying only lip service to non-lethal predation prevention. It uses inhumane, indiscriminate killing methods banned in every civilized nation—leghold traps, self-tightening snares, cyanide guns. Its non-target species kill rate is independently estimated as high as 70%. Some of the victims are endangered species. The agency should have been disbanded long ago but is kept alive by political pressure from Western ranching interests.

Even though 150 years of settler occupancy has resulted in severely degraded range- and forestlands, we think of Humboldt County as a special, rare place because Cougar, bear, and Coyote still roam the hills. *WE* readers wishing to support our cause, please send politely worded postcards or telephone/fax messages to Humboldt County Board of Supervisors, attention Roy Heider, Courthouse, 825 Fifth Street, Eureka, CA 95501, tel. (707) 445-7692, fax (707) 445-7295, pointing out that predators are essential to healthy ecosystems and asking that Humboldt County stop killing predators with public funds.

We are grateful for free printed material provided by Wildlife Damage Review, Tucson, AZ; Predator Project, Bozeman, MT; Mountain Lion Foundation, Sacramento, CA; Fund for Animals, San Francisco, CA; and the Furbearers, Vancouver, BC. It will greatly help our campaign to receive widely based public opinion support.

—Kurt Volckmar, Box 453, Garberville, CA 95542

OIL AND GAS INDUSTRY RUNS AMOK IN NORTHERN ROCKIES

The Northern Rockies of Canada include some of the last tracts of big wilderness in North America. They are still home to nearly all their native wildlife species. However, if the Environmental Impact Assessment Act now in front of the Canadian legislature is passed, the Northern Rockies will remain subject to the virtually unregulated activities of the oil and natural gas industry which have been steadily transforming the landscape into a patchwork of roads, wells, and pipelines for the past hundred years.

So far, over 225,000 wells have been drilled in Alberta, and over 7000 in British Columbia. About 1.5 million km of seismic access roads and 750,000 km of all weather roads have been built. All this plus pipelines, seismic shocks, and disruption of water courses has significantly fragmented the foothill, mountain, and prairie ecosystems of Alberta and British Columbia.

The oil and gas development has taken place with only minimal consideration of environmental impacts. Not one of the wells drilled or roads built has been subjected to full environmental impact assessment, nor has there been any consideration of the cumulative ecological effects of these activities.

And it will not stop here. Driven largely by increasing export demands, the majority of which exports are going to US markets, industry projections would lead to the drilling of one new well per hour for the next ten years.

This could doom some of the large mammals sensitive to human intrusions. Grizzly Bear habitat has already been badly fragmented, and this, combined with increasing "industrial conflict" situations, has led to a significant decrease in the bear population. Many other species native to the Northern Rockies are similarly imperiled; yet there is no endangered species legislation in Alberta, B.C., or Canada, nor is there a wilderness act that allows the public to initiate protection.

By ignoring the severe ecological impacts of this massive industry, the present legislation conflicts with Canada's Green Plan. Write to the Canadian government now and insist that the Environmental Impact Assessment Act not be passed until oil and natural gas exploration and development are included as activities subject to environmental assessment. Ask that the people of Canada have the democratic power to review and participate in the settlement of this crucial issue.

Right Honorable Jean Chretien

Prime Minister

House of Commons

Ottawa, Ontario

Canada K1A 0A6

—Dr. Brian L. Horejsi, President, *Speak Up For Wildlife Foundation*, Box 84006, PO Market Mall, Calgary, Alberta, T3A 5C4, Canada

Banff Needs You

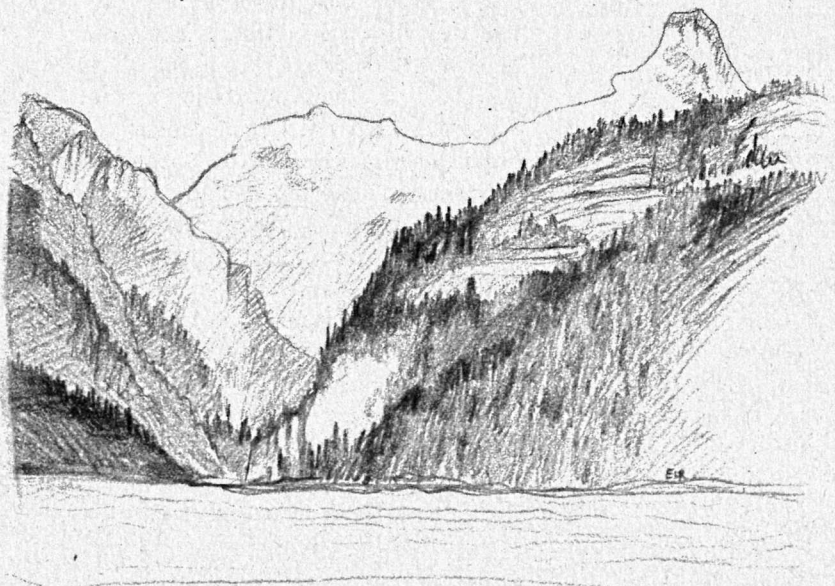
by Harvey Locke

THE MANAGEMENT PLAN for Banff National Park will be determined this year. It is the test case for the future of Canada's national parks.

In the last twelve years, close to half a billion dollars worth of building permits have been issued for construction inside Banff National Park. The Banff Springs Hotel, once a castle in the wilderness, is now a castle in the suburbs. The park's ecosystem is a shambles. Park wardens worry that the Black Bear population may not survive and that the park is no longer a secure sanctuary for Grizzly Bears. Moose, once a common sight, have disappeared from the lower Bow Valley. Elk have abandoned some of their range in the valley, and Coyotes die at a higher rate inside Banff Park than they do outside its boundaries. The cause of this ecological mess is too much construction in the Bow Valley.

Banff is the most heavily developed national park in North America, and is internationally recognized as an overdeveloped park. A 1994 study, published by the Brookings Institute of Washington DC, said in general Canada does a better job of maintaining its national parks than does the US with the glaring exception of Banff, which it described as "unique in its excess," a place where environmental sensitivities have been countered by "the political clout of prodevelopment interests."

Canadians share the international concern for the state of Banff National Park. A 1993 Angus Reid poll surveyed Canadians from across the country on their attitudes toward national parks. It found "when asked specifically about the development of townsites within national parks, a majority of Canadians believe that no further development should be allowed; this anti-development sentiment increases among recent visitors to Banff National Park."



The time has come for a complete and permanent moratorium on development in Banff National Park.

The Canadian Parks and Wilderness Society (CPAWS) thinks the time has come for a complete and permanent moratorium on development in Banff National Park. Unfortunately, the proposed management plan falls short. A partial moratorium is in place but excluded from it are the proposal by Canadian Pacific to build nine more holes of golf and a new convention center at Lake Louise, Sunshine ski area's latest expansion proposal, Skiing Louise's new hotel project, and the Town of Banff's plan for a new housing subdivision. The pressure to exploit Banff National Park for profit will continue until Parks Canada and the federal government say "no" means "no."

Those who favor commercial development, shopping, golf courses, and ski hill expansions are a small but powerful group. They have been given millions of taxpayers' dollars to fuel development inside Banff Park under the Canada-Alberta Tourism Agreement. Their paid lobbyists relentlessly press their development case in Ottawa so they can chase the industrial tourism market and cater to recreation boosters.

Recreation boosters are a tiny minority of the Canadian population (four percent according to the 1993 Angus Reid poll) who strongly believe in the economic development of recreation resources in national parks, particularly if they involve golf, skiing, or shopping. The Angus Reid poll cautions Parks Canada about recreation boosters because this group "has a disproportionately high impact upon the national parks and Four Mountain Parks."

The poll found for most Canadians the key benefits obtained from a park visit are enjoying the scenery, relaxing and enjoying quiet contemplation, and experiencing nature. It says "preserving and protecting the environment within national parks boundaries remains the most important priority for all segments of the Canadian population with the exception of recreation boosters." The commercial destruction of the natural environment in Banff National Park is a clear case of the tyranny of the minority to profit the few at the expense of the many.

Those who seek to exploit the parks argue that only a small percentage of the land area of the park is developed and the rest is wilderness. This argument ignores basic eco-

logical reality. Most development in Banff Park is concentrated in the Bow Valley bottom, in the environmentally critical montane ecoregion. The montane is often snow-free in winter, providing critical winter habitat for Elk and deer and their predators—Gray Wolves and Cougars. It also provides critical spring habitat for Black and Grizzly Bears and is home to the greatest abundance of songbirds and a wide variety of plant species. Yet only five percent of Banff Park is montane. The montane is the heart of the entire region—if it dies so does the rest.

Developers don't build things for no reason. Why, if the vast majority of park visitors want nature and natural experiences, would developers construct tennis courts, indoor mini-golf, health clubs, convention facilities and the like. The answer is that these facilities are not built for park visitors; they are built for the convention market to bring in year-round revenue. This is the lucrative part of the industrial tourism market.

It is proper and fitting for the national parks to be used for nature-related tourism. It is wrong to exploit them for industrial tourism.

Banff National Park is being destroyed from within to enrich local businessmen and to cater to a small group of recreation boosters at the expense of the park's ecology and present and future generations. CPAWS believes it is time for the management plan to say no more development should be permitted inside Banff National Park.

To stop development in Banff National Park, individuals must make their voices heard. Help us ensure that Parks Canada and politicians receive input from those who love parks—not just well-organized and highly-financed developers. Write the Parks Minister, Michel Dupuy, Minister of Canadian Heritage, Room 230, Confederation Building, Parliament Buildings, Ottawa, Ontario K1A 0A5. Also write Prime Minister of Canada Jean Chretien, Parliament Buildings, Ottawa, Ontario, Canada K1A 0A5. To contribute to the campaign to save Banff, write: Canadian Parks and Wilderness Society, 1019 Fourth Avenue SW, Calgary, Alberta, Canada T2P 0K8.

Harvey Locke is President of the Canadian Parks and Wilderness Society and sits on The Wildlands Project board of directors.

Last Chance for the Prairie Dog

by George Wuerthner



TINTERSTATE 90 FOLLOWS the course of the Yellowstone River between Livingston and Billings, Montana. About half-way between the two towns, you pass Greycliff Prairie Dog Town State Monument. One of those freeway signs—brown to indicate a natural attraction—points the way off the Interstate to a small parking lot with several interpretive signs. It's a convenient place to stop and stretch. Many people do. If you come in summer, Black-tailed Prairie Dogs will be scurrying about, standing at the mouths of their burrows “barking,” providing enough action to keep most freeway travelers entertained for a few minutes while they use the restrooms and read the signs before getting back in their cars to continue.

Most don't recognize the significance of the site. It's the only state or federal park exclusively dedicated to prairie dogs. Even more important, the 98-acre park is the *only site* in a hundred and twenty miles of former prairie dog habitat between Livingston and Billings that still has prairie dogs. Prairie dogs are going the way of the Bison—extirpated from most of their former habitat and preserved only in a few relict colonies. The park's presence in an Interstate right-of-way tells something about the prairie dog's demise. The right-of-way isn't used for livestock production or farming, so it's okay to have a few prairie dogs there.

Since this colony is miles away from any other, it too may eventually disappear. The prairie dog probably won't go extinct any time soon; but its viability as a functioning wild species is in doubt. Although hundreds of small prairie dog towns are scattered about the plains, they are lost in the immensity of the landscape. Once widespread and abundant, today prairie dog populations are highly fragmented and isolated. Dispersal between colonies is difficult, if not impossible. When disease, like sylvatic plague, sweeps across the plains as is occurring now, entire prairie dog colonies disappear and the sites are not repopulated (Miller et al. 1994).

Whereas today most Interstate travelers view the plains as boring and barren, trying to get across without falling asleep from the monotony of the landscape, early travelers on the plains were usually enchanted with these American grasslands. Early plains travelers continually commented favorably about the wildlife found there in abundance. It was a vibrant ecosystem, full of life. Today, the notable feature of the plains is the great absence of life—the plains have been silenced. And nothing symbolizes this more than the demise of the prairie dog.

Early travelers on the plains were usually enchanted with these American grasslands. It was a vibrant ecosystem, full of life. Today, the notable feature of the plains is the great absence of life—the plains have been silenced. And nothing symbolizes this more than the demise of the prairie dog.



YOU CAN HELP

To show your much needed support for the prairie dog and its central role in the Great Plains ecosystem, write to the following federal officials. Ask them to stop killing prairie dogs on public lands and to protect their habitat.

Mollie Beattie, Director
US Fish and Wildlife Service
1849 C Street NW
Washington, DC 20240

Jack Ward Thomas, Chief
USDA Forest Service
201 14th and Independence Ave. SW
Washington, DC 20250

Mike Dombek, Director
US Bureau of Land Management
1849 C Street NW, Room 560
Washington, DC 20240

To support the Biodiversity Legal Foundation's aggressive efforts to protect prairie dogs and their associated species and habitat, send questions, encouragement, and contributions to:

Biodiversity Legal Foundation
POB 18327
Boulder, CO 80308-1327

The present plight of the prairie dog is made more poignant by the fact that they may have been the most abundant mammal in North America at the time of the first Euro-American explorations of the West. In 1805, while skirting the Missouri River near its confluence with the Marias River, Meriweather Lewis crossed a town of "barking squirrels" more than seven miles wide. The expedition leaders described the number of prairie dogs they encountered along their journey as "infinite" (Coues 1893). Messiter (1890) traveling through northern Montana recorded passing a prairie dog colony he estimated to be 30-40 miles long. One town in the Texas panhandle estimated to be 250 miles wide may have been home to more than 400 million prairie dogs (U.S. Fish and Wildlife Service 1978). Merriam estimated that prairie dogs occupied some 700 million acres of the West in the late 1800s (Cully 1989). Seton (1929) estimated that the total North American population of prairie dogs exceeded 5 billion! Even as late as 1900, an estimated 100 million acres were occupied by prairie dogs (Knowles and Knowles 1994).

These numbers are so large, they beg credibility; but almost no one disputes that prairie dogs were once extremely common, and found throughout the plains. Yet today, in many parts of the West you can drive all day and not see a single colony.

In late 1994, the Biodiversity Legal Foundation (BLF) and wildlife biologist Jon Sharp filed a petition with the U.S. Fish and Wildlife Service (FWS) to list the Black-tailed Prairie Dog as a category 2 candidate species under the Endangered Species Act (BLF 1994). The Black-tailed Prairie Dog (*Cynomys ludovicianus*) is actually the most abundant of five prairie dog species. It is the only species found on the plains, and once ranged from New Mexico to Canada (Clark and Stromberg 1987).

The four other species live in various parts of the Intermountain West and south into Mexico. The southern-most is the Mexican Prairie Dog (*Cynomys mexicanus*), widely distributed south of the border.

The Utah Prairie Dog (*Cynomys parvidens*), found only in southwest Utah, historically had the most restricted distribution. In 1920 there were an estimated 95,000 of this species. By 1976 poisoning programs and disease had reduced them to only 3,500 individuals (Zelveloff and Collett 1987).

Gunnison's Prairie Dog (*Cynomys gunnisoni*) has a center of distribution in the Four Corners region of New Mexico, Colorado, Utah and Arizona. Due to poisoning programs as well as plague, their numbers have also declined precipitously (Zelveloff and Collett 1987).

The White-tailed Prairie Dog (*Cynomys leucurus*) is the largest of the prairie dogs. It sports a short, white-tipped tail that looks as if it were dipped in paint. White-tailed Prairie Dog range covered much of western Wyoming and adjacent portions of northeast Utah and northwest Colorado; a small sliver extended into southern Montana just south of Billings (Zelveloff and Collett 1988).

At present, the Mexican and the Utah Prairie Dogs are listed as Endangered under the Endangered Species Act. The White-tailed and Gunnison's currently have no ESA protection, although most biologists believe they should qualify (BLF 1994).

Black-tailed Prairie Dogs inhabit the short and mid-grass plains east of the Rockies. They feed primarily on grasses, and avoid areas with heavy sagebrush and other shrub cover. Areas in and around prairie dog colonies often look "overgrazed," with much bare soil, little litter, and a carpet of short, heavily cropped vegetation (Knowles and Knowles 1994).

However, the continual cropping by prairie dogs tends to maintain vegetation higher in protein and more palatable than that on non-prairie dog sites. As a result prairie dog sites were attractive to a host of other grazing species such as Bison and Pronghorn (Coppock et al. 1983a,b).

Prairie dogs appear to have had a mutually beneficial relationship with Bison. Bison are attracted to dog towns by the succulent growth found there, while the grazing of coarse tall grasses by Bison on the fringes of colonies helps to increase prairie dog numbers and dispersal. Evidence suggests the decline of Bison brought about a reduction—and some places perhaps even extirpation—of prairie dog colonies (Knowles and Knowles 1994). However, in some cases this was counterbalanced by livestock grazing, since prairie dog numbers may increase with heavy cattle grazing (Knowles 1986). This is in part due to the prairie dogs' avoidance of tall vegetation, which limits their ability to see and monitor predators (Coppock et al. 1983a,b).

In keeping with their strategy of predator detection as a survival mechanism, Black-tailed Prairie Dogs are the most colonial of the prairie dog species. Each colony is made up of individual family units known as coterries, with defended territories; but all colony members help to alert their neighbors of possible intruders with their yip or "bark" (Clark and Stromberg 1987).

The livestock industry persecutes prairie dogs because it perceives the rodents as competitors for forage. Although evidence suggests that prairie dogs usually consume only 18-37% of the vegetation in the immediate vicinity of their colonies, occasionally herbivory can reach 80% vegetation loss by the end of the summer (Knowles and Knowles 1994). Studies by Knowles (1986) have shown that cattle can remove a substantial portion of the vegetation in dog towns, and their combined utilization may reach 90% by the end of a growing season. Other studies have shown that forage consumption of 300 prairie dogs equals that of one cow and calf (Miller et al. 1994). Less forage may generally be left on a prairie dog town, but the higher nutritional value of the forage typically results in no decline in weight gains among livestock utilizing such areas (O'Meilia et al. 1982). Whatever forage competition may exist between prairie dogs and domestic livestock, the plains once supported untold numbers of Bison, Pronghorn, Elk, deer, and

Bighorn Sheep, plus smaller herbivores, including the billions of prairie dogs.

Livestock operators and their allies in government have waged campaigns to destroy prairie dogs throughout their range for nearly a century. The favored method was use of grain soaked in strychnine. Between 1903 and 1912, strychnine use reduced Colorado's prairie dog population by 91% (Clark 1989). More than a million acres were poisoned in eastern Wyoming between 1915 and 1927 (Clark 1989). Overall, prairie dog numbers have been reduced by 98-99% across the West (Miller et al. 1994).

Yet the killing continues. Prairie dog shooting contests are held throughout their remaining range. For example, on the Fort Belknap Indian Reservation in Montana, shooters from throughout the United States were invited to participate in a prairie dog shoot-out last year (Cornett 1994). The Bureau of Land Management (BLM), with the cooperation and encouragement of the Montana Department of Fish, Wildlife and Parks, actually distributes maps to hunters, directing them to prairie dog towns, where the rodents are picked off for target practice. Shooting can significantly reduce prairie dog populations, although it usually doesn't wipe them out completely.

Even more devastating are the poisoning programs. The favored poison of today is zinc phosphide. Upon contact with stomach fluids, phosphine gas is produced. Death is slow and painful. The poisoned animal suffers for 6-12 hours.

Poisoning is carried out at taxpayer expense by "animal damage control" agents. In some states, such as Nebraska and Kansas, landowners are forced to carry out control efforts, or suffer fines. Federal agents regularly poison prairie dog colonies on BLM and Forest Service lands. Poisoning is also common on Indian reservations, National Wildlife "Refuges," and even in National Parks. For example, between 1980 and 1984 the Pine Ridge Reservation in South Dakota poisoned almost half a million acres of prairie dog towns (Hansen 1988). Poisoning programs are ongoing in Wind Cave National Park (NPS personal comm. 1994). Prairie dogs were poisoned in Badlands National Park until 1993, prior to the reintroduction of the Black-footed Ferret (Wilkerson 1994). Park poisonings are done to maintain "good relationships" with neighboring landowners and other federal agencies.

The plowing up of millions of acres of the plains for wheat and other grain production has also destroyed many prairie dog colonies (Knowles and Knowles 1994). For example, more than 18 million acres of Montana, an area nearly equal in size to the state of Maine, has been plowed and planted for grain (Montana Ag. Statistics 1992).

The final blow to many prairie dog populations throughout their range has been sylvatic plague. Fleas carry the bacterial disease and spread it through rodent colonies. Prairie dogs are highly susceptible to the disease, which was first documented in the United States in 1900. Even isolated colonies



can suffer substantial declines as a consequence of plague (Clark 1989).

Due in large part to population fragmentation, Black-tailed Prairie Dog populations across their historic range are now threatened with extinction. Small, isolated populations are susceptible to genetic bottlenecks, genetic drift, and population extirpation from disease.

Due to the close dependency of a host of other animals, the demise of prairie dogs could bring about the extinction of commensal species. If we wish to avoid "ecological train wrecks," we should recognize that the viability of many other species hinges on healthy prairie dog populations.

Among the most endangered of prairie dog dependent species is the Black-footed Ferret, classified as Endangered and one of the rarest mammals in the world. The ferret is intricately tied to prairie dogs. Prairie dogs make up 90% of the ferret's diet (Knowles and Knowles 1994). Ferrets also depend upon prairie dogs for burrows which provide hiding cover from predators (Clark 1989). Clark (1989) estimates, from population densities found in relict wild populations in the early 1980s, that as many as 1 million ferrets may have lived on the plains at the turn of the century. Yet today fewer than 200 ferrets remain alive anywhere, and most of these are in captivity.

Swift Fox populations have also suffered drastic declines. The Swift Fox is now extinct in Montana and rare in most of its former range. Poisoning programs aimed at

Coyotes, along with the conversion of much of its habitat to wheatfields, are largely responsible for its decline (Knowles and Dood 1993); but the loss of prairie dogs, as well, has had ecological consequences for the fox.* Swift Fox consume prairie dogs, and rely upon the abundance of burrows to hide from predators such as Coyotes. In areas where prairie dogs or other burrowing rodents are absent, reintroduced Swift Fox have never successfully maintained themselves (Knowles and Knowles 1994).

Burrowing Owls also depend upon the rodents for both food and shelter. Early travelers on the Great Plains noted the abundance of and close association between these small owls and prairie dog colonies. Burrowing Owl numbers have declined significantly throughout the region where prairie dogs have disappeared (Knowles and Knowles 1994).

Mountain Plover, another species currently a candidate for listing under the Endangered Species Act, relies upon prairie dogs for creation of short grass nesting habitat. There may also be a relationship between the insects this bird consumes and prairie dog colonies. Some speculate insect abundance is greater, or at least insects are more easily captured due to high visibility, on prairie dog colonies (Olson 1985).

The Ferruginous Hawk is another ESA category 2 species linked to prairie dogs. The hawk specializes in hunting ground-dwelling rodents like prairie dogs. It will sit next to a burrow waiting for an animal to poke out its head, whereupon it springs on the unwary creature (Knowles and Knowles 1994).

In total, Clark (1989) reports more than 163 vertebrate species dependent upon or found in close association with prairie dog colonies. Prairie dogs can be considered a "keystone species" on the plains ecosystem.

As a result of their population declines, and recognition of the prairie dogs' importance to plains ecosystems, the Biodiversity Legal Foundation and Jon Sharp are requesting that the Fish and Wildlife Service protect the Black-tailed Prairie Dog as a category 2 species under the Endangered Species Act. Such classification would alert agencies to the need for a more careful approach to protecting prairie dog habitat and for eliminating control efforts on federal lands.

Some have speculated the Great Plains is North America's best hope for major ecosystem recovery and restoration (Licht 1994, Wuerthner 1994a,b); but for this to happen, we must begin by protecting one of the key building blocks of the Great Plains ecosystem, the prairie dog. Without a recovery of prairie dogs to at least something approaching their former numbers, we cannot hope to bring about ecosystem recovery or even save the multitude of other species dependent upon this animal. **WERF**

* Swift Foxes also scavenged wolf kills. Coyotes eat Swift Foxes, but wolves kept Coyotes in check. So extermination of wolves harmed Swift Foxes in two ways. —Exec. Ed.

REFERENCES

- Biodiversity Legal Foundation. 1994. Petition to classify the Black-tailed Prairie Dog (*Cynomys ludovicianus*) as a Category 2 Candidate species. Office of Endangered Species. U.S. Fish and Wildlife Service. Washington DC.
- Clark, T.W. 1989. Conservation Biology of the Black-footed Ferret. Wildlife Preservation Trust International. Philadelphia, PA.
- Clark, T.W. and M.R. Stromberg. 1987. University Press of Kansas, Lawrence, Kansas. 314pp.
- Coppock, D.L., J.F. Ellis, J.K. Detling, and M.I. Deyer. 1983a. Plant-herbivore interactions in a North American mixed grass prairie. Effects of Black-tailed Prairie Dogs on intraseasonal above ground plant biomass and nutrient dynamics and plant species diversity. *Oecologia* 56: 1-9.
- Coppock, D.L., J.F. Ellis, J.K. Detling, and M.I. Dyer. 1983b. Plant-herbivore interactions in a North American mixed-grass prairie. Responses of bison to modification of vegetation by prairie dogs. *Oecologia*. 56:10-15.
- Cornett, C.W. 1994. Prairie dog conference billed as a success. *Outdoors Unlimited*. 55(10) pp.28.
- Coues, E. 1893. The History of Lewis and Clark Expedition. Vol. 1. Ed. by Elliot Coues. Dover Books. New York 352 pp.
- Cully, J.F. 1989. Plague in prairie dog ecosystems: Importance for black-footed ferret management. In *The prairie dog ecosystem: Managing for Biological Diversity*. Montana BLM Wildlife Technical Bulletin No. 2p. 47-55.
- Hansen, R. 1988. A chronology of prairie dog control operations and related developments in South Dakota. Eight Great Plains Wildlife Damage Control Workshop Proc. Rapid City, SD. US Forest Service, Washington, DC.
- Knowles, C.J. 1986. Some relationships of black-tailed prairie dogs to livestock grazing. *Great Basin Nat.* 46:202-206.
- Knowles, C.J. and A.R. Dood. 1993. Status of the swift fox in Montana. Paper presented at the U.S./Canada swift fox workshop. Medicine Hat, Alberta.
- Knowles C.J. and P.R. Knowles. 1994. A review of Black-tailed prairie dog literature in relation to rangelands administered by the Custer National Forest. USDA Custer National Forest, Billings, Montana.
- Licht, D.S. 1994. The Great Plains: America's Best Chance for Ecosystem Restoration, Part 1. *Wild Earth* (4)2 pp. 47-53.
- Messiter, C.A. 1890. Sport and adventure among the North American Indians. R. H. Porter, Long. 368 pp.
- Miller, B., G. Ceballos, and R. Reading. 1994. The prairie dog and biotic diversity. *Conservation Biology* 8(3):677-681.
- Montana Agricultural Statistics. 1992. Montana Dept. of Agriculture. Helena, Montana.
- NPS. personal communication. 1994. Phone interviews with National Park personnel 1994.
- Olson, S.C. 1985. Mountain plover food items on and adjacent to a prairie dog town. *Prairie Nat.* 17:83-90.
- O'Mielia, M.E., F.L. Knoph, and J.C. Lewis. 1982. Some consequences of competition between prairie dogs and beef cattle. *J. of Range Management*. 35:580-585.
- Seton, E.T. 1929. Lives of game animals. Doubleday, Dovan, and Co. Inc. Garden City New York. 946pp.
- U.S. Fish and Wildlife Service. 1978. Black-footed ferret recovery plan. U.S. Fish and Wildlife Service, Washington, DC 149pp.
- Wilkinson, T. 1994. Back to the Badlands. *National Parks Magazine*. 68(11-12). pp38-42.
- Wuerthner, G.K. 1994a. Subdivisions versus Agriculture. *Conservation Biology* 8(3) pp 905-908.
- Wuerthner, G.K. 1994b. A new Vision for the West. In *The Place of the Wild*. ed. by D. Burks. Island Press, Washington, DC.
- Zeveloff, S.I. and F.R. Collett. 1988. Mammals of the Intermountain West. University of Utah Press, Salt Lake City, Utah. 364pp.

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Burrowing Owl (Athene cunicularia) by Robert Smith

The Plight of Bhitara Kanika

Emblematic of the Threats Mangroves Face

by Alfredo Quarto

IN 1975, THE CENTRAL government of India, through the intervention of the late Indira Gandhi, declared India's Bhitara Kanika mangrove forest a wildlife sanctuary, ostensibly protecting the area from exploitation and development. The Bhitara Kanika's 350 square kilometer sanctuary contains India's second largest mangrove forest, over 115 sq. km. of mangroves, only surpassed in size by the Sunderban of West Bengal. Today, however, the protective laws for this sanctuary are crumpling like paper walls under the weight of expanding industry and human population.

Expanding prawn aquaculture and a state government plan to build extensive fishing jetties within 10 km. of the sanctuary pose major threats to Bhitara Kanika. A local Indian group, the Orissa Krushak Mahasangh, is calling for international support to protect this invaluable ecosystem. The Mangrove Action Project and the Sea Turtle Restoration Project, both working with the Earth Island Institute, are supporting Orissa Krushak Mahasangh in this international campaign.

On the Eastern shores of India, by the Bay of Bengal, near the confluence of the Brahmani and Baitarani Rivers, is the stretch of mangrove-forested coastline containing the Bhitara Kanika Wildlife Sanctuary. In addition to the lush mangrove forest, the sanctuary shelters Gahirmatha Beach, the world's largest nesting ground of the Olive Ridley sea turtle (*Leplidochelys olivacea*), an Endangered species.

LIVING ON THE EDGE OF THE SEA

Mangroves have been called "the rainforests of the sea." Sixty to seventy-five percent of sub-tropical and tropical coasts were once covered by mangrove forests. In 1983, a rough estimate of the total area of mangrove forests worldwide was approximately 50 million acres. However, in the last decade, the rate of mangrove loss has greatly accelerated; today, perhaps only half the original area of mangrove forest remains.

Mangrove forests are comprised of taxonomically diverse, salt-tolerant tree species which thrive in upper inter-tidal zones of sheltered tropical shores and estuaries. Mangrove trees have specially adapted aerial and salt-filtering roots and leaves that enable them to occupy the fluctuating inter-tidal zones where other plant life cannot survive. These forests are vital for healthy coastal ecosystems. The forest detritus, consisting mainly of fallen leaves and branches from the mangroves, provides nutrients for the marine environment, supporting immense varieties of sea life which feed on the decaying forest matter. The shallow, inter-tidal reaches, which comprise the mangrove swamplands, offer refuge and nursery grounds for juvenile fish, crabs, shrimps, and mollusks.

Sixty to seventy-five percent of sub-tropical and tropical coasts were once covered by mangrove forests. Today, perhaps only half the original area of mangrove forest remains.

These complex ecosystems are found between the latitudes of 32 degrees north and 38 degrees south, along the tropical coasts of Africa, Australia, Asia, and the Americas. The greatest diversity of mangrove species exists in Southeast Asia.

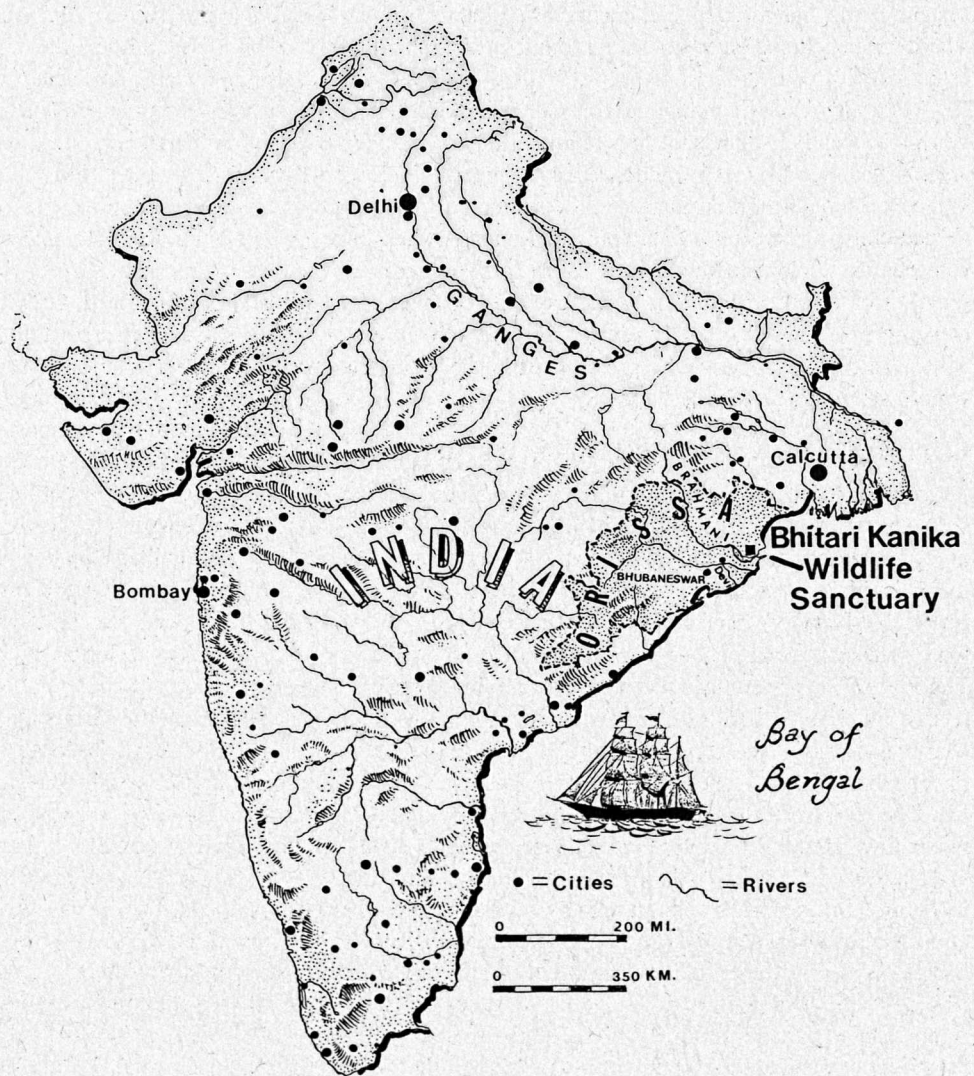
Mangrove forests literally live in two worlds at once. They act as the interface between land and sea. Mangroves help protect coastlines from erosion, storm damage, and wave action. The stability mangroves provide is of immense importance. They prevent shoreline erosion by acting as buffers and catch alluvial materials, thus allowing land elevation by sediment accretion.

Scientists theorize that the earliest mangrove species originated in the Indo-Malayan region. Because of their unique floating propagules or seeds, these early mangrove species spread westward, borne by ocean currents, to India and Africa, and eastward to the Americas, arriving in Central and South America during the upper Cretaceous period and lower Miocene epoch, between 66 and 23 million years ago. During that time, mangroves spread throughout the Caribbean Sea across an open seaway which once existed where Panama lies today. Later, sea currents may have carried mangrove seeds to the western coast of Africa and as far south as New Zealand. This could be why the mangroves of West Africa and the Americas are similar, whereas those of Asia, India, and East Africa contain different species.

A primary factor of the natural environment that affects mangroves is sea level, which fluctuates.

Other factors are air temperature, ocean currents, storms, shore slope, and soil substrate. Most mangroves live on muddy soils, but they also grow on sand, peat, and coral rock. If tidal conditions are optimal, mangroves can flourish far inland, along the upper reaches of coastal estuaries.

Mangroves vary in height according to species and environment, from mere shrubs to 40 meter trees. The prop roots of some mangrove species contain many small "breathing" pores, called "lenticels." These allow oxygen to diffuse into the plant, and down to the underground roots by means of air



space tissue in the cortex, called "aerenchyma." The lenticels close during high tide. The mangrove's root system is so effective in filtering out salt that a thirsty traveler could drink fresh water from a cut root.

Mangroves can propagate successfully in a marine environment because of two special adaptations. Through "viviparity," embryo germination begins on the tree itself; the tree soon drops its developing embryos which take root in the soil beneath. The second adaptation is the dispersal of the mangroves' "propagules," which are long, pencil-shaped pods that hang from the branches of mature trees. These fall off and eventually take root in the soil surrounding the parent tree. Depending on the species, these propagules may float for extended periods, up to a year, and still remain viable. Viviparity and the long-lived propagules allow mangroves to disperse over wide areas.

"Zonation" often characterizes mangrove forests. Certain tree species occupy particular zones, or niches, within the ecosystem. Some mangrove species occur close to shore, fringing islands and sheltered bays; others are found farther inland, in estuaries affected by tidal flows.

Naturally resilient, mangrove forests have withstood severe storms and changing tides for many millennia, but they are now being devastated by modern encroachments. Lenticels in the exposed portions of mangrove roots are highly susceptible to clogging by crude oil and other pollutants, attacks by parasites, and prolonged flooding from artificial dikes or causeways. Over time, environmental stress can kill large numbers of mangrove trees. The rapidly expanding shrimp or prawn aquaculture industry poses the greatest current threat to the world's remaining mangroves.

BHITARA KANIKA WILDLIFE SANCTUARY

Bhitara Kanika Sanctuary experiences three main seasons: summer, rainy, and winter. Temperatures range from 45 degrees Centigrade in summer to 10 degrees C in winter. The mean maximum temperature is about 27 degrees C. Cyclones usually hit during the transitional period between the rainy and winter seasons, characterized by heavy rainfall and high winds. The region is highly prone to severe cyclones. Without the protective buffer provided by mangroves, the region's violent storms can cause catastrophic damage to wildlife as well as threaten human settlements.

The core area of the sanctuary is influenced by the fresh water flow of the Brahmani River and salt water from the Patsaia River. Salinity of the latter river varies seasonally; during summer it increases, and in the rainy season it decreases considerably. The sanctuary contains many meandering creeks and channels, sand dunes and sandbars near Gahirmatha Beach, as well as the lush mangrove estuaries at the mouths of the rivers. Bhitara Kanika is largely covered by a two-story forest—a canopy and middle story, with only sparse ground flora.

The more common *Rhizophora* trees are distinctive in appearance with their clusters of looping roots, which are par-

tially submerged in water during high tide. At low tide, the innumerable "pneumatophorea" of the *Avicennia* and *Sonneratia* are apparent. These root stubs make walking through the exposed mudflats of mangrove forests rather difficult. The typical mangrove forest gradually passes into scrub jungle or semi-deciduous forest in the drier, more elevated areas.

Local people find many uses for the plants of the mangrove forest. Mangrove wood can be used for charcoal production, fuel wood, building materials, and furniture making, while the leaves of certain species are excellent for thatched roofing, domestic animal fodder, and basket making. Tannin can be extracted from the barks of many species and is useful in making dyes, inks, and medicines. Mangroves also contain important plants for the traditional health care and sustenance of the local communities.

More than 60 mangrove-related plant species are found in the Bhitara Kanika Sanctuary. Two of these are found nowhere else in the world. A variety of marine mammals, such as dolphins, thrive in the warm, shallow seas. Vast migrations of birds pass through the region, swelling the numbers of the already abundant resident bird population. About 170 bird species can be found there, including Asia's largest population of Bare-headed Geese, six species of kingfishers, five of herons, four of egrets, and four of storks. Altogether, nearly 80,000 wading birds nest in the reserve.

Bhitara Kanika is also the home of the Estuarine (or Salt Water) Crocodile (*Crocodylus porosus*), which was only recently rescued from the brink of extirpation through the efforts of a research project, called "Integrated Crocodile and Sea Turtle Conservation and Management," authorized by the state government of Orissa in 1975. The research center recently released more than a thousand incubated juvenile crocodiles into the creeks and channels of Bhitara Kanika. These ancient reptiles are the largest of their class, growing to almost seven meters in length. The sanctuary also contains Leopards, Fishing Cats, Sambars, Spotted Deer, Wild Boars, Jackals, hyenas, porcupines, Mongoose, King Cobras, pythons, monitor lizards, Mud Skipper Fish, and a huge annual nesting population of Olive Ridley sea turtles at Gahirmatha Beach. The sanctuary also supports smaller numbers of Hawksbill and Leatherback sea turtles, both Endangered species.

Within close proximity of the Bhitara Kanika Wildlife Sanctuary are about 190 villages containing a fast growing population of over 40,000 people. Nearly 90% of these settlers are new residents—mainly immigrants from Bangladesh. They depend on rice paddy cultivation and fishing for their livelihoods. The state government of Orissa is offering very generous concessions to these recent settlers (possibly to secure votes from this new constituency), encouraging them to clear and burn the mangroves to establish coastal industries. In the last several years, large tracts of the mangrove forest have been illegally cleared along the stretch of coast from the mouth of the Dhamra River to the River Devi to make way for prawn farms. Growing populations are also demanding more

natural resources than can be sustainably provided by the present area allocated to the villagers. These demands further threaten the mangroves.

Last year, the state government of Orissa gave permission to construct a giant fishing jetty at Talchua, only 10 km (roughly 6 miles) from the northern border of the sanctuary. Permission was given without the required approval of the Forest and Environment Ministry of the central government of India. Not even the consent of the Forest Department of the Orissa State Government was obtained. If completed, the jetty will offer moorage to over 500 commercial shrimp trawlers and fishing vessels capable of capturing 50 tons of fish daily.

Moreover, to transport this large fish catch and make the otherwise remote area more accessible, a 32 km road is being constructed near the mangrove forest from Talchua to Rajnagar.

This jetty, boat traffic, and road would severely disrupt the sensitive ecology of the mangrove ecosystem. To make matters worse, three more fishing jetties are scheduled for construction on the southern border of the sanctuary at nearby Jambu, Kharanasi and Tantiapal, again without the permission of the central government as required under the 1980 Forest Conservation Act. No environmental impact assessment was made by the state government, though this, too, is mandatory under the law. The entire Bhitara Kanika Wildlife Sanctuary has thus been placed in jeopardy.

Recently a temporary injunction was brought against the project by the central government but only under heavy pressure from local non-governmental organizations (NGOs). The injunction required an environmental assessment be conducted before the project continues, but the Orissa government is de-



illustration by Heather K. Lenz

fyng this order and carrying on construction of the coastal road that passes through the mangroves to the jetty site at Talchua. Protesters against this flagrant violation are pressuring the central government to act more forcibly to halt the illicit project.

Already, the clearing of mangrove forests to establish prawn farms has resulted in grave environmental problems. Pollutants from the antibiotics and additives used in the prawn feed, as well as the highly concentrated levels of prawn excrement that build up in the ponds, are regularly pumped into the nearby coastal waters. Also, the ponds may activate acid-sulfate in the disturbed soils.

Serious losses in the coastal fishery ensue when the breeding grounds and nesting sites of marine life are destroyed. The erosion following destruction of mangroves often kills the adjacent sea grasses and coral reefs, further harming the coastal fishery.

WRITE LETTERS OF SUPPORT FOR BHITARA KANIKA

Bhitara Kanika needs a wide buffer to protect the sanctuary from disruptive development. Thus far, the government of Orissa has not positively responded to the strong pressure of local and international groups asking that the sanctuary be fully protected; and the central government has been slow to act. Worldwide public pressure is needed to sway the Indian authorities to halt further encroachments on Bhitara Kanika.

Please write letters to the Prime Minister of India, New Dehli-110001, India and to the Chief Minister of Orissa, Bhubaneswar-751001, Orissa, India. Ask that they fully protect the Bhitara Kanika Wildlife Sanctuary, including the vital nesting grounds for the Olive Ridley sea turtles. Please send copies of your letters to Banka Behary Das, President of Orissa Krushak Mahasangh, 14, Ashoknagar, Bhubaneswar-751009,

Orissa, India. **WERF**

REFERENCES

- Allen, Leslie, "Cast Ashore, Florida's Sea Turtles Search for a Safe Haven," *Nature Conservancy Magazine*, May/June, 1994.
- Baird, Ian, "The Environmental and Social Costs of Developing Coastal Shrimp Aquaculture in Asia," *Earth Island Institute*, 7/93.
- Chapman, V.J., "Mangrove Vegetation," *J. Cramer, Switzerland*, 1976.
- Chapman, V.J., "Mangrove Biogeography," in *Hydrobiology of the Mangal: The Ecosystem of the Mangrove Forest*, the Hebrew University of Jerusalem, 1984.
- Choudhury, B.P., "Bhitara Kanika Mangrove Swamps," *J. Env. Sci.*, Vol. 3 (1), Dept. of Botany, Utkal Univ., Bhubaneswar, India, 1990.
- Das, Banka Behary, "Why Save Bhitara Kanika," Orissa Krushak Mahasangh & the Centre of Ecology and Development, Orissa, India 1993.
- Hellier, C., "The Mangrove Wastelands," *The Ecologist*, Vol. 18, No. 2, 1988.
- Lugo, Ariel E. and Samuel Snedaker, "The Ecology of Mangroves," Dept. of Natural Resources, Commonwealth of Puerto Rico, 1974.
- Saenger, P., Hegerl, E.J., and Macintosh, D.J., (eds), "Proceedings of the Asian Symposium on Mangrove Environment, Research and Management," Univ. of Malay, Kuala Lumpur, UNESCO, 1984.
- Tomlinson, P.B., "The Botany of Mangroves," Cambridge University Press, Cambridge, UK, 1986.

Alfredo Quarto is the Director of the Mangrove Action Project (POB 1854, Port Angeles, WA 98362).

MANGROVE ACTION PROJECT

The Mangrove Action Project (MAP) is a growing international coalition of environmental, human rights, and community-based mangrove advocacy groups. MAP coalition members include both organizations based in Third World countries, where mangroves are threatened, and in industrialized nations, where the prawns are mainly consumed. Here are some suggestions on ways you can help:

1) MAP is not at this time advocating a boycott; rather, we are now endorsing a "market slowdown." Spread the word among friends and acquaintances to *not* buy prawn products. Urge your local fish marketers and restaurants to stop selling prawns.

2) Write letters to the India Consulate, Attn. Prime Minister, 2017 Massachusetts Ave. NW, Washington, DC 20008. Ask that the central government of India protect Bhitara Kanika mangrove swamp by halting the planned fishing jetty development along its mangrove-lined shores. Ask in your letters that the central government of India and state government of Orissa create instead a protected Mangrove Sanctuary and World Heritage Site.

3) Write Lewis Preston, president of the World Bank, at 1818 H Street NW, Washington, DC 20433. Ask him to more closely monitor World Bank funding to ensure that ecologically and socially destructive projects such as prawn aquaculture are not funded in the future.

4) Financial and/or in-kind contributions to MAP are urgently needed. Send your tax-deductible contribution to Mangrove Action Project, POB 1854, Port Angeles, WA 98362-0279.

— Alfredo Quarto, MAP

Turtle Night

Under a full moon, twenty four matrons rise from a sea
white with combers and start their slow, predestined haul
up the slope to dry sand, above the high tide mark.
Not as a squadron. But silently. Separately.

One minute she is not there, and then, in a receding wave,
a dark mass forms. Each wave leaves more of it
until a mountain of blackness, denser than steel,
moves slowly up the midnight beach.

For canyons of the sea where life is deep and unrecorded,
she is compelled back to this place of her birth
for one struggled maternal moment in the sand.

We urge her on, silently will her energy
to flipper that huge tonnage to a safe nesting spot.
We are caught in cathedral silence.

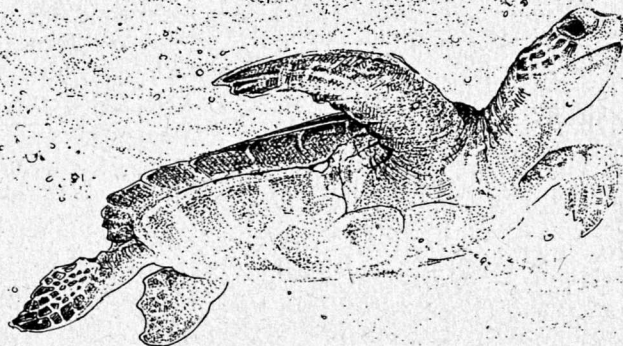
Leaving the weightless sea to pulse the cycle once again;
dragged against gravity's pull; she slips into a birthing trance.

She lays them, beneath The Southern Cross, dropping them
down the funnel into their sand chamber. Then, a barrage
of smaller eggs to blanket the clutch, to keep the sand
from drifting in, to keep the nursery clear to breathe.

Gently, then firmly, she packs the nest, and swiveling a circle,
flings deceiving sand in all directions. She is magnificent.
It's two a.m. and we've been with her.

She heads back toward the sea, relentless. Down the track
she struggled so hard to climb. She smells it now:
the salt, the wetness. A forward wave curls round
her front flippers and recedes. She sighs,
a little puff of breath. She is almost there.
The next wave and the next, and she is water-borne.
The moon paths across her shell.
She is home.

—CB Follett (Sausalito, CA)



An Interview with Susan Morse

Editor's note: This abridged dialog with wildlife habitat specialist and tracker Susan Morse is the result of our informal interviews of Susan in November 1994 and January 1995. WE is grateful to Susan Morse for sharing her work with us, and to Green Mountain Audubon Society Executive Director Bill Howland for participating in the original interview. —JD

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...And I think in this empty world there was room for me
and a mountain lion.
And I think in the world beyond, how easily we might
spare a million or two of humans
And never miss them.
Yet what a gap in the world, the missing white frost-face
of that slim yellow mountain lion!

—Elegy For A Mountain Lion
by D.H. Lawrence

Wild Earth: Susan, why don't you begin by saying something about Keeping Track.

Susan Morse: For ten years now I've been working on a project I called "Room for Me and a Mountain Lion," a title I borrowed from the poem *Elegy For A Mountain Lion*, by D.H. Lawrence. I have participated in Cougar, Bobcat, and other carnivore research projects in a number of states and provinces including Alberta, Arizona, Wyoming, and California, as well as bear habitat studies in Montana and here in New England. These experiences taught me one very important thing: a significant cause of wildlife extinction worldwide is habitat degradation and loss. In response, my colleagues and I created a new organization. Keeping Track, Inc. is a non-profit corporation organized in September of 1994. The nineteen Project Advisors include scientists, conservation educators, land use planners, and community leaders.

For northern New England communities interested in habitat monitoring programs, we offer in-depth track and sign survey workshops at Wolfrun, our outdoor research and education center in Jericho, Vermont. These workshops introduce participants to survey methodologies to be carefully and consistently utilized so that accumulated data is both credible and useful as a planning tool. To this end we recommend that town conservation and/or planning commissions administer the surveys, utilizing adult volunteers or groups who live in the region involved.

Year-to-year survey data documents:

- the presence or absence of sensitive, endangered, or other target species;
- repeated uses of specific habitats which should lead to the identification and conservation of critical habitat areas and travel corridors;

*Transcribed by Kevin Freeman, Wild Earth Intern
Photos by Susan Morse*

- positive or negative changes in the status of wildlife populations inhabiting an area, and corresponding changes in habitat size and quality;
- the need for both immediate and long-term conservation planning.

One thing unique about Keeping Track is that we make it part of our policy to put aside our differences when it comes to wildlife habitat protection. We deliberately invite the participation of all people interested in wildlands protection. A love of wildlife is a common denominator among our board as well as our volunteers, which include hunters, hikers, naturalists, scientists, educators, and community planners alike.

WE: Could you tell us about some of the carnivores that existed in pre-settlement New England forests and what is the status of each.

SM: The Wolverine and the Canada Lynx were residents of boreal forest in the Northeast, making occasional southern forays as dispersal and habitat requirements may have dictated. The Timber Wolf (or Gray Wolf) enjoyed a broader distribution throughout the Northeast wherever there was suitable prey including deer, Moose, Woodland Caribou to the north and even Elk and Bison to the south and west. By contrast, the Cougar (also called the Catamount or Eastern Panther here in the East) would have been more of a transition forest animal, living in direct association with its principal prey in this region, the

Keeping Track, Inc.

Wildlife habitat protection through field research, conservation education and planning.

Keeping Track, Inc. (RFD 1, Box 263, Jericho, VT 05465) is dedicated to:

1. Educating the public about appropriate land use planning so that the biodiversity and ecological health of public and contiguous private lands will be ensured. Local volunteers are trained in wildlife track and sign identification. Their cumulative data is then used to aid local and regional planners in making informed decisions about wildlife habitat protection.
2. Encouraging cooperation among wildlife and natural resource interest groups to help them appreciate their common priorities in reaching for long-term goals. This is achieved through presenting slide lectures, leading how-to workshops, and serving as panelists at national and regional conferences.
3. Researching habitat to identify and protect travel corridors critical for the long-term well-being of the large and wide-ranging carnivores. This entails performing wildlife track and sign surveys.

White-tailed Deer. Also here were Fisher, Pine Marten, Long and Short-tailed Weasels, Red Foxes, and Gray Foxes in the Champlain Basin and southern New England. The Eastern Coyote is a newcomer, having arrived in the Northern Forest region during the early decades of this century.

The Fisher is one of Vermont's success stories. I am exploring the Fisher literature now in preparation for field research and it's curious that the literature doesn't describe Vermont's restoration efforts of the late 1950s and 60s. As I understand it, Vermont was one of the first states to reintroduce this mustelid and really succeed. Vermont reintroduced a couple hundred Fishers in the late 50s and 60s in at least forty-one Vermont towns. It was a cooperative effort involving both state Fish and Wildlife and Forest and Parks Departments, and a direct result of collective concern about timber stand damages associated with overpopulating Porcupines. The Fisher is a marvelously efficient predator of the Porcupine. I have found sign of Fisher-Porcupine conflicts that resulted in dinner for the Fisher. Other encounters clearly showed the Porcupine's ability to escape and wait-out the predator deep within ledge crevices. Students and I have found Fisher scat full of Porcupine quills, sure proof that this carnivore is tenacious indeed, both inside and out! Despite popular belief, Fishers do not solely depend upon Porcupines. Scat analysis here in northern Vermont has revealed that Fisher primarily eat Snowshoe Hare, rodents, Ruffed Grouse, deer, carrion, squirrels, fruits, and nutmeats.

WE: Was that, then, a reintroduction effort where there was already a political constituency, with little preparation necessary to educate the populace?

SM: Yes. I'm sure there would have been some publicity about it because it was a noble effort. I believe Vermont's biologists got the Fishers from Maine. Getting them from a local source was important. The Fisher restoration project is a great success story: they're everywhere now.

Fishers are teaching us that we've been guilty of making a lot of generalizations about what this species needs in terms of habitat. The Fisher habitat descriptions of the old days describe a deep woods, primarily coniferous forest animal. This is not necessarily so. Fisher go all the way down to southern New England now, and they seem to be utilizing many different habitat types corresponding to the availability of suitable cover, a veritable smorgasbord of prey species, and the various habitats that support them. If you track a Fisher you will quickly appreciate that they cover great distances. It's always amazing to see how far a Fisher will go in a night, what they'll investigate, and how they will access different places, often quite near farms and buildings. Undoubtedly, they're getting their share of house cats on some of these forays.

Another wildlife restoration that has taken place in Vermont is the recent Pine Marten program. One hundred and fifteen live-trapped wild Martens from Maine and northern New York were released in or near wilderness areas in southern Vermont's Green Mountain National Forest. The restoration

effort spanned three years and currently state and Forest Service biologists are interpreting their track transect and remote camera data to determine if the project is a success. Biologists are optimistic. Tracks and photographs both document the presence of surviving Pine Martens. The next step will be to document successful reproduction and dispersal. The release sites would appear to be less than optimal due to the greater percentage of hardwood in the forest composition than softwood, yet the biologists involved are confident that the wilderness release sites do have sufficient structural diversity and woody debris to provide Martens with denning, security, and resting sites.

I made an interesting discovery involving some western Pine Martens last summer, in the Lee Metcalf Wilderness Area of southwestern Montana. I was up at an elevation of ten thousand feet in the talus and found a den of Pine Martens. I was shocked at first, but I've since learned that California biologist J. Grinnell observed Pine Marten utilizing talus fields in the Sierra Nevada during the 1930s. My last visit to the den involved a kind of experiment. Since I surmised that the Mar-

© Susan C. Morse



Fisher (*Martes pennanti*)

tens were preying on Pikas, which appeared to be the most abundant prey species associated with the talus, I decided to "predator-call" the Martens by imitating the Pika. I concealed myself roughly two hundred feet above the denning area and was astonished when the mother Marten accompanied by two of her kits stalked me under the talus. They became visible within twenty feet of me and I had not seen them at all beforehand. Contrary to what I had thought necessary for Marten habitat, these animals were clearly doing well in some different real estate. Though they are associated with mature and old-growth coniferous forest habitat in the West, it's clear that they can thrive for at least part of the year in the treeless, rocky terrain of the talus.

WE: Are the other mustelids [weasel family], aside from the Wolverine, which we've lost, doing okay in the East?

SM: I'm not doing any formal research on these species here in New England, but my impression from years of tracking is that they are doing well here in contrast to New Brunswick, Canada, for example. I participated in a Cougar reconnaissance effort there in the Fundy Coast Region a couple of years ago. Searching for sign of the Cougar, we snowshoed hundreds of miles yet saw River Otter and Mink sign very rarely. I was struck by the contrast between there and similar habitats here in New England. Huge sections of this beautiful province—including crown lands, which are public—were being clearcut, treated with herbicides, and often planted back to monocultures of pulp wood species. I was reminded of the work done by biologists C.F. Mason and S.L. Macdonald warning that otter populations have decreased substantially worldwide as a direct result of habitat destruction and pollution. At the top of the food web, the River Otter is vulnerable to the cumulative effects of poisons and habitat loss.

The River Otter has made a real comeback in many watersheds in Vermont and elsewhere in the Northeast. They need clean water and undisturbed watersheds. Here in mountain habitats in Vermont otters need to be able to move vertically from upper elevation Beaver ponds and streams to lower elevation riparian habitats as the seasons and food availability dictate. The proliferation of Beaver habitat here has been good for otters. I see a lot more otter sign here now than I did twenty years ago.

WE: What kind of response to Keeping Track do you expect from agencies? Will you face hostility for proposing change?

SM: I hope our program will be well received. After all, the job is certainly big enough for all of us. We will benefit from the agencies' technical expertise, while they can benefit from the data we gather. And lest anyone think our data can't stand up to scientific scrutiny, we intend to be extremely careful in our methodologies and to rely upon scientifically accepted means of both gathering and interpreting our data.

Not long ago I did a map for a track and sign survey report that was published by the town of Jericho after fifteen years of data gathering. The town was awarded an Act 200 grant to publish this information for the benefit of Jericho's Planning and Conservation Commissions. In the document I included the state's "Bear Habitat Map," which illustrates that sixty-five percent of the state of Vermont is currently either "productive" or "seasonal" bear habitat. Along with this map I included an overlay which super-imposed all public lands upon the known productive and seasonal bear habitat. These maps revealed that roughly ninety percent of Vermont's Black Bear habitat is privately owned. This is not to say that we need to take all that land away from all those people, but I think the agencies and the people need to sit down and decide what our priorities are.

WE: Have any other towns sought the help of Keeping Track? Is any citizen monitoring already under way?

SM: Yes. Keeping Track is currently working with eight Vermont towns. We are engaged in field training programs and are hopeful that within the year each of these towns will have functioning survey teams performing seasonal track and sign investigations.

WE: It might be nice if we could publish in *Wild Earth* a list of experts like yourself who would be willing to train citizen trackers.

SM: Keeping Track would be delighted to assist community groups interested in developing town-based monitoring programs. We would also welcome the opportunity to teach tracking and survey methodologies to any individuals or organizations that want to establish monitoring programs for large wildlands. I would refer folks in southern New England to Paul Rezendes (author of *Tracking and the Art of Seeing*). Paul and his wife Paulette Roy offer excellent introductory and advanced programs in tracking. In the West, Dr. James Halfpenny of Gardiner, Montana, also offers top-notch tracking workshops to private individuals as well as personnel representing government agencies.

WE: This monitoring would really tie in well with The Wildlands Project—in particular, finding where carnivores are most abundant with the aim of protecting large habitat areas and biological corridors.

Bill Howland [a biologist and geographer who accompanied *WE* staff to interview Susan]: The Vermont Monitoring Cooperative offers some potential for supporting work of this sort. It is bringing together people doing research, as well as people monitoring wild areas. It's a state initiative that comes out of the Forest, Parks, and Recreation Department. VMC has supported my research and monitoring of alpine plants on Mt. Mansfield.

SM: It's encouraging to see our various efforts directed toward protecting whole ecosystems. We need to work together now to educate ourselves and the public. People are still astonished when they learn that a pack of about a dozen Gray Wolves might require five to six hundred square miles of wild habitat, an area roughly 1/15th the size of the state of Vermont.

WE: What have been the effects of the eradication of large predators in the East; and conversely, what renewed cycles and processes might we look for after reintroduction or augmentation of native predators?

SM: In all appropriate humility, we haven't a clue. We weren't looking around when we trashed this place. We are barely inclined to look around now as pieces of recovered habitat are once again put at risk.

A lot of generalizations have been made. Take deer, for example. We thought we knew what deer winter range is and is not. It turns out there's a whole gray area in between. It depends on the severity of the winter. It depends on the does and what they learned from their mothers, and what the habitat has been able to give them. We're dealing with a number of influences and biological systems. Just how the eradication of large predators affected the status of deer, which are now over-populating much of the East, we still don't know. We're dealing

with herbivores responding to plants, plants responding to herbivores, prey responding to predators or lack thereof, and all the subtleties in between.

BH: Might the growth in Eastern Coyote numbers here mitigate against the success of the Catamount and other carnivores?

SM: That question hasn't been asked in relation to the Catamount, but it has been in relation to the Bobcat, which is a widespread resident here and would presumably be more at risk. The Bobcat is smaller, yet utilizes the same prey base and is not able to go through the thin periods by eating viburnum berries and frozen apples in the dead of winter, like I've seen Coyotes do. Nor will Bobcats typically skulk to backyard birdfeeders in the middle of the night. I have found Coyote scat way off in the bush that was full of sunflower and millet seeds, suggesting that Wiley made a trip to town. The resourcefulness of the Coyote is something to admire. This adaptability would give the Coyote a real advantage over the Bobcat, particularly in a hard winter.

Nonetheless, the Bobcat has made considerable inroads into what was historically Lynx habitat. Lynx live in boreal forests spanning the globe in a circumpolar distribution. Here in the Northeast and parts of southeastern Canada, it appears that Bobcats have expanded into that habitat partly because we eliminated Lynx. But another factor, equally important to ponder, is *how* land use practices and resulting changes in forest composition have affected these two wild felids and their respective prey species. Changes in forest composition were, and are *still* being, met with corresponding changes in species and community diversity, affecting the whole complex of ecological processes—over decades of time.

WE: Can you tell us about the history of abuses here and how wildlife was affected?

SM: In Vermont and throughout the Northern Forest region, the past two centuries have been a period of continual assault upon the natural world. Vermont's former forests were cut—repeatedly—culminating in the early decades of the 19th century when lumbering and agriculture reduced the entire state's forests to less than 25% total cover. Much of that remaining forest was restricted to the most inaccessible wetlands, steepest hillsides, and mountain summits. Market hunting, unregulated trapping, and "predator control" combined with widespread habitat destruction to cause the local extirpation of many species including wolves, Catamounts, Canada Lynx, Pine Marten, Beaver and even White-tailed Deer. It must have been a very grim period indeed if you were a Bobcat or a Black Bear. Your food and cover resources were few and far between.

To return to the subject of Bobcat expansion into what was historically Lynx habitat, I'm convinced the Bobcat's success is in part due to its relative resourcefulness, and perhaps aggressiveness, enabling it to out-compete the Lynx. The steady "reversion" of abandoned farmland throughout the first several decades of this century contributed significantly to the creation of "edge" habitat and the brushy early succession shrub and tree growth that provides the kind of habitat values ben-

official to deer (reintroduced to Vermont in 1878), grouse, rodent, and lagomorph [rabbit and hare] species. Such is the fare of the generalist predator, in this case enabling the Bobcat to perhaps persist in new territory. The peril in this success, I think, is today's combined effects of maturing forest cover which becomes less productive for deer, grouse, Snowshoe Hare and the like, coupled with northern winter conditions. Severe winters are a given up here; deep snows and deep cold greatly increase the Bobcat's energetic demands, especially challenging females and juveniles at a time when prey availability and hunting mobility is most compromised.

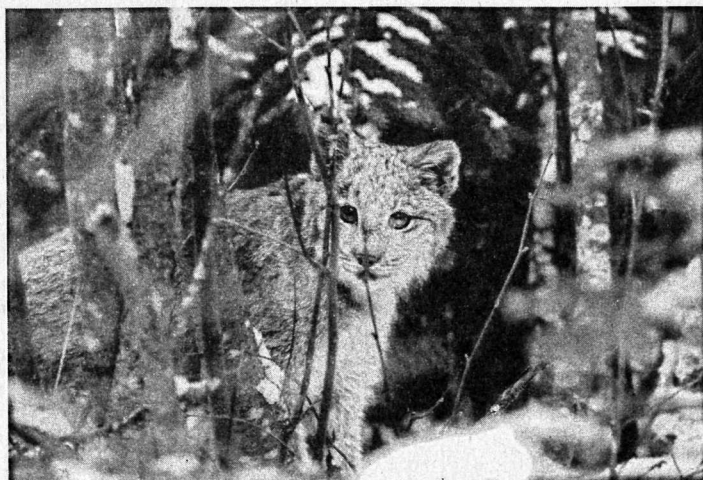
mainstays of a Cougar's diet. It's been theorized that parts of the Florida Panther's habitat are no longer sufficient for viable populations because the few remaining Panthers there have had to resort to finding other prey. Raccoons don't cut it over time, especially when they're bio-accumulating toxins in the aquatic food web.

Here in New England, historically, Cougars would have eaten everything from White-tailed Deer to Beavers, Woodchucks, Snowshoe Hare and Porcupine. Researchers in the West have found Porcupine to be fairly high on the list of foods eaten by Cougars. Cougar, and for that matter, their cousin the Bobcat, can effectively kill Porcupine if the opportunity arises.

To conclude with your question, Bill, I believe the jury is still out on the subject of inter-specific competition involving Coyote and Cougar or Bobcat respectively. Research addressing this question done in Maine during the 1980s concluded that there was no apparent competition or niche partitioning involving these species. But my own feeling is that we don't know enough about what constitutes truly good Bobcat, much less Cougar, habitat here in the Northern Forest. We know, for example, that Bobcats are where they are today partly as a function of where they *can be*—what's left, if you will. We haven't done enough on-the-ground research to appreciate what portions of current Bobcat habitat are best. Undoubtedly the Bobcat is at risk in the more northern habitats which are not wholly suitable given this cat's physiology and bioenergetics. I'm convinced that the "best" Bobcat habitat, both historically and presently, is found at lower elevations in hardwood and mixed hardwood transition forests. Here in Vermont, the hills and remote wetlands overlooking the Champlain

Basin are some of the best. Two winters ago I was doing a wildlife habitat inventory for the town of Charlotte and found such a place. Thrust fault geology and a corresponding cliffy jumble of broken topography combine with numerous habitat features and prey species to make this area Bobcat Heaven on Earth. Despite the presence of many Coyotes and fox in the vicinity, the resident Bobcats enjoyed safety in their rocky refugia while being able to successfully access Gray Squirrels in the hardwoods, cottontails, Ruffed Grouse and rodents in nearby early succession habitat, and wintering deer in the nearby yarding cover among Eastern Hemlocks and White Pine. One day I found three Bobcat kill caches—the buried remains of two Gray Squirrels and a Ruffed Grouse. I learned two important lessons from this discovery. The first is that an important quality of the best Bobcat habitat must be the availability of refugia, in this case, rocky, inaccessible security and denning cover. Such cover gives the wildcat a definite edge over wilddogs. Second, however productive these "best" areas may be, they will be no good at all to future generations of Bobcats if they are all further fragmented and isolated from the larger, more remote mountain habitats. Human intrusions and development penetrating into these still remote wooded parcels are taking the "best" away all over again.

© Susan C. Morse



Lynx (*Felis canadensis*)

The Lynx is tied to the Snowshoe Hare, and is very different from its Bobcat cousin in that regard. I think the biggest limitation for Lynx habitat here in the Northeast is land-use practices. Especially up in northern Maine and southeastern Canada—where presumably Lynx might still exist in viable populations and hence have the opportunity to disperse into New England—I think dispersal opportunities will be fewer and fewer with industrial forest practices what they are. These huge constellations of clearcuts aren't doing anybody any good.

Regarding Coyote and Catamount competition, I am reminded of a time when I held a Cougar in my arms which started to gag because of the drug we used to immobilize her. We realized it was potentially fatal for her because she couldn't expel the obstruction and was unable to breathe. I had some hemostats in my pack. We quickly used them to remove the obstruction, which turned out to be two toes of a Coyote's foot!

Biologists throughout the range of the Cougar have regularly found Coyote remains in Cougar scats. If a Coyote has nerve enough to get cornered by a Cougar, it will probably lose.

As to their effect on Cougar prey, Cougars are principally interested in a larger ungulate prey base. They have to live where there are deer—White-tails in the East. In the West, White-tail, Mule Deer, and to some degree Moose and Elk are

No one can really answer whether Bobcats prevent Lynx recovery in the Northeast. The largest threat to the Lynx, in my mind, is large-scale industrial forest practices and other developments including roads and human recreational facilities. This is true in the West as well as here in the Northeast and southeastern Canada. On both sides of the continent, we need to investigate habitat requirements, not just for the Lynx but for Wolverine, Fisher, Pine Marten, Gray Wolf, Grizzly Bear, and other carnivores. We need to begin research and planning initiatives at all levels, from local to international. Such initiatives should collectively address biodiversity issues in the only logical way—on an ecosystem basis. Habitat connectivity is key. We have it now, functioning, in the Northern Rocky Mountains and here in the Northern Forest. We should preserve it, add to it.

WE: How goes the Lynx recovery effort in the Adirondacks?

SM: I recently saw the Project Director, Dr. Ranier Brocke, at the Eastern Cougar conference, and I asked him. He was only somewhat optimistic about the prospects for the project's success. I believe he said it was "50/50." He believes that perhaps a dozen released Lynx are living wild in the Adirondacks but the "bottleneck," as he calls it, is that so few animals so widely distributed may not be successfully reproducing. Brocke has had reports of kittens being seen but he cannot regard them as credible without proof. In the meantime, there appears to be no follow-up research. Radio collar batteries have died, and there are no attempts to monitor or even detect surviving animals through track and sign surveys.

Which brings me to a point, and I said this to Ranier at the time: We might involve trained citizens in monitoring of this sort, to help projects like this.

WE: Are there any viable populations of the Lynx in the East?

SM: No, not in the states. Up in southeastern Canada there are populations. I believe we need to establish a regional working-group of interested individuals and organizations working together to discuss the Lynx and other forest carnivores. I'm a member of such a group in the West, called the Western Forest Carnivores Committee. It is a cooperative research and planning initiative addressing the population status and habitat research needs of Canada Lynx, Fisher, Wolverine and Pine Marten. The Committee brings together representatives from the US Forest Service, Fish and Wildlife Service, National Park Service, Bureau of Land Management, National Biological Survey, private resource consultants, conservation organizations, and private industry.

WE: What's the best hope of getting a viable Cougar population back in the state?

SM: My first reaction to that question is that I don't even want to spend the time or the money trying to restore the Cougar to the East until we've spent the time and money taking care of the habitat that's here now and the wildlife, both stable and endangered, which depend upon healthy habitat for their survival. To "restore" the Cougar to the East might best proceed with protecting and restoring its necessary habitat.

WE: So citizen conservationists, for whom the Catamount is a totem, a charismatic icon, might better serve the animal by worrying about habitat conservation and building a political constituency for carnivore recovery?

SM: Yes. Look at Yellowstone. For many years many of us have been saying "restore the wolf to Yellowstone." Well, the wolf is already restoring itself to Yellowstone, but now officials are going to officially restore the wolf to Yellowstone and *unprotect* the animals already there by putting them into an "experimental non-essential" category. My attitude about that is "hands off." Let government wildlife managing agencies, federal and state alike, spend our money on in-depth field-based biological inventories aimed at understanding the status of both stable and declining species. Better we should take care of existing wildlife and existing wild habitats. Better we should take care of habitat connectivity so as to prevent the loss of genetic and biological diversity necessitating future crisis management and expensive efforts at "restoration." There's a perverse fascination in our nation with the high-tech heroics of "saving" species on the brink of extinction. This is not to say that all restoration efforts are inappropriate or ill-conceived, but common sense dictates that we must begin to comprehensively address wildlife needs *before* species become endangered. Fifty years from now, if we've taken care of enough of the Northern Forest, the Cougar could make a comeback here on its own.

WE: Is it safe, then, to say that in many cases it is best to close roads and let forests grow back and not worry too much about active reintroduction?

SM: Absolutely; there's definitely a place for some reintroduction programs, but there's an urgent need for habitat protection. Citizens should support their State Fish and Wildlife Departments' land acquisition efforts, and insist that existing federal monies be allocated for large-scale land acquisition. Large habitat blocks and likely corridors connecting them must be permanently protected.

There's great opportunity here in the Northeast for some real thinking about wilderness. We need big areas with no roads, no cutting, no nothing. But at the same time, private lands can serve as vital buffers to wild areas. Private land owners should be rewarded for their good stewardship of these lands.

WE: What should concerned individuals do to help achieve these desiderata?

SM: I believe in starting right at home. Those of us here in the Northeast US should all get involved immediately in the Northern Forest lands discussion. We should be right there on the heels of the Northern Forests Lands Council's recommendations handed over to Washington this past fall. We should insist that these recommendations be strengthened to protect the entire region's wildlife and forests from further degradation and destruction. **WERF**

For further information on Keeping Track, Inc. contact Sue Morse at RFD 1 Box 263, Jericho, VT 05465.

Befriending a Central Hardwood Forest

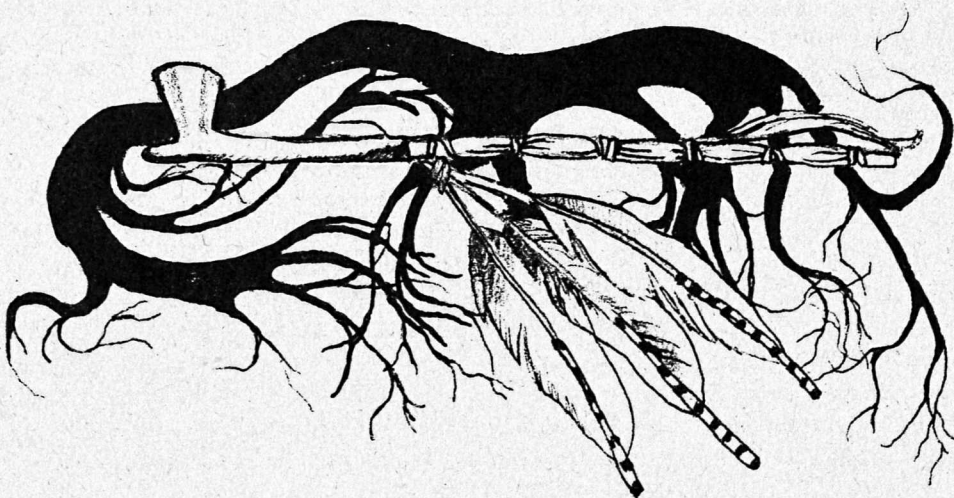
Part 1 of 4

by Sidney Collins

Since April 1991 when the Hoosier National Forest staff at Bedford, Indiana released a plan to direct the management of the 190,000-acre forest for the next decade, activists have called the plan everything from great to disastrous. The four documents, ten pounds of paperweight and bureaucratese, replaced the 1985 commodity-driven plan. Like ninety-five per cent of the other National Forest plans across the country, the 1985 plan had been legally challenged from all quarters—the environmental community and timber interests alike.

Under the rubric “ecosystem management,” this heavily fragmented public forest, patched into the farmed-out hills of the southern part of the state, is being inventoried for the health and range of its flora and fauna—in short, for biodiversity. The forest is now abuzz, not with the whine of chainsaws, but with the quiet explorations of wildlife biologists.

Yet Indiana activists remain uneasy with Hoosier Supervisor Frank Voytas’s reformation and have appealed not only the plan itself but individual management projects, particularly those that create new openings in the forest canopy. The small Hoosier is a remnant of the central hardwoods deciduous forest regenerating from cutover and denuded land. Though viewed through a new ecological lens by its professional staff, the forest is coming in for closer scrutiny by its citizen/scientist monitors as they appraise the new restoration and research projects which burble up out of the Bedford office like tadpoles in a sunlit pond. Two and a half years into the plan, what is happening out there in the woods?



You can say about the Hoosier National Forest what Gertrude Stein is reputed to have said about Los Angeles: “There is no there there,” by which the laconic Stein meant that L.A. was sprawled out all over the place, that it was diffuse and diverse, and that it was difficult to behold the heart of the city. A quick glance at a road map of L.A. belies its far-flung character. A road map impression of the Hoosier is equally misleading. On the road

illustration by Eva-Lena Rehnmark

map the forest is blocked solid green within boundaries demarcating the area where the Forest Service may purchase land. The map seems to suggest you could breach the boundary at a given point and go trekking into the heart of a forest primeval. But only about a third of the land within that area of 644,163 acres is in HNF ownership. A more telling map is a huge foldout, published by the Forest Service, of that portion of Indiana containing the forest. It goes tumbling through nine counties down the south-central part of the state like a Cubist painting rendered in ecotones of forest green. With some notable exceptions, many of those green cubes are free-floating—discrete, discontinuous—especially if you attempt to see the forest as a geographic mass characterized by ecological integrity. Like most public land units in the US, the Hoosier was composed in homage to the ninety-degree angle rather than contoured according to the natural features of the land—to watersheds, to the range of its native species and land forms.

The rational footprints of the Enlightenment are stamped all over those green cubes. Afraid that the frontier folk abroad in the Old Northwest might fall into unholy alliances with the Spanish, the British, or even the French and Indians, Thomas Jefferson in 1784 framed an ordinance that provided for the “orderly” survey and sale of lands. The big checkerboard squaring off of future states was writ small into the township system: squares measuring six miles on each side, the smaller, 640-acre squares within numbered from one to thirty-six.

Indiana historian Ralph Gray, in Volume One of *The Hoosier State*, casually mentions the “extinguishing” of Indian titles so that Jefferson’s vision of “a little community of free men meeting together to devise themselves a government” might extend and protect the solidifying nation. The HNF is the sight of four treaties made and disregarded with Native Americans, including the Shawnee, Delaware, Potawatomi, and Miami tribes.

These swift and decisive acts of appropriation by ebullient pioneers and enlightened governance have not gone unremarked. Rupert Sheldrake, English scientist and philosopher, comments on Jefferson’s grid in *The Rebirth of Nature*:

Stripped of their myths and stories, the lands sacred to the native peoples were no longer a gift of the Great Spirit to be held in common; they became real estate. The conquered territory was divided up and bought and sold as private property. In the older settled regions, such as New England, boundaries were often related to natural features; like all traditionally settled countryside, the human divisions of the land were connected to the landscape. The territory came before the map. Not so in the virgin lands of the West.

In the rationalist spirit of the Founding Fathers, government officials superimposed a kind of Cartesian graph paper on maps, dividing them into many squares of equal size, and then into squares within squares. In due course, the map became the territory. Throughout the Midwest and the West, the square boundaries of townships, properties, and fields marched on regardless of the lay of the land, unrelated to the actual features of the place.

The HNF is a legacy of grid mapping—all sharp corners, a “new symbolic landscape superimposed on the old” Sheldrake calls it, replacing the native spirit of the place with private property. As Sheldrake observes, the imposition of the grid continues, “as forests are divided up on maps and then destroyed in rectangles.”

Bioregional writer Stephanie Mills, with consummate poetry, describes ecological restoration as “making amends to the myriad creatures.” Before we can judge the acts of the Forest Service, or anyone else in the neighborhood, an effort of historical retrieval is necessary. By reaching back to discern the nature of the presettlement landscape, we may arrive at some notion of how to coax back the remnants and regenerate, with healing hands, part of a forest that grew itself in magnificent diversity for 12,000 years. How to comprehend the blocky compartments of the Hoosier? First, get a different kind of map.

Michael Homoya, a botanist and plant ecologist with the Indiana Natural Heritage Program, has designed a map of many colors to show what the state looks like underneath the arbitrary political boundaries and technojunk built onto the landscape. Natural features are the organizing principles of Homoya’s map. They include climate, soils, glacial history, topography, exposed bedrock, presettlement vegetation, present species composition, and physiography. If you want to answer the question: How did this place come to be? and you don’t mean the freeway, the shopping mall or a giant inflatable statue of a hamburger, you can get on and even under the ground with Homoya’s map. (For a copy, send \$7 to DNR Map Sales, 402 W. Washington Street, Room W160, Indianapolis, IN 46204).

The places called the Hoosier National Forest fall within two natural regions: the Shawnee Hills and the Highland Rim. Reading Homoya’s interpretation of the map, I recognize features I’ve observed on forest outings: “sandstone crops out in many places to form distinctive cliffs and rockhouses, rugged hills, upland forest types, especially dry-mesic and mesic limestone glades and barrens, karst topography, sinkholes, deeply dissected uplands underlain by siltstone, shale, and sandstone.” There is such marked difference and variety within the two regions that Homoya created two subunits for the Shawnee Hills—the Crawford Upland and Escarpment sections. The Highland Rim has three subunits but only the first two—the Mitchell Karst Plain and the Brown County Hills—overlay the Hoosier.

Accustomed as we are to speeding across the landscape on the arteries built to accommodate our transportation technologies, i.e., cars, trucks, and trains, Homoya’s map grounds us in geological time, evolutionary time and ecological time. It also encourages an expanded sense of landscape where it becomes possible to claim a stake in our home geography. For instance, I am native to Section Eight on the map, the Southern Bottomlands Natural Region skirting the Ohio River. Born on the flood plain, comfortable among the bleached, rawboned limbs of sycamore trees and the whispering heart-shaped leaves of cottonwoods, I relish a way of perceiving that impels the

built landscape, both commercial and domestic, to come unmoored and float out of the range of my attention, at least for awhile.

Homoya's map is a learning tool that highlights the distinctiveness of each region. Using the accompanying article as a guide, you can understand and savor the uniqueness of the forest. Homoya even describes the native grasses and wildflowers you can expect to find blooming in each region.

How else to reconnect with the forest? Anyone naive enough to think, as I once did, that there is a wilderness howling from the Brown County Hills down to the Buzzard's Roost bluffs looming over the Ohio may be quickly disabused of the notion by reading a small book commissioned by the Forest Service, *Looking At History: Indiana's Hoosier National Forest Region, 1600 to 1950*. I had been straining to imagine all the prehistoric humans who moved about what is now southern Indiana, and the native Americans inhabiting the forest when the frontier began to shove north across the Ohio River from Kentucky—La Belle Riviere the French named it. Reading their history, my picture of the pristine is suddenly peopled by over three hundred and thirty known historic archaeological sites and structures on Hoosier NF lands. The Charles C. Deam Wilderness, a place where many of those green cubes merge into a 12,953-acre contiguous forest area, at one time contained over eighty houses and farms.

I found Cheryl Munson, archaeologist and co-author (with Ellen Sieber) of *Looking At History*, in an old sandstone building on the Indiana University campus. To recapture a sense of how human habitation affected the forest before the white settlers came, I asked the archaeologist to take me on a time trip into the past. I had to confess, as I looked at the precise pencil drawings of Ohio River Valley dig sites tacked up around Munson's large workroom, that Hollywood Indians ripped around on painted ponies inside my head. Munson laughed and said that her work involves wiping cultural residue from the movies off people's mental screens. She then delivered the archaeological news about the Hoosier: the evidence of the effects on the landscape of the historic tribes, that is, the groups who acquired horses from the Europeans and who appear in written records, was almost nil because these Indians were not in the HNF long. Remember, we're talking just about HNF territory and not the rest of Indiana—Tecumseh, the Prophet, and

all of that clash and battle up north.

As Munson explains in her book, by the time the first European traders and explorers arrived in the region in the late seventeenth century, the original native inhabitants had been bumped by displaced tribes retreating westward from European colonies on the Atlantic seaboard and inward. "This is also the case elsewhere," Munson says, "because of the impacts of warfare and introduced diseases during the early period of Native American and European contact."

So historic Indian presence in the forest was transitory. Where maps and records show Indian villages, distinguishing them from early European American sites is difficult because the natives rapidly shucked off their own domestic technologies for the lure of trade goods and log cabins.

"Scant documentation suggests that their presence spanned decades, not centuries," Munson writes, "and was marked by nearly constant movement and adjustment between groups and territories. Given these circumstances, it is not surprising that direct evidence for the early historic Native Americans in south central Indiana is still elusive."

What of the tribes before written records were kept? The Miami and the Piankeshaw were present in southern Indiana before the arrival of European settlers, and the Shawnee may have passed through what is now the Hoosier National Forest. These tribes were not tethered to towns, but their wanderings over the landscape were not just casually nomadic. Movement was purposeful and seasonal, designed to get the living offered by their environment.

With recent history of Indian inhabitation so sketchy, perhaps it makes sense to cast a prehistoric net back into the Hoosier hills. I feel a shiver, from Munson's evocation of the cooler post-glacial environment of the paleo-Indians, present on the archaeological time chart up to 8000 B.C. "If we picture them right in following herd animals," she says, "or gregarious herbivores...I don't want you to picture cows... there would certainly be elk and possibly some remnant bison of Pleistocene persuasion. Possibly mastodon and mammoth. But those animals would not be up in the hill country of the forest. They would be in the flatter grasslands. Paleo-Indians were probably few and far between on the forest." However, paleo-Indians did retool their spearpoints at outcrops along the Ohio River where they found high-quality flint or chert.



People from the early Archaic Tradition, 8000 B.C. to 1000 B.C., in contrast, left their implements strewn at camp sites all over the place—up and down the hill country. It was an economy of gleaners, and the population density, says Munson, was low. The effect on the natural environment of so few people skimming the bounty of the land was negligible.

Around 3000 B.C.—the late Archaic—people began a gradual transition to a more settled lifeway, establishing semi-permanent base stations from which they made seasonal excursions to gather foods. Archaeologists know this from solid evidence: discarded freshwater mussel shells, not just on the major rivers but back up in the smaller valleys. Munson has also found camp sites “littered” with anvil and hammer stones and dense deposits of charcoal composed primarily of burned hickory nut shells. Archaeologists call these piles of shells or hulls—the detritus of food gathering—middens.

Munson describes how our Archaic forebears put food by, an innovation more basic than State Fair blue-ribbon canning that packed fat and carbohydrates for the coming winter. The archaeologist: “It’s very hard to make wages, if you just pick up hickory nuts and crack them. But if you crack a mass of them with big wooden mortars and pestles, the nutmeats can be extracted from the broken shells by boiling. The shells sink because they are dense. The nutmeats are very fatty, float to the top and can be skimmed off. So Late Archaic people weren’t just simply doing this to feed themselves overnight before they moved on. They were producing hickory nut meat and oil in quantity to store, and probably to be transported to their winter settlement, by dugout canoe, I believe.”

Munson’s husband, Patrick, also an archaeologist at Indiana University, has speculated that later Archaic people may have practiced a kind of silviculture, the woodland craft of producing products from trees. The race for hickory nuts in the fall is between humans and squirrels. Possibly, Archaic people here cut down all but the hickory trees in some areas to create a food-bearing grove, isolating them enough to create a risky route for nut-loving squirrels, thus deterring hoarding by the furry little mammals.

Would we call this managing the forest? “They were affecting the landscape,” Munson says, “in order to make efficient use of the natural products. The data for this comes from the Hoosier National Forest, around Patoka Lake

and Lake Monroe.” I’ve gone nutting after hickory tree bounty myself in the autumn woods. Next time out, ghosts of the ancestors will be with me, along with the squirrels, who handily survived the pioneering “management” of the Archaic people.

Curiously, the next archaeological period—the Woodland Tradition, 1000 B.C. to A.D. 900—is not so well known. In the Hoosier National Forest area the population moved down out of the hill country into the major river valleys. The people became gardeners and by the late Woodland period were cultivating corn in the rich bottomlands along the major rivers but not in the hill country. The natives had showed better sense about cropping maize than the pioneers, who cleared the steep hillsides and planted in thin soils—to the ruination of the forest.

Munson refers to the Mississippian Tradition, A.D. 900 to A.D. 1600, as late prehistoric. There were a few settlements in the smaller stream valleys that run through the forest—including an unusual stockaded village at Pioneer Mother’s Forest, the 88-acre remnant patch on the Hoosier that approximates virgin forest. By A.D. 1300 these Native American people were growing maize and living in fortified villages. Some tracts of land near the village would have been cleared to create fields and to supply wood for dwellings, defensive walls, and fires. So the most intensive use of the hill country seems to have been in the late Archaic when people were making seasonal forays.

On balance, it does not seem that the legacy of Native American inhabitation in southern Indiana is large-scale deforestation or that all those shell and burned hickory nut middens will be spilling toxic leachate down through the generations. With a gracious reminder to credit Patrick Munson for noodling out early food harvesting and processing techniques, Cheryl Munson sends me outside the sandstone enclave to walk, or rather to bicycle, on pavement, among the shades of Indian nations. I’m in a place where nature ordains broadleaved trees. And that’s a far-flung place.

Sidney Collins (323 N. Hillsdale Dr., Bloomington, IN 47408) recently earned a masters degree at Indiana University to celebrate turning 50. She was present at the creation of Heartwood and serves on the Protect Our Woods board. She has two grown kids, and credits her treehugging to her own mother.



It's Not Either/Or; It's All Or Nothing

by Andy Kerr

*No one approach
to conserve and
restore biological
diversity will work
exclusively. It's
not either/or; it's
all or nothing.*

IT HAS BEEN NOTED that the problem with environmentalists "inside the Beltway" is they are inside the Beltway. Although this is very true, it is equally true that the problem with environmentalists outside the Beltway is they are outside the Beltway.

You can often tell where one stands by where one sits. An environmentalist who serves in the capacity of Washington, DC lobbyist doing daily battle with the national (and international) forces of darkness will inevitably have an entirely different perspective on the best courses of action from that of a grassroots activist doing daily trench warfare with the local Forest Service district ranger.

Part of the conflict stems from the great gap between ecological reality and political reality. Unfortunately, in the near term, both are equally real. Although ecological reality is constant while political reality can (and must) be changed, recognition of political reality is generally necessary in order to change it. (In some cases, however, ignoring political reality can be helpful: "We did it because we were too stupid to know we couldn't.") Even though a prime objective of conservationists is the protection and restoration of biological diversity, we do not tolerate political diversity particularly well.

Much of the stress between "nationals" and "grassroots" boils down to money and strategy. The former is a topic in and of itself and cannot be further addressed here. Suffice it to say that either having or lacking money can make people and organizations very weird.

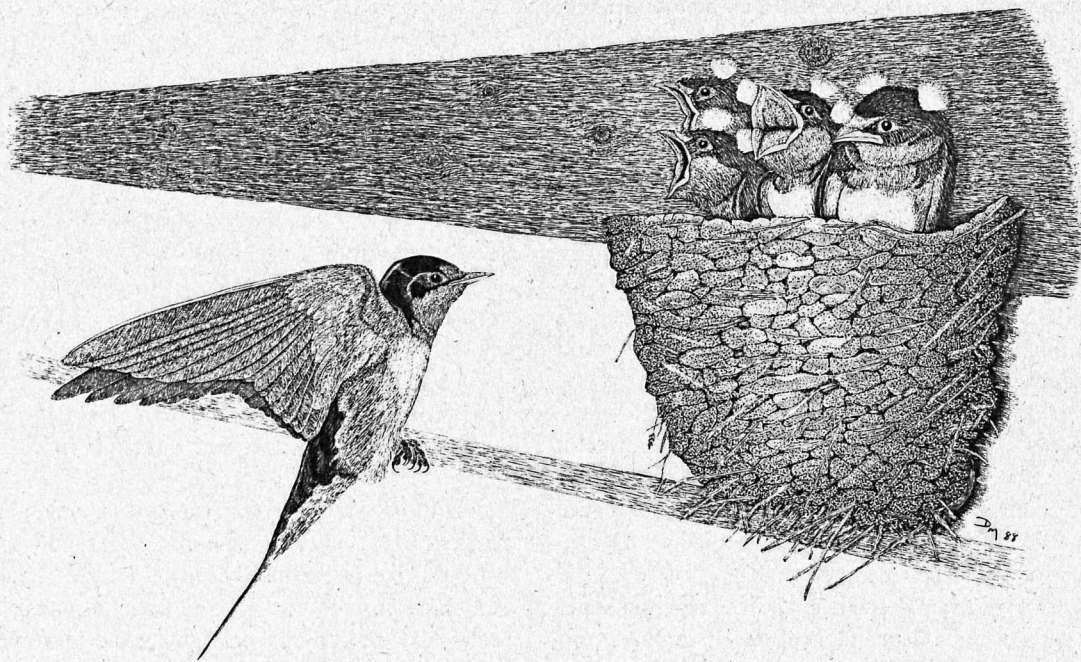
Regarding strategy, we certainly have diverse backgrounds, beliefs, and views that often cause heavy friction. We are all prejudiced by our own experiences. We can't do much about that except to realize and tolerate it and each endeavor to accumulate many diverse experiences. It also helps to recognize the three relatively distinct ideologies that make up the environmental movement and that translate into different strategies to save the Earth. The following may be useful in understanding these ideologies and placing your environmental colleagues (and yourself) in this context.

The environmental movement is made up of *radicals*, *idealists*, and *realists*.^{*} Let's briefly examine each type:

Radicals seek fundamental change of the system. They believe environmental goals cannot be realized without deep socio-economic-political changes, and thus tend to be anti-corporate. Winning individual short-term battles is less important to them than changing the world in the long term. Many feel that the ends justify the means. The best radicals suppress emotion to implement their strategy.

Idealists are usually altruistic. They view the world from a very moral and/or ethical perspective, with individual responsibility and example paramount. They are emotionally involved and believe the ends never justify the means.

^{*} I am greatly indebted to Ronald A. Duchin, senior vice president of Mongoven, Biscoe & Duchin, Inc., a research and analysis firm in Washington, DC. His remarks on "Social Activism in the '90s" at the National Cattlemen's Association convention in Dallas in 1991 were most instructive and illuminating. Excerpts were reprinted in the *CATTLE FEEDER*. A lobbyist for the forces of darkness, Mr. Duchin is an astute observer of the environmental movement. His article was invaluable in articulating my thoughts on this matter. Never forget: *read the enemy literature*. His article is an excellent treatise on how to divide and conquer public interest movements. Copies may be obtained from ONRC.



Realists view the world as a poker game—the cards are dealt and you do the best you can with your hand. Their actions focus on the short term. Although they believe the ends can often justify the means, they prefer to work within the system. They can live with trade-offs and do not seek radical change, if for no other reason than they see it as unobtainable.

Some examples may help to clarify these categories. Earth First! was founded by radicals and is now dominated by idealists. The Sierra Club has a membership of idealists and a staff of realists. Greenpeace is idealistic with some radical tendencies but not to the extent of the Sea Shepherd Society.

To stretch the “boat-rocking” analogy, realists want to help steer the boat, however small the change of course; idealists would rather the boat not move at all if it doesn’t turn far enough in the right direction; and radicals would just as soon capsize the boat.

Oregon Natural Resources Council (ONRC), confounding friends and enemies alike, has found that it can be most effective by being pragmatic, which for us is usually being idealistic, with increasing forays into the radical and sometimes into the realistic camps.

Take public land logging as an example. Earth First! works to end logging by performing civil disobedience. Greenpeace appeals to our sense of the “right thing to do.” The Wilderness Society fights logging one timber sale at a time. Who’s right and who’s wrong? They all are both. No one approach to conserve and restore biological diversity will work exclusively. It’s not either/or; it’s all or nothing.

Many staff members of national environmental groups are angry, ineffective, ignorant, or inefficient in dealing with representatives of the grassroots. The opposite is equally true. (I’m using “grassroots” to mean activists outside the Beltway and not on the staff of a national environmental group, though the term is now so loaded with multiple meanings as to be almost meaningless [and worthy of an article unto itself].)

Realists and radicals need to understand and use the ex-

isting ideological diversity to their own, and therefore the movement’s, advantage. (Idealists are a slightly different matter, because they view the world in a way that makes toleration of differing views problematic.) Both realists who adhere to Tip O’Neil’s philosophy and radicals who follow Saul Alinsky should have no problem being tolerant because it advances their cause.

Below are eight suggestions for grassroots activists and national environmental staff on how to use each other to everyone’s (and most important, the environment’s) advantage:

1. Assume each other’s integrity.

GRASSROOTS: Just because they choose to work in an inhuman habitat doesn’t mean that DC environmental lobbyists are inhuman. Whether or not they love or hate it (or some of each), it’s where they’ve personally decided they can be most effective for the environment. While the strategies they’ve chosen may vary greatly from yours, you might find that your goals are very similar if you both got down and drunk.

NATIONALS: Many grassroots activists began when they started seeing clearcuts in their backyards. While they’re trying to save the world, or at least their part of it, most detest “politics” and see themselves as sullied for having to participate in it. Remember, you were once as politically pure.

2. Acknowledge each other’s reality.

GRASSROOTS: DC is the world of the realistic. Politics is the art of the possible. Essentially every environmental group with a serious presence in DC is of the “realistic” camp. Yes, Greenpeace (idealistic) has a big office there, but they don’t have much impact directly lobbying Congress or the Administration. Don’t expect a “realistic” group to do something “radical.”

NATIONALS: When you are inside the Beltway, it’s easy to get caught up in policy and lose sight of the ecological damage occurring daily. What is a major gain in Washington, DC may result in little improvement on the ground. Don’t expect a grassroots activist to be overjoyed that you beat back an attempt to increase the Forest Service road budget. And remem-

ber that it's often those who ignore political reality who succeed in changing it.

3. Agree to disagree.

GRASSROOTS AND NATIONALS: The realistic, idealistic, and radical wings of the environmental movement don't have the luxury of being ideological enemies. The Earth has real enemies that we must fight together. This requires tolerance on all sides. We need to stop considering it a personal affront when other groups pursue strategies different from our own.

4. Trade places.

GRASSROOTS: DC is not the ecological center of the world, but it is the *political* center of the world, upon which the ecological world lives or dies. That may not be right or good but, for the time being, it's a fact. If you don't like what is going on in DC, go there yourself. You'll get a better appreciation of the living hell it is for national environmental defenders; and DC environmental lobbyists will get a better understanding of the environment *you* are particularly interested in saving and what a living hell it is "out there." People always fight harder and more effectively for something they know. Help them get to know you and your part of the Earth.

NATIONALS: Go out into the field. Do it on your own time if you can't do it on company time. See the problems first hand. You will fight better and stronger for the places you know. You'll get a better appreciation of the living hell it is for grassroots environmental defenders. You'll develop a relationship with your grassroots counterparts that you couldn't in DC. Inviting local activists to DC and making resources available for them is perhaps the single best way to educate grassroots activists on the political reality's you face daily.

5. Use each other's power.

GRASSROOTS: Although one can never be powerful enough in Washington, DC, the national environmental groups have more power than you do. As long as DC decisions can affect ecological realities on your ground, realists believe someone has to play that game. DC lobbyists want to help if they possibly can, but sometimes political reality makes that impossible. Don't take it personally or get mad at the DC lobbyist who tells you the system won't help. Change the system, so it can help. But don't try to change the system by changing national environmental groups directly. Instead, change the political reality that makes the national groups behave the way they do. Don't just tell them they are wrong; prove them wrong. In the meantime, use their power. It is the big nationals who can deliver the votes when your bill gets to the floor, or can help kill a bad bill. They have the contacts with national media, with politicians and their staffs. They have access. And, if approached properly, they are willing to help you, if they can.

NATIONALS: Recognize and appreciate the grassroots "bad cops" to your "good cop" routine. Don't feel threatened by grassroots positions that go beyond what your group is able to advocate. Remember that the presence of a strong, vibrant grassroots movement makes your job easier by changing political reality and shifting the "middle" of the debate. The stronger the demands of

the grassroots, the farther your organization can go as well, while still appearing "reasonable."

6. Use each other's knowledge and resources.

GRASSROOTS: Would you visit a foreign country and not seek advice from the natives? If you feel it's important enough to be in DC, you ought to seek advice from the locals. They know the political landscape, and you need to know your enemy to beat your enemy. Washington, DC groups, for the most part, like to have visitors from outside the Beltway. They appreciate the help and, in return, can usually provide a place to work and some free copies, free long-distance calls, etc.

NATIONALS: Grassroots know the issues and have the passion. Help them have an impact in Washington, DC by using this passion to lobby Congress or the White House. Helping a grassroots activist get a meeting can be more effective than meeting the politician yourself—to the politicians they are folks from home, not just more lobbyists. And they can be better than most interns, even if you can't fire them!

7. Use your charm more than the power of your lungs and/or position.

GRASSROOTS: As that great environmentalist Che Guevarra said, "You can get more with a kind word and a gun, than just a kind word." But grassroots activists don't usually have a gun that works on national environmental groups. Grassroots don't control the nationals' budgets, their boards of directors, or the political environment in which they work. Hardly anyone likes to be yelled at, and DC lobbyists are as human as anyone else. Don't tempt them to conclude that there are plenty of other, equally important issues to work on that don't involve such unpleasantness.

NATIONALS: Never abuse your position and knowledge to thwart a grassroots activist. Remember, you're working for the same thing. Recognize that while you have more power within the system, only they can create the power to ultimately change the system. Encourage local and regional activists to be as strong and uncompromising as they can and let them know that even if your organization doesn't sign on to their proposals, you're glad their proposals exist.

8. Focus on the real fight.

GRASSROOTS AND NATIONALS: As that great environmentalist (and even greater realist) Winston Churchill said, "The only thing worse than fighting with your allies is fighting without them."

Andy Kerr is Executive Director of the Oregon Natural Resources Council (Yeon Building, Suite 1050, 522 SW Fifth Avenue, Portland, OR 97204). In his 18 years with ONRC, he has often spent one week in four in Washington, DC (enough to justify being bicellular, with phone numbers in Portland and the nation's capital), giving him a unique perspective on the environmental movement, and not simply from 39,000 feet over Iowa. He is part of a death pact against ever moving inside the Beltway.

Economics for the Community of Life

a challenge to the New Conservation Movement

1st of 2 parts
by Chris van Daalen

IN THE GLOBAL FEVER-PITCH RACE of economic growth, people and places are exploited as raw materials to serve the bottom line of corporations and their stockholders. To reverse the spiraling decline of ecological and human communities, we must confront and overturn a basic assumption of economics: that land, labor, and capital are no more than interchangeable "factors of production."

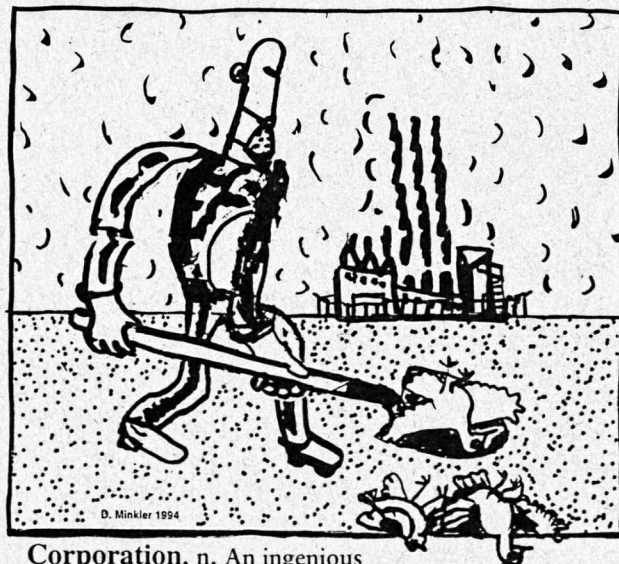
We must ask the key question "Whom should the economy serve?" and insist upon the only survivable answer. Economic activity *must serve communities*, both ecological and human.

How can we bring about such an inversion? Ecological communities cannot speak for themselves. Similarly, the best interests of human communities are overwhelmed by the corporate power entrenched in every corner of society. We cannot hope to win outright an international debate on this economic question, since our adversaries largely control the media. The function of economics will be reversed only when community advocates *work together* to craft a new economic model and to organize it into being, economy by economy, independent of corporate power.

Confronting the economic status quo begins with democracy and entrepreneurship. The movement has already begun.

The New Conservation Movement should take a position on the leading edge of this effort to shape a new economic vision. An alternative economic vision should be central to our ecological vision. Applying the economic vision to specific places should run parallel with the design of new Wildlands proposals.

This article will not address theories of what that economic vision might be. Alternative theories have been explored at length by many authors (see suggested reading list below) and will be discussed in future *WE* articles. Rather, I will use this space to consider an integrated political and economic strategy to overturn the prevailing profit-driven economic paradigm.



Corporation, n. An ingenious device for obtaining individual profit without individual responsibility.

Ambrose Bierce 1842-1914

SELF-GOVERNANCE OR CORPORATE RULE?

Richard Grossman, environmental and social justice activist, says "we have ceded to large corporations the right to govern. Our communities, and nature, have limited standing within such governments. We can't even aspire appropriately or think logically under corporate rule." In the global corporate vision embodied by NAFTA and GATT, ever-growing wealth is contingent upon reducing rights of self-governance. If people are precluded from organizing democratically to protect even their own human communities, how will the interests of species or wild places ever be heard?

Reclaiming our democracy is essential if we hope to transform the economy so that it serves natural and human communities rather than corporations. Our alternative economic vision must be integrated with a new vision of democratic practice.

"Democracy" has been captured and warped by the powerful to serve themselves. The integrity of the word has been corrupted. Today people are encouraged to leave decisions to politicians. We are persuaded that the Market will steer us right.

We must reclaim the term "democracy," as well as the practice—government of communities, by communities, for communities. To reverse the interdependent trends of corporate growth and lost sovereignty, people of all backgrounds must take the initiative to reclaim democracy. This cannot be done by executive order. Democracy must be recaptured from below.

Communities must demand that companies and governments be subject to the sovereignty of the people. The people, in demanding and accepting this sovereignty, must

in turn consider and represent the rights of future generations of all species.

The human residents of the United States and Canada have lost their sense of citizenship, and the responsibility that comes with it. People are dissuaded from engaging in politics as "the powers that be" use the media to discourage and sedate them. Moreover, they are reluctant to participate because they see politics as *never-ending adversarial debates resulting in lose-lose compromise outcomes*. This is more than a perception, of course. The failure is built into the process.

The nature of every political debate is shaped by the way our democracy was defined in the U.S. Constitution. Rather than designing a political system in which people were meant to see through their differences to discover the public good, as Thomas Jefferson argued it should be, the Federalists (led by Alexander Hamilton) persuaded the Constitutional Convention that politics should weigh individuals' private interests, or their "vices," against one another until a countervailing balance of those interests emerged. The important democratic mechanism of a "balance of powers," which is appropriately applied to prevent the excesses of the different branches of government, was mistakenly applied to all individuals and interest groups in society. This set the stage for the present day political gridlock, dominated by dilemmas like "jobs vs. owls."

Challenging this definition of our democratic process is essential if we want to revitalize public politics for the sake of the Earth. A new view of the process would guide citizens to see beyond their private interests, and to seek their common interests. Politics of cooperation and participation, rather than politics of compromise and alienation, would not only help break the gridlock of purely adversarial debates, but would serve to build community and a respect for diversity.

The Federalist idea of balanced vices has locked both our political process and our economy into a purely competitive mode. In contrast, a cooperative political model is a framework for shaping an economy that can be held accountable to individuals, communities, and wild beings and places.

An approach to community economic development integrating social and environmental objectives may best be pursued by creating *new* community-based processes rather than trying to capture or pressure existing political institutions; such institutions are immersed in traditional adversarial policy-making. A community coalition can identify a common agenda and then build the political constituency needed to sway public policy.

PLACE-CENTERED ECONOMICS AND DEMOCRATIC PRACTICE

The basic challenge of building a functioning economy that serves communities rather than corporations is to foster "reinhaboritory" or place-centered local economies and to create a political climate that helps to implement them. Daniel Kemmis, Mayor of Missoula, Montana, in his book *Community and the Politics of Place* stresses import substitution.

Import substitution is "replacing goods that were once imported with goods that are produced by the economy in question...[which] depends upon a working understanding of what the place can feasibly produce which, at the same time, many of the residents want or



need." Import substitution means local businesses are supported, jobs are created, and money remains in the local economy, rather than being captured and removed by large companies owned by national or global stockholders.

In Missoula, the strategy was effective in resolving a long-standing environmental dispute: the effects of home wood-burning on local air quality (Missoula suffers from air inversions, like Los Angeles). With the local abundance of trees as a source of heating fuel, federal Clean Air Act restrictions on wood-burning seemed to local residents a ridiculous intrusion on their personal freedom, which would require them to import oil to heat their homes. Leaders sought to respond in a way that would enhance local autonomy and solve the air pollution problem. The solution was to help people switch to clean-burning, pellet-fed wood stoves. This solution created a variety of benefits. Local manufacturers of pellet-fed wood stoves received an immense boost in sales, and local sawmill operators realized an opportunity to turn their sawdust waste (which had always been a liability) into profits, by installing a cooperatively owned pellet plant using sawdust as the source material. Missoulians had discovered a solution "at the intersection of hardship and opportunity."

Another key strategy, which goes hand-in-hand with import substitution, is value-added manufacturing—creating the greatest possible value (in terms of jobs, businesses, and profits) from a limited quantity of raw material. In the Northwest, that material is wood; and a region-wide effort is under way to foster value-added manufacturing among small, locally owned wood products manufacturers. WoodNet, a cooperative network of small manufacturers on the Olympic Peninsula, is a particularly successful part of that effort. By creating finished products rather than shipping out raw logs, many wood products that residents once purchased from outside the local area are produced and purchased locally. Wood, trees, and forests are conserved. In addition, these high-quality products are being sold to customers around the world, bringing added income to the local economy. Hal Fossum of the Northwest Policy Center says, "Value added strategies offer high ground in a sea of tense relations, conflicting priorities, and cross purposes that have divided the development priorities of communities and natural resource dependent enterprises" (175).

REMOVING THE LINES THAT DIVIDE US

In a community forum, whether a planning process, court case, or public hearing, the public interest must be held at the center of consideration, and people must actually hear each other. How ironic that in a modern "public hearing" neither is accomplished, because each side is encouraged to emphatically state its own case, based on individual private interest, to a third-party arbitrator. Ev-

eryone talks, no one hears, and the public is left out; private interest dominates, and someone else decides.

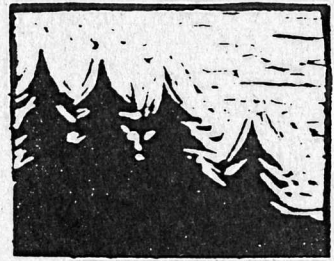
Instead, people sitting around a table should be made to feel that *they* are responsible for making a decision, that they are responsible to each other and to the community as a whole. Accordingly, the roles of public officials should be redefined to emphasize facilitation rather than arbitration.

New ideas about political process can be brought in at many levels, from individual households to the White House. They will gain serious impetus when they emerge from many local communities simultaneously, and when those communities seek to redefine the political boundaries drawn across the landscape.

Changing the way boundaries are drawn would serve many positive ends. Replacing arbitrary political boundaries with natural boundaries that define bioregions would deeply alter the way people and communities think about the places in which they live. Kemmis explains: "As the challenge of inhabitation makes itself felt in the political sphere, it becomes clear that this drawing of lines should not, perhaps, be left entirely to human choice. Too often, the lines cut across natural units of inhabitation, leaving inhabitants cut off from each other in terms of their capacity to act together politically—to will a common world."

On a large scale, success in rejecting political boundaries (like national ones) may seem less likely than a Constitutional Amendment to revamp politics. But locally, at a watershed level, it is already happening. In the Mattole River Watershed which surrounds Petrolia, California, the Mattole Restoration Council has been developing cooperative management plans that bring private landowners—some loggers and ranchers, some ecologists—together with county, state, and federal land managers. They are working together to bring back decimated salmon runs.

Especially in rural areas, I believe the greatest potential for instilling a land ethic and developing the stewardship practices appropriate to a given place exists in cooperative efforts to revitalize local economies. A move toward inclusive, cooperative politics and economic planning would begin a process of mutual education: workers and businesspeople would learn about ecology, and environmentalists would learn about economics and the needs of dislocated families. I believe that groups of all interests would welcome a chance to educate potential adversaries about their values and the imperatives they face.



THE ECONOMIC DEMOCRACY MOVEMENT

What are the chances of creating a political economic climate based on cooperation rather than compromise, that considers natural boundaries before political ones, and holds the rights of future generations of all species as a core value? The change has already begun. Around the world, an array of dedicated academics, activists, and local citizens are fighting to reverse the cycle of economic, political, and ecological disempowerment that has accompanied the growth of the industrial economy.

In their book, *Rural Environmental Planning for Sustainable Communities*, Frederic Sargent and co-authors outline four central values on which such a rural development planning strategy is based (5):

1. *Rural people place a high value on self-reliance and self-determination...*
2. *Rural people value cooperation as a guide to problem-solving...*
3. *Long-term sustainability of a rural environment is achieved when citizens guide economic development according to the "physical carrying capacities" of the ecosystem...*
4. *Increasing the self-reliance of citizens in rural communities can be the basis for sustainability...*

These values are being applied in the work of many community economic development groups, in rural communities across the continent. Forest Trust, based in New Mexico, every year publishes a "Directory of Forest-Based Rural Development Practitioners" to draw attention to the many efforts ongoing in the United States. Forest Trust operates the Mora Forestry Center, which "markets erosion control, restoration... and provides on-the-job training to rural residents." Their value-added wood products brokerage "has provided access to wider markets for small, predominantly Hispanic manufacturers." This fosters local self-reliance and sustainability, while showing that restoration can provide more jobs than destruction.

Their directory outlines the efforts of many groups; I'll mention just a few. The Newton County Resource Council in Jasper, Arkansas "seeks to improve county residents' quality of life while preserving and enhancing the local culture" by working to "develop viable, value-added products that will utilize local resources...without damaging the environment and the related tourist industry." The Vermont Natural Resources Council seeks to "promote a sustainable forest economy while ensuring healthy and stable communities" by bringing together "disparate interests to develop strategies for the protection of forest resources and to enhance the local timber economy through incentives and development loans" (35). Oregon's Rural Development Initiatives (RDI) is a statewide nonprofit organization working in over 70 rural resource-dependent communities. They strive to empower each community by providing access to resources such as government grants, technical assistance, and training programs designed to build leadership skills. In a conservative state embroiled in a bitter environmental/economic struggle, RDI has been able to implement very

progressive political practices because they focus on creating self-reliance and inclusive democracy—positive American ideals that rural people hold dear. While they craft their language regarding environmental issues with a keen sensitivity to local politics, they have actively involved environmentalists in the democratic planning process.

CONCLUSION

The beauty of building an ecological economy from the bottom up is that individual failures—the unraveling of a local coalition, for instance—do not doom the whole effort. With hundreds and later thousands of communities working to implement economic democracy around the world, the risk is dispersed, and the potential for collective success is increased. The odds improve because cooperative politics and economics are synergistic.

To make the economy serve Community, human communities must look to natural communities for new models. Earth offers this lesson, among others: When evolution discovers a new symbiotic relationship, say between plants and mycorrhizal fungi, each organism's success is enhanced. Economic democracy can work this way, too. Watershed restoration creates jobs and transforms people's awareness.

New economic models are being devised. Leaders and entrepreneurs need input from the New Conservation Movement. They need lessons from conservation biology. Human communities need the inspiration of The Wildlands Project. Many in the economic democracy movement are reaching out to us. I challenge you: Get involved in your local economy. Make your economy serve the Earth community.

Suggested Reading List (references are noted with *)

- Berry, Wendell. *Home Economics*. Berkeley: North Point Press, 1987.
- *Brewer, Kathryn. *Forest Based Rural Development Practitioners: Directory 1993*. Santa Fe: Forest Trust, 1993.
- Costanza, Robert, et al. *Ecological Economics: The Science and Management of Sustainability*. Boulder: Colorado University Press, 1992.
- Daly, Herman E. and John B. Cobb, Jr. *For the Common Good: Redirecting the Economy Toward Community, the Environment, and a Sustainable Future*. Boston: Beacon Press, 1989.
- *Fossum, Harold L. *Communities in the Lead: The Northwest Rural Development Sourcebook*. Seattle: Northwest Policy Center, 1993.
- *Grossman, Richard. "Comments on Rethinking Corporate Accountability." Unpublished: 1994.
- Henderson, Hazel. *Paradigms in Progress: Life Beyond Economics*. Indianapolis: Knowledge Systems, 1991.
- Hawkins, Paul. *The Ecology of Commerce*. New York: Harper Collins, 1994.
- *Kemmis, Daniel. *Community and the Politics of Place*. Norman, OK: University of Oklahoma Press, 1990.
- Ross, David P. and Peter J. Usher. *From the Roots Up: Economic Development as if Community Mattered*. Croton-on-Hudson, NY: Bootstrap Press, 1986.
- *Sargent, Frederic O. and Paul Lusk, Jose Rivera, and Maria Varela. *Rural Environmental Planning for Sustainable Communities*. Washington, DC: Island Press, 1991.

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Species Requiem Day

A Proposal

Environmentalists have only a few special days on any official calendar to celebrate: Earth Day, Arbor Day, and in California, John Muir Day, and in Pennsylvania, Rachel Carson Day. (Solstices, equinoxes and such may be recognized by many environmentalists, but have yet to achieve any official status.) There are local observances of All-Species Day around October 30 of each year, recently picked up by the National Audubon Society as an annual event.

Given the loss of biodiversity, I contend that environmentalists have more to be sorrowful for than to celebrate. In fact, it may be as important psychologically to observe and commemorate tragedy as it is to celebrate joyous occasions: witness the renewed attention in the press in recent years to public recognitions of Pearl Harbor Day and Holocaust Memorial Day.

Environmentalists need their own day to commiserate their love and loss. As Phyllis Windle wrote in "The Ecology of Grief" (*Orion*, winter 1994), mourning is a psychological necessity to recover from grief. Just as funerals "reinforce the awareness of loss, sanction remembering, enable feelings to be expressed, provide support, guide the needed reorganization of life and affirm its meaning," so ritual expressions of mourning could guide and support the lovers of the land and life. Such "grief work" is vitally important to our task of protecting the Earth. It may also serve to increase public awareness of the suffering and loss of endangered species and places.

Windle affirms that "There are scientists among us who also think in terms of rituals, even funerals, for the species and places we are losing... Ecologists gathered on October 12, 1992, where Columbus may have landed in the Bahamas to 'conduct a funeral ceremony for the natural environment of the Western hemisphere.'"

As Windle states, "Environmental losses are intermittent, chronic, cumulative, and without obvious beginnings and endings." This makes it difficult to find dates on the calendar to serve as a focus for healthy expressions of mourning for environmental losses. Yet, we have documented at least one date for the death of a species, and I propose that we take this date and create an international day of mourning in the form of a Species Requiem Day.

On 1 September 1914, the last known member of a once plentiful species died, thereby terminating the species forever. Caged at the Cincinnati zoo, this bird was the last Passenger Pigeon, *Ectopistes migratorius*.

John Muir, who lived contemporary with the final years of this species, thought this species was "one of the most wonderful of all birds," and described their former abundance in glowing terms:

The beautiful wanderers flew like the winds in flocks of millions from climate to climate in accord with the weather, finding their food—acorns, beechnuts, pine-nuts, cranberries, strawberries, huckleberries, juniper berries, hackberries, buck-wheat, rice, wheat, oats, corn—in fields and forests thousands of miles apart. I have seen flocks streaming south in the fall so large that they were flowing over from horizon to horizon in an almost continuous stream all day long, at the rate of

The anniversary date of September 1 is an appropriate time for mourning and penance, a day to remember the disgrace and shame the human species ought to feel, for having willfully wiped out another species.

by Harold W. Wood Jr.

forty or fifty miles an hour, like a mighty river in the sky, widening, contracting, descending like falls and cataracts, and rising suddenly here and there in huge ragged masses like high-splashing spray.

Muir also described the exceptional beauty of individual birds of the species:

The breast of the male is a fine rosy red, the lower part of the neck behind and along the sides changing from the red of the breast to gold, emerald-green, and rich crimson. The general color of the upper parts is grayish blue, the under parts white. The extreme length of the bird is about seventeen inches; the finely modeled slender tail about eight inches, and extent of wings twenty-four inches. The females are scarcely less beautiful.

These Passenger Pigeons were bludgeoned to death by the millions and sold for pennies a pound. This, together with the destruction of their forest habitat, caused their extinction.

Thus, the anniversary date of September 1 is an appropriate time for mourning and penance, a day to remember the disgrace and shame the human species ought to feel, for having willfully wiped out another species. By expressing our sorrow for this species, we can reaffirm our commitment to protecting all endangered species and biodiversity.

Again, Windle is worth quoting to help us understand the importance of such a Species Requiem Day: "Experts urge us to grieve not only for its benefits but also because failure to grieve can have such far-reaching consequences. Generally, problems originate in two ways. Mourning can become excessive and prolonged, leading to chronic grief from which recovery never seems to come. Alternatively, we can inhibit the process. Then it becomes distorted, and grief emerges in different forms. The results are not trivial. Unresolved grief is the underlying cause of problems for as many as twenty percent of the people treated at some substance abuse centers."

We cannot restore the Passenger Pigeon, but we can help save thousands of other species now in trouble. Windle says, "People emerge from grief with new insights about their relationship to the deceased and renewed energy for loving again." The

purpose of this Requiem for a species would not be to commiserate in hopeless despair, but to renew our efforts to protect and restore life on Earth.

Given what appears to be an increasing political momentum to gut state and national endangered species acts, a day of mourning for the loss of species seems particularly timely. I suggest the introduction of legislation at both the state and federal levels to establish this "Species Requiem Day," and in the meanwhile, for environmentalists everywhere to begin recognizing it annually through a nationwide Day of Mourning on September 1.

Harold W. Wood Jr. (2011 W Laurel Ave., Visalia, CA 93277) is active in the Sierra Club and other organizations working on behalf of preserving biodiversity.



Putting Vernal Pools in Curricula

by Michael Brody

MOST EVERYONE HAS PLAYED IN A PUDDLE at some time, yet most people are entirely unaware of vernal pools as valuable and vulnerable wetland ecosystems. Most people regard such standing water as a nuisance.

Expanding development throughout the country has left fewer areas where natural temporary pools can form. This has led to decreases in biodiversity. Most temporary pools have no human advocates, no legal protection, and are easily drained and lost.

Temporary pools that form near schools and in neighborhoods provide excellent field sites for studies in the physical and biological sciences. Through hands-on field studies we can gain an appreciation for basic ecological concepts, relationships, mutual interdependence and cause and effect. Vernal pool educational activities are appropriate for children, adults, families, formal and nonformal education as well as biology and ecology courses.

BACKGROUND

A whole world of life appears in a vernal pool, with a fast-paced lifestyle geared to win the race against time, that is, the time when the pool dries up. This lifestyle has a major benefit: the absence of predators like fish that abound in more permanent water bodies. The major risk is that the pool might dry up and disappear before metamorphosis or reproduction can occur.

The daily, seasonal or annual variation in precipitation in any given area can affect the size as well as the duration of vernal pools. The overall volume of the pools affects their carrying capacity (the numbers of plants and animals the pools can accommodate). Vernal pools may differ significantly in size and duration from year to year.

Life forms of all the kingdoms may be found in temporary pools. Examples of animals are salamanders, wood frogs, toads, and fairy shrimp; protists, fungi, bacteria, and algae and other plants represent the other four kingdoms. Some of these species live out their entire life cycles within the pool.

Temporary pools also play important roles in larger ecosystems. Many animals are attracted to them as reproduction sites and water sources. Temporary pools act as nurseries; and as adults, these vernal pool animals may play major ecological roles in desert or forest ecosystems.

LOCATING THE POOLS

Determine what time of year, in your climate, vernal pools are likely to form. In temperate North America, vernal pools often form in late winter and early spring due to runoff from snow and rain.

Plan a series of short field trips (possibly one every other day for three weeks) in the neighborhood. Construct a neighborhood map and mark the location of significant pools. Give each pool an identification number and assign students to monitor each during its entire existence.

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MONITORING THE POOLS

Record observations of each pool every other day during the pool's entire existence. Note changes. Use simple field equipment such as thermometer, ruler, string, hand dip net and magnifying glass. The variables to monitor include, but are not limited to:

water temperature—easy to measure and has significant effects on dissolved oxygen and metabolism of vernal pool animals;

surface area—measure and estimate, affects dissolved gases;

depth—estimate average, affects carrying capacity of pool;

volume—estimate from surface area and average depth, affects carrying capacity;

animal and plant types and numbers—use field guides and hand dip nets, indicates diversity between and within species.

If water quality testing kits are available, it is simple to measure other variables such as dissolved oxygen or pH. Be sure

to include frog or salamander eggs in your census of animal life. Also look for signs of other animals that might visit the pool during this time (animal tracks?).

CLASSROOM VERNAL POOL

When you take your first walk in the rain to visit areas where vernal pools may form, take soil samples from sites that look like they have potential to become significant vernal pools. Place this soil in a simple aquarium. As you monitor the vernal pools, compare the animal and plant life to the classroom aquaria. What are the similarities and differences?

CASE STUDY: SAN DIEGO COUNTY, CA, USA

Once the most common mesa-top habitat in San Diego County, California, vernal pools are virtually gone. One reason for this loss is that coastal mesas are flat, and people like to build in flat areas.

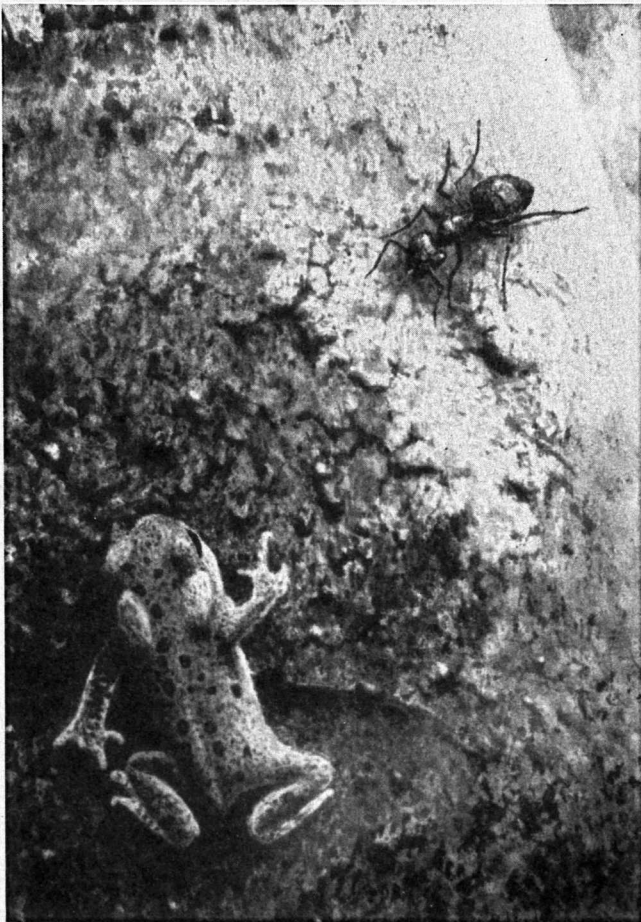
Only one mesa in San Diego County still has vernal pools functioning as integral parts of the mesa-canyon ecosystem. Most vernal pools are now surrounded by development or agriculture, thus are disconnected from larger undeveloped areas of San Diego County.

Vernal pools form each winter and spring when seasonal rains fill depressions on the mesas and inland plateaus. The pools support an incredibly adaptable flora and fauna. Duration of ponding, depending on soil type and rainfall, can range from one day to five months. Dependent on the standing water are numerous pool species, with some plants preferring long periods of saturation, and others needing just a little bit of moisture.

Vernal pools were the first sensitive habitat to be recognized by municipalities in the county. The result of that early concern during the late seventies and early eighties was the creation of several "postage stamp" preserves in the middle of approved development. These preserves protect only the plants and animals of the pools themselves, and do little for the surrounding ecosystem.

Only on Del Mar Mesa/Carmel Mountain, in the north-central portion of the county, is the situation better. Several groups are encouraging the establishment of a reserve to protect a large chunk of extremely sensitive mesa-top as a part of the already existing 5000 acre Penasquitos Canyon Preserve. This canyon is in turn connected to wilder areas to the east. The possibility exists to maintain some semblance of the natural ecosystem.

Two of the threatened species in this ecosystem are the San Diego Fairy Shrimp (*Brachinecta sandiegensis*) and the San Diego Mesa-mint (*Pogogyne abramsii*). The San Diego Fairy Shrimp



was only recently identified as a distinct species. Before, it was considered the same as a freshwater shrimp found in every state west of the Mississippi. The shrimp hatches in the vernal pool within a week of first ponding and matures and breeds within two weeks of ponding. As the water evaporates, the females die with the eggs attached, and the eggs remain in the soil until the next year's wet season. All vernal pools supporting the San Diego Fairy Shrimp are threatened with destruction.

The San Diego Mesa-mint maintains healthy populations on only two mesas. It is the only San Diego County vernal pool species already listed as Endangered. This single listing has afforded imperiled pools little protection. The mesa-mint favors pools with standing water that evaporate fairly quickly after spring storms. It is found along the margin of these pools, forming a purple ring in the month of May. Extremely pungent, the mint can sometimes be smelled half a mile away on a windless day, even by humans (see *Wild Earth*, fall 1992, p. 32-33).

DELVING DEEPER

Extending your vernal activities can increase the usefulness of your findings. Complete a survey of your neighborhood's vernal pools and a biological inventory of life found in association with them. Conduct a more in-depth microscopic investigation of vernal pool life. Graph time versus plant and animal species and numbers found in vernal pools. Compare several pools during the same time period, and compare reports of similar pools from year to year. Submit reports to the state natural resource agency and local government.

Michael Brody is an environmental educator and writer. He wishes to thank John Kerr, Barbara Waters, Judy Markowski, Charles Roth, and other educators who worked on these ideas at a Project WET writing workshop at Woods Hole, Massachusetts in the spring of 1993.

Water Planet

See it from space:

diamond continents green and granite
Cradled in rolling galaxies of charted water
Salt and curving depths
forge and echo
Birth and death of man in a wet blur.

Despise what nurtures.

Take crowbar to coral, monofilament drift

Net to salmon and squid, repeat the

"no-one's looking"

Anthem of the river slavers,

Alien chemical

Song of those who bury

Waste and death in the source of life.

Put the resurrection engine of the world

In overdrive, harvest piled bones

Gone to chalk on Antarctic beaches,

Raw stone eyes of thalidomide bass

Netted off New Jersey's coast.

A sea's no good to endure everything.

Or is, and dies before us,

Dies with its gliding dolphins

Cast like leaves; hardens

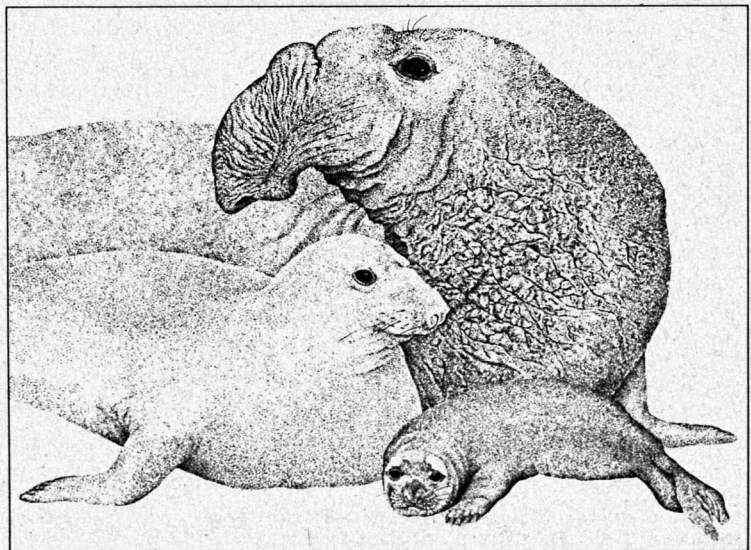
To a snow of petrochemical and rosebud ash,

Leaving only massive tube worms

Tangled in the magma rifts

On the deep sea's desert floor.

—Michael Shorb (San Francisco, CA)



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Saving Common Places: The Palouse

by Alan Wittbecker



INTRODUCTION

A large portion of the planet, probably 25 to 30 percent of the land area, can still be considered wild, if by *wild* is meant an absence of human habitation and a minimum of human impact—no roads or power lines in particular. Most of these wild areas are considered unattractive or uninhabitable: too cold (arctic and sub-arctic regions), too dry (the Sahara, central Australia), too remote (southern Pacific islands), or all three (Antarctica); even many of these areas have some human habitation. The most desirable lands were converted to human use long ago. Many rich areas, such as tropical forests and temperate wetlands, whose forbidding characteristics discouraged development for a long time, are being converted rapidly. The cold, dry ecosystems, remote and often fragile, need formal protection before the quest for resources overwhelms them. The rich forests of the tropics need protection before our excessive desires for beef and wood pulp destroy the lungs of the earth. Conservationists, and even much of the public, recognize these needs; but, alas, there has been little support to protect the common* areas, the places that we have used and abandoned and reused for thousands of years. Relatively unspoiled common places, like grasslands, are being altered rapidly by industrial agriculture and human population pressures. Grasslands are among the least protected biogeographical provinces on earth. They are being replaced by surplus crops subsidized by energy-intensive industrial agriculture.

Wilderness designations in the United States have been inspired by recreational interests, protecting mountain areas good for hiking, camping, and hunting. Most Wilderness Areas are high elevation areas in the Western states. Even in the relatively Wilderness-rich states of Idaho and Washington, other regions—such as basin and range, Snake River lowlands, Owyhee broken lands, and Palouse grasslands—are scarcely represented. Wetlands and forests in the eastern part of the continent are poorly represented. Wilderness designation has recently begun to consider potential economic benefits and ecological self-preservation—the recognition that the Earth provides free life-support services, as through its biogeochemical cycles. Now, we should plan a global strategy, not only to save wilderness, but to preserve diverse working ecosystems, including semi-natural landscapes that are not considered wild or special—common lands. These lands should be kept at optimal levels of productivity and diversity although some percentage should be restored to an ultrahuman condition. The Palouse grassland, extending from eastern Washington to northern Idaho and northeastern Oregon, is an example of a common area needing restoration and protection.

* The word *common* is used here in the sense of ordinary or typical, as opposed to spectacular or especially rich areas that tend to attract most of conservationist's attention. It is not meant to imply abundant.

THE PALOUSE

The Palouse grassland is a geographic region of approximately 6 million hectares (roughly 15 million acres) centered in southeastern Washington. Its origin, topography, and soil composition are unique. Wind-deposited loesses form steep, rolling, dune-like hills that overlie the Columbia River basalts. The primeval vegetation was composed of dense stands of perennial bunch-grasses.

Dry-land farming has almost completely replaced the original vegetation, although fragments can be found in fence corners, right-of-ways, cemeteries, and inaccessible slopes. In spite of its uniqueness, there has been no successful attempt to save more than patches of the original vegetation. In the 1960s, the Idaho Association of Soil and Water Conservation called for the expansion of the Great Plains Conservation Program to include the Northwest prairie. This and later resolutions were defeated for political or financial reasons. Only small research natural areas (RNAs of 10-15 ha) have been saved, by Washington State University. No large stands of native grasses remain.

DESCRIPTION

The Palouse Prairie is a dry, intermountain grassland, characterized by grasses of boreal affinity, located within the Columbia Basin Physiographic Province in the Pacific Northwest. The geological foundation of the area is basalt, from lava flows that occurred 15 million years ago. Lighter deposits of volcanic ash fell from Glacier Peak (12,000 years ago) and Mt. Mazama (6000 years ago). The eruption of Mt. St. Helens (in 1980) added a 2-8 centimeter deposit of ash to much of the Palouse. Heavy depositions of loess, coming from arid lands to the west continuously since the Pleistocene (300,000-500,000 years ago), resulted in fertile soils of loam and silt loam texture, which developed in a semiarid Mediterranean climate. The landscape has moderate to high relief; elevations range from 180 to 1200 meters (roughly 600-4000 feet). Annual precipitation varies from 200 to 800 millimeters (roughly 8 to 32 inches); the average is about 440 millimeters (this is significant because it is near the minimum for dry-land agriculture). A high proportion (45-65%) of this precipitation falls during winter. Maximum temperatures coincide with minimum precipitation during late summer, producing intense drought.

The Palouse has 40 habitat types in 9 zones. (A habitat type is a particular environment inhabited by particular organisms; a zone is a clearly-delineated division of vegetation; an association is a climax plant community characterized by one or more particular species.) The vegetation in the proposed reserve belongs to the Idaho Fescue/Snowberry association (*Festuca idahoensis*/*Symphoricarpos albus*), dominated by the caespitose grasses Idaho Fescue, Bluebunch Wheatgrass (*Agropyron spicatum*), and June Grass (*Koeleria cristata*), and the shrubs Snowberry and Wild Rose (*Rosa nutkana*). The ecotones separating habitat types are relatively sharp.

Palouse vegetation is determined primarily by climate, but sometimes by soil and topography. Unlike most other grasslands (the tall-grass prairies to the east, for example), it developed without significant grazing or regular fires. Fire plays a minor role in these habitats. The perennial species sprout from underground parts, but fire kills sage, a native dominant in some communities. In its natural state, grazing did not significantly affect the composition of the grassland, although White-tailed Deer (*Odocoileus virginianis*) were present. Archeological history indicates small populations of Bison (*Bison bison*) and Pronghorn Antelope (*Antilocarpa americana*) as recently as 2000 years ago, but no permanent populations have established themselves since, possibly due to increased snow depths west of the Rocky Mountains.

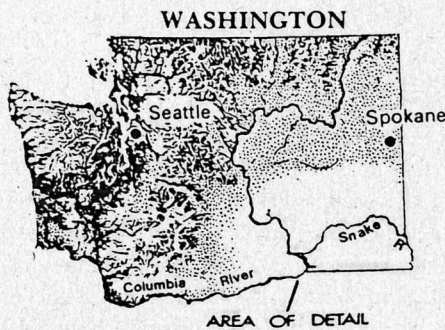
Human agriculture was the first intensive use of the region. As agricultural technology became more advanced and the demand for crops increased, less desirable segments of the prairie were tilled. Smaller islands of native vegetation, regarded as waste places, were left for livestock grazing, since the native vegetation was palatable and nutritious. Native vegetation was easily injured by close cropping and unable to compete with introduced exotics on disturbed sites. Even the few remaining natural stands, on the steepest slopes and boundaries, have been influenced by fertilizer and herbicide drift.

DISCUSSION

Since the 1880s alien grasses, chiefly Cheatgrass (*Bromus tectorum*) and Kentucky Bluegrass (*Poa pratensis*), have pioneered most disturbed sites. Often, Cheatgrass and bluegrass out-colonize native species. However, in the Kramer Natural Area, two sites disturbed by cultivation and a road have healed over with native vegetation similar to the undisturbed area. Apparently, dominance depends on order of establishment— whoever gets there first wins the soil; the exotic species do not displace established and undisturbed natives, but natives cannot displace established exotics.

The Idaho Fescue/Snowberry association has a rich collection of perennial forbs which flower during much of the growing season. The native grassland is far richer in species than farmland. Ninety-three mammalian species representing 58 genera have been recorded in the present Palouse. Birds (Sage Sparrow, Brewer's Sparrow, Western Meadowlark, Sharp-tailed Grouse) and insects (mostly arthropods) are also well represented. The Palouse has at least 25 mosses and 9 lichens. The Idaho Fescue/Snowberry is the best represented and studied habitat type. Yet ecological studies even of this habitat type are rare and localized. Some areas are still unstudied and there has been no treatment of the habitat type as a whole. A previously unknown plant association dominated by Elk Sedge (*Carex geyeri*) has been described on three university sites, as well as two previously unidentified phases of the Idaho Fescue/Snowberry association.

Many of the plant associations in the Columbia Basin Province are not represented in any of the small RNAs in Wash-



economics and politics in touch with ecology. The most important biocentric argument for wilderness is autological—ultrahuman species need ultrahuman places. Wild reserves would permit natural processes to occur without human interference.

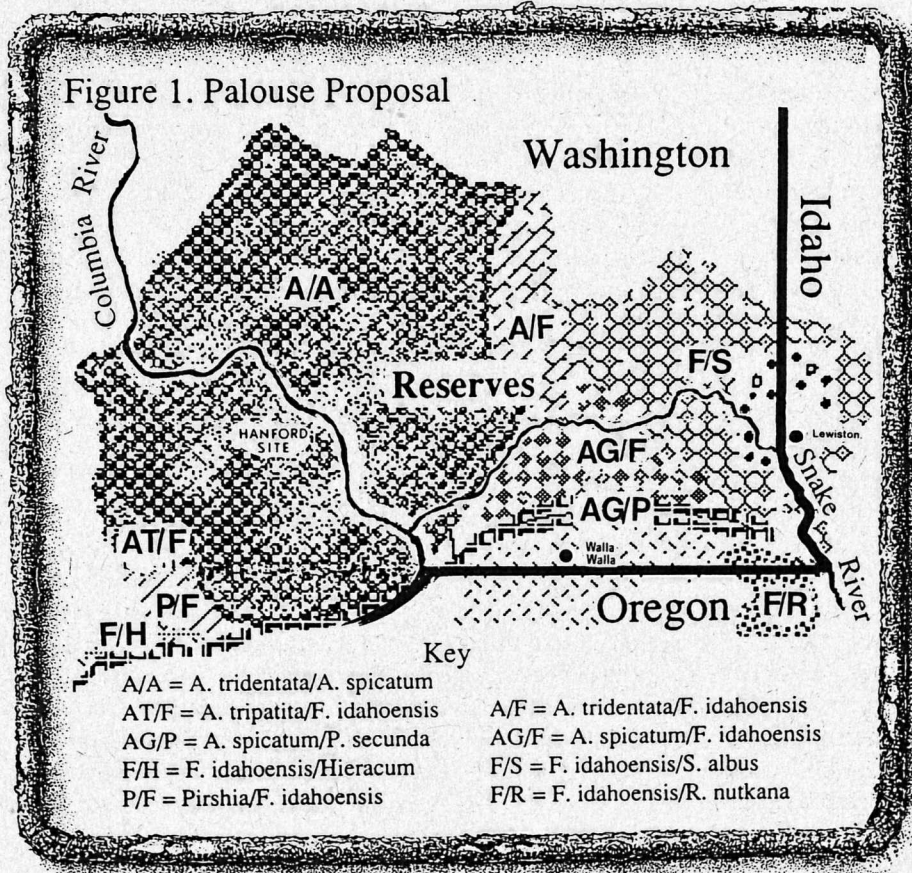
RESERVE PROPOSAL

The desired size of the reserve is a complex function of the area's key species, quantity of suitable habitat, and minimum viable population numbers. Large-bodied vertebrate species tend to have lower population densities, thus a reserve with self-sustaining large-bodied vertebrate populations will likely be adequate for herbivores, insectivores, and primary producers. The key mammal species in the Palouse are Coyote (*Canis latrans*), Badger (*Taxidea taxus*), and mice (*Perognathus parvus*, *Peromyscus maniculatus*), with White-tailed Deer (*O. virginianus*) as regular visitors.

Estimating the minimum number of individuals in a population to guarantee a high probability of survival results in widely varying minimum areas, depending on the key species selected. An effective population of at least 500 individuals may be needed to maintain genetic viability of each animal species (Frankel and Soulé 1981). Each animal requires a minimum area; for example, each Coyote requires 700 ha (7-10 km²) for a home range. Since not all Coyotes in a group breed—some become aunts or uncles and help care for pups—it is necessary to assume 3

Coyotes per breeding unit. Using Coyotes as the key species, the minimum area for the reserve becomes at least 1.05 million hectares. With a home range of 250 ha (2.5 km²), the minimum area for deer would be at least 200,000 hectares. With a home range of 1-5 ha, the minimum area for mice would be at least 2500 hectares. Using Idaho Fescue (with 5000 individuals as a minimum), the minimum area would be about 10 hectares. Usually, large carnivores are a sensitive indicator of carrying capacity. In the Palouse, however, Coyotes can adapt to humanized landscapes, so preserving their entire range is not critical for the survival of that species, though generalist species should be preserved in at least one large range. The minimum area should be large enough for the protection of all endangered or threatened invertebrates, which play key roles in such basic ecological processes as predation, recycling, and pollination.

Figure 1. Palouse Proposal



ington or Idaho, although some of them would be included in proposed areas. In the Zonal Meadow Steppe Association, the Idaho Fescue/Nootka Rose community has no representation (it occurs in Hells Canyon), and the Idaho Fescue/Snowberry community is only partially represented (in the Kramer Biological Study Area). Poor representation at present is one reason why large reserves are needed. Existing RNAs are not nearly large enough to save viable mammalian populations.

Large reserves are important for many other reasons, too. They help perpetuate global element cycles; they help maintain the integrity of wild gene pools. Reserves can be justified by anthropocentric arguments, also; in addition to recreation, resource-banking, and research opportunities, reserves have importance for watershed management and as gene pools. Knowledge of biological history and cultural change over time contributes to the understanding of a place and keeps human

Although there have been debates over whether a single large reserve is better than several small ones, the shape and size of a Palouse reserve should be determined by habitat studies of the unique natural history and conditions. The key plant species to be protected are Idaho Fescue and Snowberry, with all their ecological relationships to microorganisms and arthropods. The large carnivores and herbivores (Coyotes and deer) can adapt to more artificial conditions, so their needs may not be limiting factors. The size should be large enough so that species will not be vulnerable to "extinction vortices" (Gilpin and Soulé 1986), caused by genetic or environmental stochasticity. In a Palouse reserve, disturbances from farming, grazing, and recreation would probably be the greatest threats.

The recommendation for a Palouse reserve is 1 large area about 200,000 hectares, doubly buffered by rehabilitated fields and then by a greater amount of fallow agricultural land; 3 areas of 3000-10,000 hectares; and 22 satellite areas of 8-25 hectares, which would probably not be buffered. Saving a million hectares would be economically or politically difficult under the current industrial monolith; 1 million hectares is about 17% of a region that profits immensely from growing grains and legumes. In a truly eutopian vision (Wittbecker 1983), that is, one concerned with maintaining good places and characterized by rational planning and realigned priorities, 3 million hectares would be set aside, but such a vision can only be created with radical changes in political and economic regimes.

Based on a suggestion that at least 5 units of each habitat be preserved, the reserve is divided into over 25 unequal areas. The largest portion of the proposed reserve is located on the eastern edge of the Bluebunch Wheatgrass province and includes at least 5 habitat types.

The proposed reserve would be laid out on the Southwest/Northeast axis with large fingers extending to the Northwest and Southeast, to maximize the number of protected Northeast slopes. Since the winds are predominantly from the Southwest, herbicide drift would be minimized. A range of elevations across areas would minimize the effects of climate change—the possibility of extreme change is rarely considered in wilderness design. Soils, drainage, and land-use history and ownership would also receive consideration. This would allow management for diversity on three different scales: community, habitat, and region. The reserve would extend into the ecotones separating grassland and forest provinces; the natural edge effect would benefit many species. The medium sized areas and the satellite areas, with good planning, could be linked by wildlife corridors that could follow property lines or fence rows.

Fence rows could limit human access and might even encourage animal dispersal. For example, small mammals and birds use fence rows for travel and nesting. Mice, deer, and Coyotes use fences for partitioning space. Fences also create microsites for different communities. One biologist (Daubenmire 1942) noted that slight differences in soil depth and moisture permitted different types of associations in the Palouse; this was especially true around fences, which caused

greater dust and snow accumulations. Because local soil conditions result in a wide variety of habitat types in small areas, even small reserves might have a rich flora and fauna.

MANAGEMENT CONCERNS

There is little information on the restoration or preservation of "near-natural" ecosystems—primarily native, not subject to major change. The Palouse probably has no natural landscapes and very few near-natural; most are semi-natural (pastures as a consequence of human activity) or artificial (totally humanized). The Palouse could not be restored to its original state, since many species are extinct, but it could be rehabilitated. Methods such as direct planting into de-sodded ground can be used to restore species-rich grasslands. The inner buffer zone, being rehabilitated, would be the most expensive to create. The outermost buffer would be managed by benign neglect (despite the fact that most ecologists do not list this as a management option). Natural processes, such as wind or species explosions, would be allowed to operate freely, even if they altered the functioning of the communities. In fact, a reserve, in contrast to a preserve, is simply an area placed off-limits to exploitative human activity, where natural processes are allowed to proceed naturally.

The shapes shown in the map for the reserves would minimize the dangers from physical and climatic changes. The greenhouse effect could drastically alter the species distributions in reserves, with the loss of many species. Placing the reserves on heterogeneous soil types and topographies increases the chances that species' temperature and moisture requirements would be met. Simply maximizing the size and number of reserves would enhance long-term survival.



The cost of reserves would be high. Palouse land sells for \$2000 per hectare. The cost for restoration of a reserve has been estimated at \$20-140,000 per hectare, depending on the density of planting and the area. The costs of buying, rehabilitating, and managing 200,000 ha could cost \$2-4 billion—comparable to the \$3 billion the Forest Service wants to spend to add 35,000 miles of roads in roadless areas. Larger areas would have lower management costs per hectare; smaller reserves in general require more intensive management and habitat manipulation.

SUMMARY

Although very few people consider the Palouse a "priority habitat," it does need protection, and it should be a part of the Biosphere Reserve Program. A large area of undisturbed grassland would be a valuable ecological baseline, for comparison with the domesticated landscapes of farming and grazing. Variables such as productivity or the effects of climate could be compared between the natural and artificial systems. Native species would be preserved, both for our sake and their own.

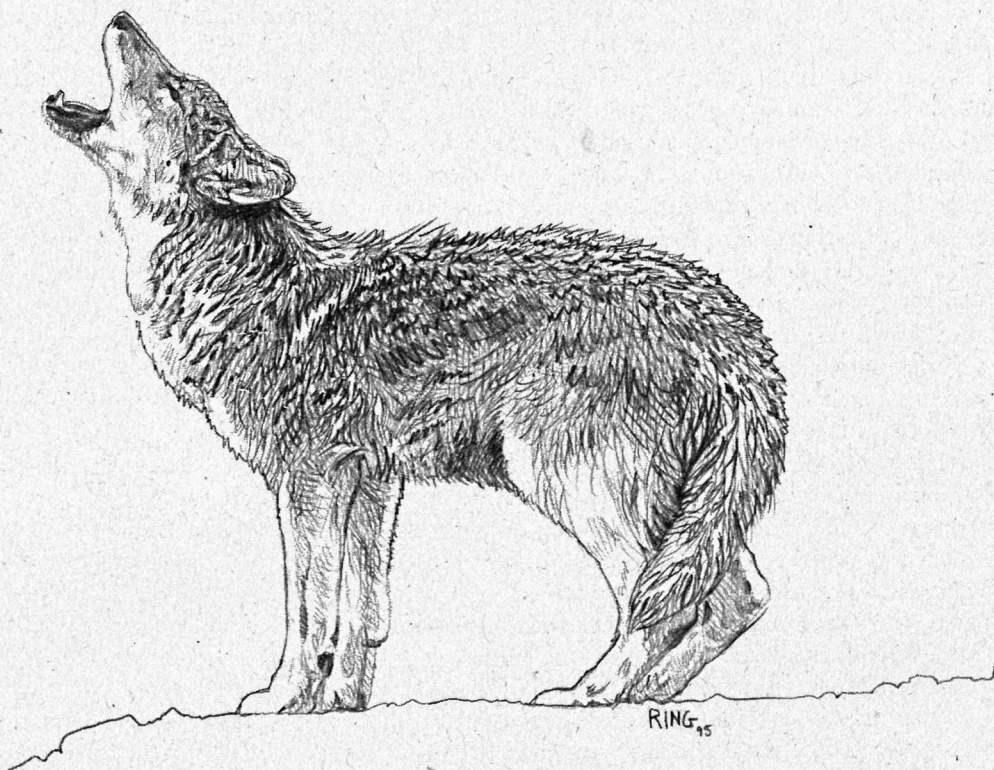
The Palouse is common, in the sense of being taken for granted and treated badly. Being common does not mean being without value, however. The Palouse is attractive and useful because it is so productive and forgiving. The Palouse seems like a simple grassland, but having fewer organisms or simpler patterns does not mean being less unique. The Palouse has a special beauty, more subtle than a rainforest or a desert, that has become rare. If that specialness is not to disappear completely, it must be protected, now, in a reserve.

Saving common lands requires a wide vision that entails making decisions without complete knowledge, ecological or economic, within the human communities that must bear the cost. Because many of the mysteries even of common habitats have not been unraveled, saving large numbers of habitats from human intervention is a hedge against the ultimate price of ignorance—extinction of animals and plants and, eventually, humanity. The Palouse is a unique ecoregion, and very little of it is left in a natural state. Let us save it and then save samples of common places everywhere.

BIBLIOGRAPHY

- Aller, Alvin R. et al. 1981. Plant Communities and Soils of North Slopes in the Palouse Region of Eastern Washington and Northern Idaho. *Northwest Science* 55(4):248-261.
- Daubenmire, Rexford. 1942. An ecological study of the vegetation of south-eastern Washington and adjacent Idaho. *Ecol. Mono.* 12:53-79.
- Daubenmire, Rexford. 1970. *Steppe Vegetation of Washington*. Technical Bulletin Number 62. Pullman: WA Agricultural Experiment Station.
- Despain, Del and Grant Harris. 1981. Kramer Palouse Natural Area. *Great Basin Naturalist* 43(3):421-424.
- Diamond, J. M. 1975. The island dilemma: Lessons of modern biogeographic studies for the design of natural preserves. *Biol. Conserv.* 7:129-146.
- Frankel, Otto. 1975. *Crop Genetic Resources for Today and Tomorrow*. O. Frankel and J. Hawkes, eds. New York: Cambridge University Press.
- Frankel, O. H. and M. E. Soulé. 1981. *Conservation and Evolution*. Cambridge: Cambridge University Press.
- Osborne, D. 1953. Archaeological occurrences of pronghorn antelope, bison and horse in the Columbia Plateau. *Scientific Monthly* 77:914-917.
- Soulé, Michael and Wilcox, B. A., eds. 1980. *Conservation Biology: An Evolutionary-Ecological Perspective*. Sunderland, MA: Sinauer Associates.

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Minnesota Biosphere Recovery Strategy

A Preliminary Proposal

LYING ASTRIDE the Laurentian Upland and the Interior Plains and Lowlands physiographic provinces of North America, Minnesota represents 4.5 billion years of geologic and glacial activity. Geologically speaking, the groundwork for Minnesota's landscape was laid over 2.5 billion years ago when the Canadian Shield was created during the early Precambrian Era. At various times in its history, Minnesota has sat upon the equator, been inundated by epicontinental seas, and been carved during no less than five glacial periods. These and other events created a region with some of the most varied habitat in North America.

COMMUNITIES AND HABITAT TYPES

Minnesota is the starting point for three of North America's major drainage systems—the Mississippi River, Hudson Bay, and the Great Lakes/St. Lawrence Seaway—while within the state itself are nine major watersheds. Watershed boundaries commonly indicate divisions between ecoregions. Minnesota has over 1.6 million hectares of water bodies covering 8% of the landscape, including over 15,000 lakes and 22,000 kilometers (km) of streams and rivers. Appropriately, Minnesota is known as the Land of 10,000 Lakes.

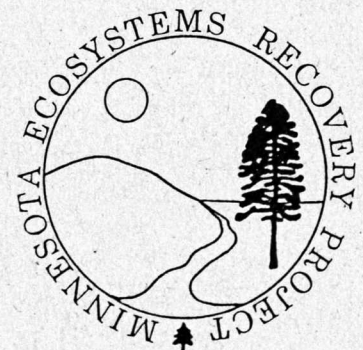
Prairie, deciduous forest and coniferous forest biomes converge here and the state has six landform types and ten major vegetation types. All told Minnesota has over 50 natural community types.

The most threatened natural communities are associated with the prairie biome. Originally covering almost a third of the state, approximately 0.2% of Minnesota's tallgrass prairie remains. Most has been eliminated by agriculture. Today, many species, such as the Western Prairie Fringed Orchid (*Platanthera praeclara*) and Topeka Shiner (*Notropis topeka*), survive only in isolated areas.

East of the prairie, the maple-basswood, oak savannah, northern hardwood, and northern coniferous vegetation types are particularly threatened. The "Big Woods," whose major component is maple-basswood forest, used to cover as much as 7500 square km of southcentral Minnesota. What remains is isolated within a fragmented landscape of farms and scrub forest. Even so, rare woodland plants, such as Golden-seal (*Hydrastis canadensis* L.) and Twinleaf (*Jeffersonia diphylla* (L.) Pers.), still survive.

The oak savannas of eastern Minnesota existed in the Forest-Prairie transition zone south and east of the "Big Woods." Due to the absence of fire, this region has grown up into young forests, threatening associated species. The only reminders are intensively managed fragments along the Mississippi River.

The northern hardwoods forest of Minnesota once stretched from present day Duluth to the Canadian border along Lake Superior. Native stands are generally composed of Sugar Maple, Yellow Birch, Northern Red Oak and scattered coniferous trees. Minnesota's northern hardwood forest constitutes a portion of a major flyway for raptors. Its remaining old growth is important for unprotected species such as *Lobaria quercizans*, a lichen.



by Mike Biltonen

The northern coniferous forests once consisted of ancient Eastern White and Red Pine with younger Jack Pine forests scattered throughout. What remains is important habitat for plant species such as the Ram's-head Ladyslipper orchid (*Cypripedium arietinum* R. Br.) and a rare tiger beetle (*Cicindela patruela patruela*). Remnant old growth can be found in select areas around the state, such as the Boundary Waters Canoe Area Wilderness (BWCAW). Efforts to restore the northern pine forests have met with limited success because of white pine blister rust, pine weevils, and herbivory by White-tailed Deer.

A few natural communities, however, are not severely threatened. The peatlands of the Red Lakes region, for example, possibly the state's last remaining intact ecosystem, contain the largest tracts of wild land outside of the BWCAW. Despite several unsuccessful attempts to drain them for agriculture, they persist in a pristine but unprotected condition. Likewise, many floodplain and lowland hardwood forests remain fairly intact because of their relative inaccessibility, especially in Minnesota's northern lake country. Nonetheless, immediate protection is necessary to secure their future.

SPECIES COMPOSITION

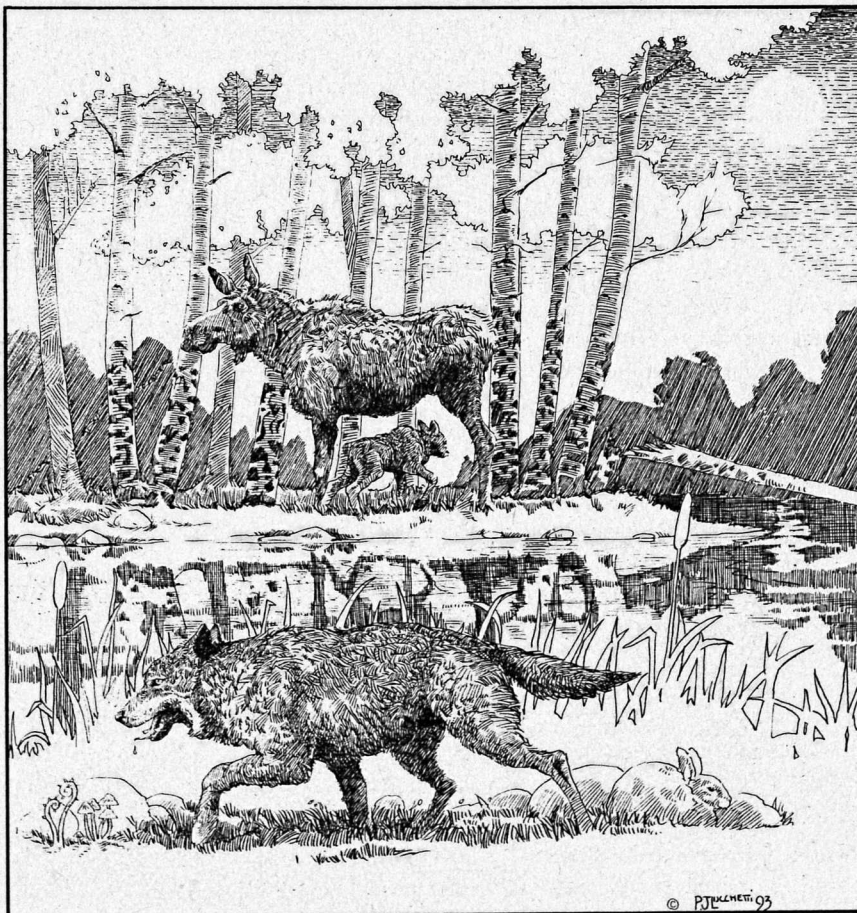
The state has over 1800 native vascular plants, 600 vertebrate animals and countless thousands of invertebrate animals and non-vascular plants. Of the large native land animals, Elk (*Cervus elaphus*), Bison (*Bison bison*), Catamount (*Felis concolor*), Wolverine (*Gulo gulo*) and Woodland Caribou (*Rangifer tarandus caribou*) survive only in isolated areas of northern Minnesota, if at all. The Catamount (Cougar) has officially found its way back into the state and onto the state special concern species list. Many species, such as the Passenger Pigeon, will never grace the landscape again. Many rare plant species survive isolated from other sub-populations and ecotypes. They have little legal protection and are generally ignored in land management plans.

However, some species are rare not because of human activities, but because they naturally inhabit what are known as primary communities. Primary communities are defined as environmentally stressed sites that have little or no true soil development, such as deep bedrock gorges or sandy beaches.

In Minnesota, primary communities can be found along the rocky crags of the Lake Superior's north shore, and the limestone bluffs of the Mississippi and Minnesota Rivers. Naturally rare species include Bog Bluegrass (*Poa paludigena*), Beach Grass (*Ammophila breviligulata*), and *Succinea chittenangoensis*, this last a species of land snail widespread during the Pleistocene, but now limited to algific talus slope communities. While these habitats could be affected by human encroachment, greater concern is given to the habitat that surrounds them. For example, the Peregrine Falcon (*Falco peregrinus*) currently nests in rocky cliffs along the north shore of Lake Superior. Though direct threats to the nests are rare, the habitat the falcons hunt in and migrate through needs protection.

CONSERVATION EFFORTS AROUND THE STATE

Conservation efforts began during the early twentieth century. In 1913, a project to restore Elk to Itasca State Park met with uncertain success; by 1988, the size of the Elk herd had dwindled to 60% of its original size. A project to restore Woodland Caribou to the Red Lakes region in 1938 completely failed: just eight years after the project was begun, not one individual from



¹ We have decided to use the pre-settlement time period, approximately 150 years ago, as our baseline. The damage humans inflicted on the landscape prior to this time probably pales in comparison to what has occurred since the arrival of European settlers.

the herd could be located. Another effort at Caribou reintroduction has been recently started, with suitable habitat identified in the BWCAW near the Minnesota-Canada border. Actual reintroduction hasn't yet taken place.

Efforts to protect and/or restore populations of the Eastern Timber Wolf (*Canis lupus*), the Peregrine Falcon, and the northern Bald Eagle (*Haliaeetus leucocephalus*) have been remarkably successful. Minnesota supports the healthiest population of wolves in the lower 48 states. Wolf population estimates range from 1500—1750 individuals. Their range is rapidly expanding in all directions. Unfortunately, a lack of suitable habitat outside United States Fish and Wildlife Service-designated "critical" ranges could limit the ultimate success of all three species. A recent decline in reproductive success by Bald Eagles on the Chippewa National Forest should serve as a warning.

Although conservationists have succeeded in protecting some native prairie and deciduous forest, no comprehensive strategy for the preservation and recovery of the state's native biodiversity has been formulated. The Minnesota Biosphere Recovery Strategy (MBRS) is intended to fill this role. [MBRS is a product of MERP: Minnesota Ecosystems Recovery Project, a grassroots group working with The Wildlands Project.]

INITIAL DESIGN

There is no strong consensus within the scientific community regarding the status of biodiversity here. The baseline data and completed studies are too recent. Therefore, it was important to establish a baseline for our discussions on biodiversity.¹ MERP argues that, by and large, on-going scientific studies are overrating the health of biodiversity here. The MBRS will require critical analysis of all scientific studies concerning biodiversity here.

We concluded that protecting and restoring native habitat types in patterns and abundances approximating their historic levels would address the biological needs of native species. MERP's first step, under way, is to research native vegetation patterns. By comparing these with existing vegetation patterns, it's possible to identify gaps between natural communities, native habitat types and rare species' occurrences. Much of the data is being generated through the state Natural Heritage Program's Minnesota County Biological Survey.

Eventually, we will utilize a Geographic Information System (GIS) to detail the MBRS. GIS involves overlaying component data layers, such as existing natural communities or rare species' occurrences, and identifying gaps. Computer mapping will provide the necessary level of resolution for scientific defensibility.

We have identified the most significant component data layers. Data layers based on political or ownership boundaries will be necessary when the MBRS is implemented, but were considered unnecessary for determining biological needs. Although layers may be added, detailed, or deleted later in the project, following are the ones we

determined to be most important at this time. Data collection and analysis is in progress for most.

Major Component Layers (no particular order)

- 1) drainage systems
- 2) watersheds
- 3) historic vegetation patterns
- 4) biomes and major native habitat types
- 5) existing natural communities
- 6) identified rare species sites
- 7) Scientific Natural Areas
- 8) native wildlife ranges
- 9) Nature Conservancy reserves
- 10) conservation easement sites

Supporting Component Layers

- 1) roadless lands
- 2) road kill data, for identification of natural corridors
- 3) federal or state protected wilderness areas

VISION MAPPING THE MBRS

Mapping started initially using the single component layer that provided a strong foundation for primary core reserves: roadless lands. Although roadless lands are listed as only a supporting component layer, their immediate protection would provide the basis for large core reserves in northern Minnesota.

Foreman and Wolke described the large roadless areas (>20,000 ha) of the contiguous eastern states, as well as Minnesota, in *The Big Outside*. For the MBRS, however, we recognized not only these large intact areas, but also complexes comprised of smaller areas. In other words, we consider small (2000 ha minimum, mostly) but spatially close roadless areas where the obliteration and revegetation of a few key roads would create a contiguous area fulfilling the 20,000 ha definition. These areas were designated Primary Core Reserves (PCRs).

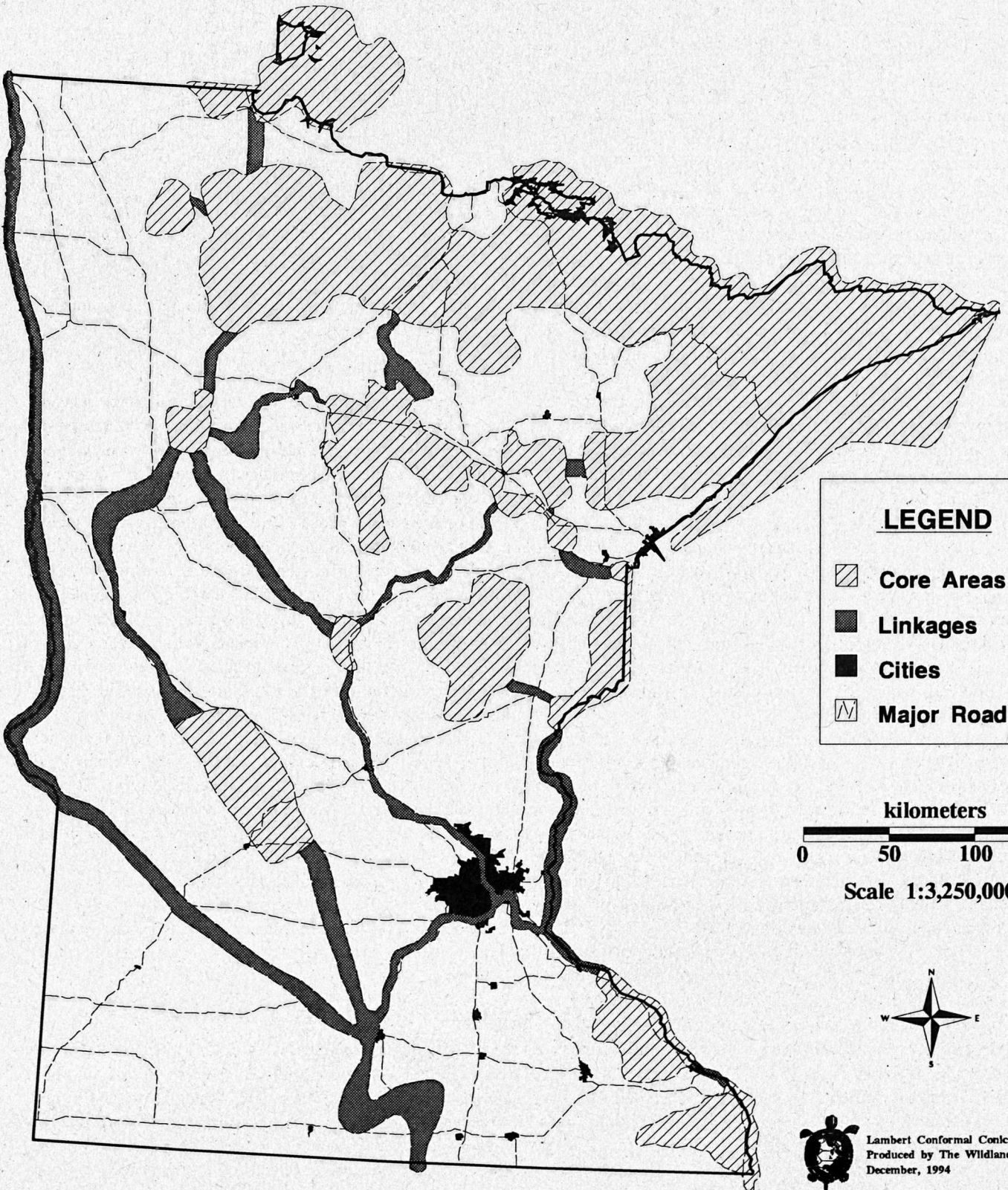
The Minnesota Roadless Lands Inventory produced some surprising results. For example, it revealed over 2 million ha of roadless lands/complexes in the state, including 0.52 million ha in the Boundary Waters region and others in some counties we did not expect. Roadless land complexes were identified in 13 counties. Six of these are cornerstones of the MBRS. The remaining seven make significant contributions to their regions and can be linked to the Superior Wildlands by broad corridors and protected by buffer zones. The MBRS is divided into three regions, based primarily on biomes, but also on pragmatic, biological considerations.

MBRS: SUPERIOR WILDLANDS (MN PORTION)





The contiguous counties of St. Louis, Lake, Koochiching, Cook, Beltrami and Lake of the Woods contain over 1.6 million ha of roadless lands. The BWCAW and Voyageur's National Park are represented as a Primary Core Reserve contiguous with the Quetico region in Ontario. The Arrowhead PCR preserves much of the threatened northern hardwood forest along the north shore as well as the ecotone between it and the northern coniferous forest zone. The Peatlands PCRs are

MINNESOTA DRAFT

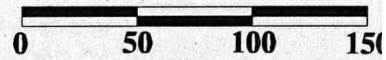
Iteration 1



LEGEND

-  Core Areas
-  Linkages
-  Cities
-  Major Roads

kilometers



Scale 1:3,250,000



Lambert Conformal Conic Projection
Produced by The Wildlands Project
December, 1994

the other major part of the western Superior Wildlands. Lake of the Woods County's contribution is comprised mostly of Lake of the Woods, but the associated terrestrial habitat is remote and mostly roadless and, therefore, of significant biological value. It also provides an important connection to lands in western Ontario and eastern Manitoba. A Superior Wildlands reserve in the Midwestern North Woods bioregion, free of large-scale human disruption, would help secure the survival of the Eastern Timber Wolf, Wolverine, Moose and Woodland Caribou, as well as a myriad of rare vascular and non-vascular plants.

The deciduous forest portion of the Superior Wildlands is the central piece of the statewide habitat puzzle and creates a bridge between the major regions. It is functionally comprised of the Leech Lake, Camp Riley, Mille Lacs Lake, and Nemadji State Forest PCRs which can be linked to the North Woods PCRs via corridors and buffer zones. Leech Lake and Mille Lacs Lake PCRs provide vast expanses of aquatic habitat and transition zones between adjacent terrestrial habitat. If protected, Camp Riley could be a crucial core reserve along the Mississippi River. The Nemadji PCR is the only significant terrestrial linkage to Wisconsin in Minnesota.

MBRS: Deciduous Forest-Tallgrass Prairie Transition Region

In the deciduous forest-tallgrass prairie transition region, fragmentation is more severe and viable lands for ecological reserves more scarce. Whereas the Superior Wildlands are comprised of large roadless areas, this region will likely be represented by a series of smaller protected areas connected by corridors.

Important parts of this region are the Upper Mississippi River (UMR) and Minnesota River Valley (MRV) National Wildlife Refuges. Stretching from the Iowa/Minnesota border to the Twin Cities, the UMR is an important stopover for many migratory birds and waterfowl. The MRV stretches 26 miles west out of the Twin Cities and preserves unique habitat at the confluence of the Mississippi and Minnesota Rivers. Nerstrand Woods (including Nerstrand Woods State Park) is the largest remaining representation of the "Big Woods" deciduous forest that once covered the central part of the state. Other areas include the Root and Zumbro River watersheds which supply the Mississippi River. As two of the largest watersheds in southeastern Minnesota they provide habitat for a multitude of aquatic and terrestrial species.

For most of this region the greatest impact has been fragmentation as a result of conversion to farmland. However, for the oak savannas, the absence of fire has allowed them to succeed to young forest. Restoring them will require reintroduction of fire and creative restorative actions. Only isolated fragments currently remain.

MBRS: Tallgrass Prairie Region

Minnesota's short-term contribution to the recovery of native prairies will be slight since only 0.2% of its native prairie still exists. Over 105 vascular plant and animal species associated with this basic habitat type are currently listed as endangered or threatened. Key areas that have already received some degree of protection include the Minnesota River Val-

ley, and the Big Stone Lake and Glacial Lake Agassiz regions. The Red River of the North, Lake Minnewaska region, White Earth State Forest, and Coteau des Prairie regions have not received protection. Because of the deplorable condition of Minnesota's tallgrass prairie, a conservation strategy will require forethought and a great deal of patience. A conservation strategy would provide a link between the northern tallgrass prairie and the western North Woods. Although a preliminary reserve design is presented herein, much work is still required to make it a sound, defensible proposal.

Vision mapping workshops for the Midwestern North Woods bioregion (Superior Wildlands) and the Great Plains/Prairies have recently been completed. These workshops not only revealed the hard work ahead, but also provided solid proof of the hope still remaining. This preliminary proposal concludes the first step of a life-long project. The accompanying map illustrates our vision of a wilder Minnesota. The next steps require continued collection and compilation of data for the remaining component layers. Refinements will continue as PCRs are redrawn to reflect the true needs of Minnesota's biotic communities. The MBRS will remain flexible as our knowledge of the land increases.

If a wilder and healthier Minnesota is to become reality, scientists and activists alike must rise to the occasion and "sound their barbaric yawp!" Good science is required to disclose the problems, and emotion to see they are resolved. It won't happen overnight, or probably even in our lifetimes, but if the seeds of change are planted and begin to germinate soon, then there is a glimmer of hope for a wilder Minnesota.

WERE

Acknowledgements

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Selected References

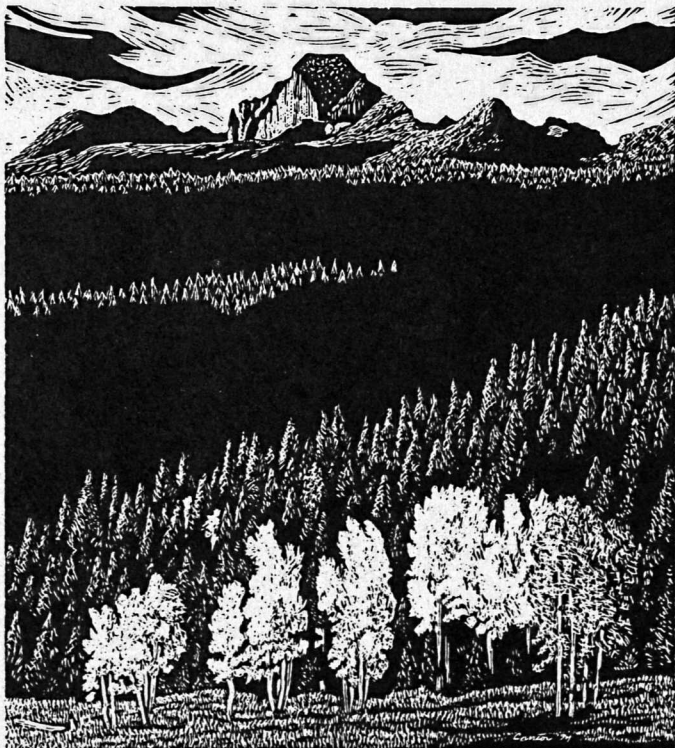
1. Minnesota Department of Natural Resources. 1986. Checklist of Endangered and Threatened Animal and Plant Species of Minnesota. St. Paul, Minnesota. 23 pp.
2. Minnesota Department of Natural Resources. 1993. Minnesota's Native Vegetation: A Key to Natural Communities (ver. 1.5). Natural Heritage Program, Biological Report No. 20. St. Paul, Minnesota. 6 pp.
3. Minnesota Department of Natural Resources. 1988. The Natural Vegetation of Minnesota at the Time of the Public Land Survey: 1847-1907. Natural Heritage Program, Biological Report No. 1. St. Paul. 6 pp.
4. Bray, E. C. 1977. Billions of Years in Minnesota: The Geologic History of the State. Science Museum of Minnesota. St. Paul, Minnesota. 102 pp.
5. Coffin, Barbara and L. Pfannmuller, eds. 1988. Minnesota's Endangered Flora and Fauna. University of Minnesota Press. Minneapolis, Minnesota. 473 pp.
6. Ojakangas, Richard W. and Charles W. Matsch. 1982. Minnesota's Geology. University of Minnesota Press. Minneapolis, Minnesota.
7. Foreman, Dave and Howie Wolke. 1992. The Big Outside: A Descriptive Inventory of the Big Wilderness Areas of the United States. Harmony Books. New York, New York. 500 pp.
8. Noss, Reed. 1991. What Can Wilderness Do For Biodiversity?. Wild Earth. Vol. 1, no. 2. p. 51-55.

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Deep Grammar

My Retort to the Responses by Noss and Foreman to My Critique of the Wilderness Idea

by J. Baird Callicott



I DON'T KNOW WHY I sent that critique of the wilderness idea off for publication in *this* rag. John Davis wrote me a while back asking for a piece to put in the "Land Ethics" section. I should have sent him something nice—on the intrinsic value, say, of things wild and free. Then, perhaps, I could have avoided being publicly rebuked by two people for whom I have the utmost respect. Looking back, it's sort of like Father Tom Berry being asked to come on the 700 Club by Pat Robertson, saying there are some problems with the concept of God or the historicity of Jesus or the literal truth of the Bible, and tuning in next week to find himself being verbally battered by Jerry Falwell and Billy Graham. I should have known better. Wilderness is a religion. And this magazine is the wilderness world's

Watchtower. A little deviation from the true faith—even a friendly, sympathetic one—will be labeled heresy and cut out like a precancerous polyp. Question the idea that the world was created in six days and the Religious Right will accuse you of furthering the sinful work of the devil. Question the wilderness idea and Dave Foreman will accuse you of furthering the sinful work of Wally Hickle and Jimmy Watt.

What's in a name? Shakespeare asked. Plenty, answer women and African-Americans. Even a name that is supposed to be complimentary—such as "ladies" or "blacks"—may turn out to be a misnomer. Dave may feign not to detect the difference, but let me reiterate here that my critique was directed at the name, the label, "wilderness," not the places that bear it. Everyone understands that to criticize the ladies idea (to say nothing of fond little epithets such as "chicks" and "babes") is not to criticize women. Indeed, women themselves have led the assault on the ladies idea (as well as on the more scurrilous labels). And to criticize the black idea is not to criticize people of African descent. Likewise, I focused my criticism exclusively on the *received wilderness idea*, the conventional concept of wilderness, not (so-called) *wilderness areas*.

And there was nothing disingenuous—that is, "lacking in candor...giving a false appearance of simple frank-

ness... calculating," according to my Merriam Webster's—about it. I don't have any hidden agenda. I'm not on the Forest Service payroll, nor am I Ron Arnold's fellow traveler. I'm just an academic philosopher, by trade, whose main business is conceptual analysis. And the *concept* of wilderness seems to me problematic. I'm trying to choose my words carefully here, as always. That is, the wilderness idea *appears* to be fraught with *problems*. Appearances, however, can be deceiving; and real problems can be solved. So, I'm just calling it like I see it—and keeping an open mind. If the problems I find with the wilderness idea are not real, or if they can be solved, so much the better. That's the reason, to be perfectly nondisingenuous, why I put my critique in this, rather than in some more neutral journal—such as *Ecological Economics*. I knew that the top guns in the wilderness movement would come out blazing. And that way the wilderness idea would get the best, most authoritative defense available—even though I might get wounded in the process.

Question: What's wrong with the labels "blacks" and "ladies"? Answer: The former has a negative connotation and the latter carries historical baggage. Plus, both terms misrepresent what they refer to.

Think about "black magic," "black thoughts," "black humor," "film noire." In all such usages, the adjective "black" suggests something evil or sinister. So the deep grammar of the word "black" subliminally suggests that black people are evil and sinister—despite the counteractive talisman, "black is beautiful." The term "African Americans," on the other hand indicates that its proper referents are, first and foremost, Americans—a very good thing to be in the United States, if not everywhere else—who happen to be of African descent. Same folks, different name. But the now-preferred name provides both a more accurate description (relatively few Africans or people of African descent actually have black skin) and a more positive image.

The word "ladies" connotes nothing negative, certainly nothing evil or sinister. Quite the contrary. But the term carries historical baggage: "Ladies first." "Act like a lady." "Lady-like demeanor." Thus, to label someone a "lady" is prejudicial, in the literal sense of the word. It prejudices a woman, and so forecloses her opportunity to be sexually and occupationally free and equal.

Like the word "lady" and unlike the word "black," "wilderness" connotes something very positive to me and to the other readers of *Wild Earth*—though, as Rod Nash points out in his classic study of the wilderness idea, for centuries the word had a largely negative, evil, sinister connotation and was regularly modified by adjectives such as "hideous" and "howling." But also like the word "lady," "wilderness" carries a lot of historical baggage. I don't have anything against women who are proud to be ladies. And I don't have anything against places that are proud to

be wildernesses. But times are changing. Many women have agendas other than to be ladies. And conservation now is about something other than protecting a *resource* and experiencing it. Yet that's what the American wilderness movement, historically, was mostly about—as all three parties to this debate more or less agree. I may be a dull student, despite my bamaphid status (BA, MA, Ph.D.); and I may not have read all the books on conservation that Uncle Dave has read (or written), but it is a hardly contestable fact that until very recently the wilderness movement was about recreation, scenery, solitude, transcendental religion, and little else. (By the way, Dave's "C"-student-who-barely-graduated-from-a-Western-college exercise in self-deprecation is a textbook case of disingenuousness; Foreman is a formidable scholar and an inimitable stylist.)

"No one" Reed Noss knows "today thinks of wilderness the way Callicott depicts it." Reed's circle of acquaintances must be very small and very elite indeed. Certainly it cannot include Mike Matz, author of "Lock It Up," the lead article in the same issue of *Wild Earth*. According to Matz, "Wilderness is something more than 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" (emphasis added). My point exactly. That's what wilderness was, and for most wilderness fundamentalists, that's what wilderness is.

Wilderness areas, like zoos, are now being made to serve a purpose for which they were not originally intended. And what is that new purpose? In both cases: the conservation of biodiversity. Zoos are being redefined as *ex situ* biodiversity reserves, and wilderness areas are being redefined as *in situ* biodiversity reserves. One can imagine a nostalgic article, analogous to Mike Matz's, in *Zoological Gardens* (a hypothetical zoo-world equivalent of *Wild Earth*), saying that zoos are more than places where we can keep endangered charismatic megafauna alive until enough of their habitat can be restored so that they can live free; zoos are places where jaded city people can do a little good old-fashioned gawking at animals in cages.

Now don't get offended. I'm not saying that all experiences are equal, that the wilderness experience and the zoo experience are morally equivalent, any more than I would say that the college experience and the casino experience are morally equivalent. I remain a member of the Wilderness Church and repair as often as I can to the outdoor spiritual sanctuary of my choice. My critique of the wilderness idea is relative—relative to contemporary conservation desiderata. What contemporary conservation needs—and needs desperately—is biodiversity reserves, not zoos and psycho-spiritual resources that preserve biodiversity on the side. I'm not saying that *we* don't also need untrammled places to which *we* can retreat for inspira-

tion. Rather, I'm saying that these are two different needs—the habitat needs of other species, on one hand, and *our* psycho-spiritual needs, on the other—which may happen to coincide (as Dave points out) in some instances, but not in others.

This brings up two issues: anthropocentrism and multiple use.

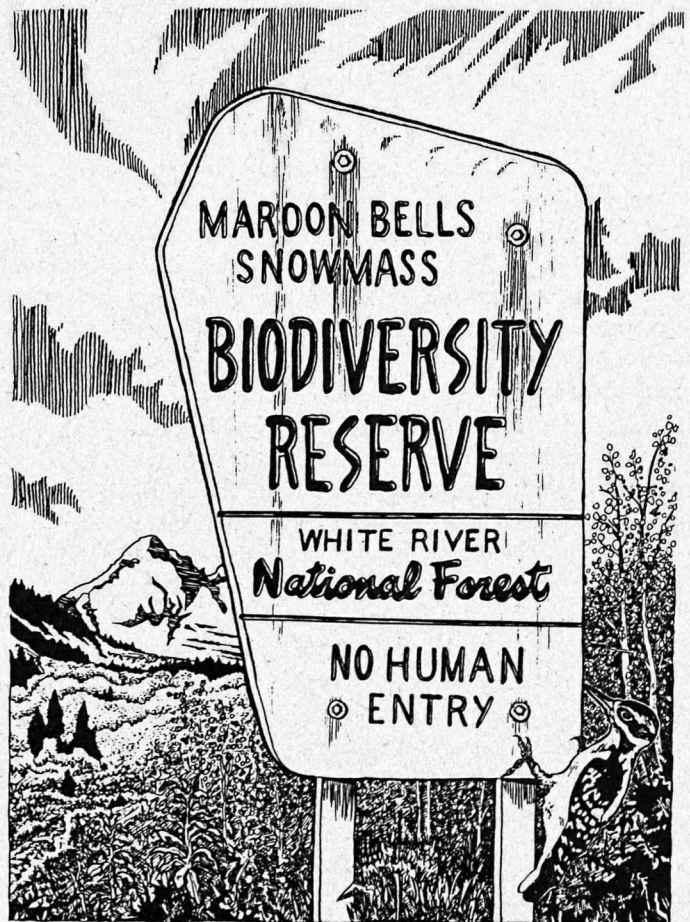
Dave suspects me of defecting to the “liberal” People First! camp. (Maybe that suspicion is behind the disingenuousness allegation. And I'm sure that the foregoing discussion of acceptable names for various groups of people only makes me look the more guilty.) But what I'm trying to promote—in suggesting that we contemporary *conservationists* abandon the *concept* of wilderness (with its resourcist historical baggage) for the *concept* of biodiversity reserves (with their buffer zones and connecting corridors, together with sustainable livelihood through appropriate technology elsewhere)—is the right of other forms of life to habitat in which they can live and live well. I'm still loyal to my long-standing nonanthropocentrist commitments, even in criticizing the concept of wilderness. In fact, those commitments are, in part, the source of my discomfort with the (originally anthropocentric) wilderness idea.

Reed suspects me of advocating the same old failed Forest Service policy of “multiple use” tricked out in new terminology. I'm not. Multiple use attempts to combine *incompatible* activities on the same landscape—lumbering, grazing, recreation, wildlife conservation. Of course, not only does it fail to work, it is a big charade: getting out the cut comes first, getting in the cattle comes second; trekkers and critters can glean the spoils. The human economic activities that I suggested might go on in and around biodiversity reserves would be strictly limited by norms of ecological health and integrity. Ecological health and integrity never figured into the Forest Service's multiple use concept.

However, the wilderness idea that Reed seems to be defending does, ironically, entail multiple use. Wilderness areas are still conceived as sanctuaries to which we so-inclined human beings can retreat whenever we want for inspiration, while, at the same time, they are now supposed to moonlight as habitat for those nonhuman beings for whom the presence of a lot of techno-camping people carrying tasty food is a distraction. Isn't that attempting to combine two incompatible uses of the same places? Calling a biodiversity reserve a “biodiversity reserve,” not a “wilderness area,” puts would-be human users on notice that the core area of this place is for the wolves, the bears, and all the other beings that live there, not for us. Once again, ecological health and integrity

should be the prime consideration. And that norm cuts both ways. If considerations of ecological health and integrity permit it, a variety of human uses should be sanctioned. But if the same consideration required it, I would be for keeping every human being out—including me, Reed, Dave, and Mike. Lock it up? Yeah! And, if necessary, lock us pilgrims out!

J. Baird Callicott is Professor of Philosophy and Natural Resources at the University of Wisconsin-Stevens Point, where he offered the world's first course in environmental ethics in 1971. He is author of Earth's Insights: A Multicultural Survey of Ecological Ethics from the Mediterranean Basin to the Australian Outback and In Defense of the Land Ethic: Essays in Environmental Philosophy. He is editor of Companion to A Sand County Almanac: Critical and Interpretive Essays and (with Susan Flader) of The River of the Mother of God and Other Essays by Aldo Leopold.



Wilderness Does Work

by Michael Frome

THIRTY-PLUS YEARS AFTER PASSAGE certainly marks a fitting point in history to consider whether the Wilderness Act of 1964 still works. Has wilderness preservation, as a principle and as a mechanism, failed—so that we need an alternative, as J. Baird Callicott proposes? Or do we need wilderness “now more than ever,” as both Reed Noss and Dave Foreman insist? Whatever the answers, I view the discussion in *Wild Earth* (winter 94/95) by these thoughtful, able witnesses as positive and challenging. I’m glad the questions have been raised and I’m glad to have the opportunity to contribute to the dialogue.

Even at its best, I see the Wilderness Act as a beginning rather than an end in itself. True enough, the National Wilderness Preservation System, which came into being with the act, has grown to embrace nearly 100 million acres of public land, but perhaps that’s only a number—that doesn’t necessarily mean it works as it should. I see an unfinished agenda, a time to identify weak spots, opportunities, and challenges. We have a long way to go to realize the promise of the victory one generation ago.

But more important, at least for me, is to recognize and appreciate wilderness preservation as something deep-rooted in American history and national conscience, and even beyond our own country as a universal calling, a global need. The rest of the world has taken heart from our lead, as in Great Britain, where Lady Sayer, prime mover of the Dartmoor Preservation Association, pleads for a halt to the tragic disintegration of upland moors. Her words are poignant: “The rocks and heather, the gorse and the bogs. That is wild country, and in Britain it is all we have left of truly virgin land; and it is slowly vanishing, not only in Britain, but in every part of our man-polluted planet.”

Here at home it is sometimes assumed that wilderness preservation as a land use was conceived with the movement for the Wilderness Act, and that it was based largely on goals of “aesthetics” and “recreation.” History, however, shows otherwise, that the Wilderness Act emerged as the culmination of ideas and efforts of diverse people, often unsung, over a considerable period of time. For example, I recently came across the August 1936 issue of *Nature Magazine*, in which Arthur Newton Pack editorialized in support of a proposal by Dr. E. Lucy Braun for a network of national primeval monuments, extending from tropical hammocks in Florida to rain forests of the Northwest, from desert flora of southern California to spruce and fir forests of Maine, “sufficiently substantial and representative areas that would preserve intact examples of every type of native vegetation.” Pack applauded Dr. Braun’s stated goal to safeguard historic, scientific, and aesthetic values, urging that: “A national survey should quickly be made of remaining typical areas and a complete program of acquisition adopted.”

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Dr. Braun, for her part, may have developed her thinking through contacts with Aldo Leopold and Robert Marshall. In his 1933 book, *The People's Forests*, a conservation gem unfortunately lost to time, Marshall proposed a national network of primeval reservations in all sections of the country, saving specimens of each timber type. He in turn may have been influenced by his close friend and ally in forestry, Gifford Pinchot, who in 1920 as commissioner of forestry in Pennsylvania (ten years after leaving his federal position as chief of the Forest Service) successfully advocated establishment of forest parks, forest monuments, and special scenic areas, the basis of Pennsylvania's roadless wild areas and natural areas. Looking back into the nineteenth century, George Perkins Marsh, in pioneering a unified concept of soil, water, and forest, recommended keeping a large portion of America in its primitive condition. So did Thoreau, who foresaw national preserves protected as a democratic birthright, "in which the bear and the panther may still exist, and not be 'civilized off the face of the earth.'" Thoreau, in fact, wanted each community to sustain a primitive forest of 500 or 1000 acres around it to "keep the New World new."

Now, one may question whether Thoreau and others were motivated ecologically and scientifically or "merely" aesthetically. Dave Foreman, in organizing the North American Wilderness Recovery Strategy (The Wildlands Project), has argued that true wilderness—ecological wilderness—is the only path home, that without it we are strangers and aliens in our own land. I share Dave's view, but see the rationale in other terms, perhaps best explained by treating ecology or biological diversity as a feeling rather than exclusively as factual or substantive. As Emerson revealed more than a century ago, literature, poetry, and science all are homage to the unfathomed secrets of nature. John Muir felt uplifted and exalted in the wild. Wilderness to him was an expression



of God on earth—the mountains, God's temples; the forests, sacred groves.

Wilderness, above all its definitions, purposes, and uses, is sacred space, the heart of a moral world governed by peace and love. Wilderness preservation is not so much a system or a tactic, but a way of experiencing the world within oneself, of understanding the sacred connection with all of life.

That is not a new idea, nor uniquely American. All religions emphasize God's gifts of the earth, sky, water, and life, the unity and wholeness of creation, the immorality of abusing nature for immediate gain, and the benefits of intimate, personal communion with nature. For centuries Buddhists and yogis have gone to caves, mountain tops and other remote places to find revelation. On one occasion Jesus Christ spent forty days in the wilderness, where he had been led by the Holy Spirit. On another he and three disciples undertook to visit a high mountain, probably Mount Hermon on the northern boundary of Palestine, in the expectation of finding unlimited good.

All across the world so-called primitive peoples have placed personalized values on sacred qualities of land, particularly untouched land. Their sacred places serve as common history uniting generations. In Hawaii, the concept of *wahi pana* merges the importance of visible place with invisible spirit. The inventory of the sacred in Hawaii includes the dwelling places of the gods and of venerable disciples, temples, and volcanoes. Sacred places are located widely across North America, retreats where native peoples in many different ways have sought to cleanse body, mind, and spirit.

"Preservation" means perpetuation of living cultural conditions—beliefs, lifeways, languages, ceremonies—as well as places associated with them. Native Americans are very concerned about cultural preservation. They live in the belief better days will come if they can mend the sacred hoop broken many times over in the past five centuries.

Wilderness does something like that for me. Wilderness enriches my body; it elevates my mind and spirit to look above and beyond my own wants and needs. It makes me a better person. Thus, I think of the Wilderness Act as an expression through law of national ethics and idealism, a symbol of hope, lighting the path to an age of reason and nonviolence, an age of respect for the Earth as a source of respect for each other.

Of course, there's plenty of room for pessimism. For every step forward, society seems to take two (or more) steps backward. I can't deny the gloomy critique of Thomas Merton in *Raids on the Unspeakable*:

We live in the time of no room, which is the time of the end. The time when everyone is obsessed with lack of time, lack of space, with saving time, conquering space, projecting into time and space the anguish produced

within them by the technological furies of size, volume, quantity, speed, number, price, power, and acceleration.

On the other hand, Oscar Wilde delivered a great line: "We are all in the gutter, but some of us are looking at the stars." Wilderness is a special place for looking at the stars—for touching stars and being empowered by them, for dreaming impossible dreams. That was what Howard Zahniser did when he wrote the Wilderness Act (drafted on his dining room table), then proclaimed, "We are not fighting progress. We are making it. We are not dealing with a vanishing wilderness. We are working for a wilderness forever." Zahniser, despite all odds and opposition, never let go of the dream.

Nor do I see why those who care should let go of it now. Zahniser and the other citizen leaders of thirty-plus years ago left a monumental legacy, and a challenge to fulfill the dream. I was privileged to know many of those pioneers. They were patriots, of the best kind, demonstrating that wilderness preservation is American, just as wilderness is America, the vestigial symbol of the original America. The vestiges may be in no way perfect, nor even adequate, but they are the best we have and thus more the treasure. Leopold defended the value of places less than pristine, urging that they be left alone to evolve over the long term. On his Sand County land he showed the earth's ability to heal itself under caring stewardship. On a larger scale, the history of National Parks, such as Great Smoky Mountains in Southern Appalachia and Big Bend in west Texas, proves that restoration is a realizable goal.

It takes serious commitment to make such things happen, but the effort itself is rewarding. Involvement evokes the best in people: Albert Schweitzer taught that a person is ethical when life becomes sacred, not simply his or her own life, but that of all humans and of plants and animals, and when he or she devotes himself or herself to other living things. Rachel Carson espoused the same idea:

The beauty of the living world I was trying to save has always been uppermost in my mind—that, and anger at the senseless brutish things that were being done. I have felt bound by a solemn obligation to do what I could—if I didn't at least try I could never again be happy in nature.

The Wilderness Act opened the way to a new level of citizen involvement and activism, a grassroots conservation movement in which local people worked for wilderness areas they knew best. The late 1960s and early 70s were exciting times in conservation history, when Stewart Brandborg, who succeeded Howard Zahniser as executive director of The Wilderness Society (on Zahniser's death in 1964), and associates systematized grassroots wilderness activism. They grasped the importance of the provision of the act stipulating that, prior to

consideration by Congress, public hearings must be held on each proposed new wilderness unit in the vicinity of the lands in question. Harry Crandell, who worked for The Wilderness Society from 1970 to 1975, recently wrote to me about that period:

The Society was in the forefront and led major wilderness and public land issues. We all worked together as a team, each helping the other, but often we had to work alone for long stretches simply because there were so many balls in the air at once. Successful conclusions of issues would have been highly unlikely absent citizen involvement and telephone "trees" manned by volunteers and staff and "alerts" prepared by staff.

This kind of organizing doesn't happen much any more. National organizations like The Wilderness Society and Sierra Club are now led and staffed by well educated professional personnel, who have learned much from course work but not enough from life or from self-sacrifice. The national groups have field offices, yet local citizen groups (notably the Greater Ecosystem Alliance and Alliance for the Wild Rockies here in the Northwest) function on their own and do most of their own politicking in Washington.

I recall going to California (at Brandborg's suggestion) to visit the San Rafael Wilderness, the first National Forest area reviewed under the 1964 act. My partner on the trail was Dick Smith, an energetic Santa Barbara newsman who knew the area intimately. Smith worked with The Wilderness Society to develop a wilderness proposal far broader than the official proposal from the Forest Service. Like Arthur Carhart in the northern Minnesota canoe country and Aldo Leopold in the brushy Southwest, Smith saw something special in the chaparral slopes, Indian cave paintings and sandstone cliffs others had missed. Efforts by Smith and his local allies, coordinated with The Wilderness Society, led to establishment of the San Rafael Wilderness, and later of the adjacent Dick Smith Wilderness, named in his honor following his death in 1977.

Working to influence public policy through avenues provided by the Wilderness Act and other laws helps individuals understand that efforts are rewarded, even in causes that appear lost. In Memphis during the 1960s and 70s, the Citizens to Preserve Overton Park were determined to save one of the finest urban forests in the world from construction of a highway through the middle of it. They were forced to contest not only merchants, developers, and public officials, but the two powerful Memphis daily newspapers, which ridiculed park defenders and belittled any politician who dared speak in defense of the park. The parks department and park professionals were easy pushovers, acquiescing to the proposed highway; but the citizens group insisted that a park represents an integral and sacred part of the American city,

that it makes the city habitable, and that the highway should be built elsewhere or not at all. The Overton Park case, because it involved federal highway funds, was debated in Congress and before the Supreme Court. It was tough going. The citizens felt that even though the park might be lost, their lives were enriched for each day they saved it. Ultimately, Overton was spared, and it still enhances the landscape and quality of life of Memphis.

Such grassroots struggles go on everywhere, and perhaps they will continue unto eternity. Should that be the case, may those who care eternally be guided by the words of Ernie Dickerman, the wilderness warrior's warrior. Dickerman in the 1960s was a leader in the battle to save the Great Smoky Mountains from a destructive pseudo-wilderness proposal of the National Park Service. Thirty years later, though well past eighty, he is still going strong, campaigning for wilderness in Virginia and inspiring friends and fans everywhere. In 1992 he concluded a letter as follows: "It is amazing how political democracy in the United States, despite its deficiencies and innumerable errors, permits so many of us to lead satisfying, rewarding lives."

Private citizens, Dickermans across America, need to advance the wilderness cause because public officials and public agencies do so little in its behalf. Congressional policy in our time dictates that the very parks, forests, and wildlife refuges John Muir helped save must be used, as commodities, by and for people. Game must be harvested, trees cut, and visitors served; otherwise the areas are considered to be locked up and going to waste. Congressmen may possibly be forgiven, considering that politics is their game; they don't know anything about ecology. Those outside who do know need to try harder to enlighten Congress. But it's another story with the four federal agencies directly responsible for implementing the Wilderness Act and for protecting the separate units of the National Wilderness Preservation System. The US Forest Service, Fish and Wildlife Service, National Park Service, and Bureau of Land Management all ought to know better and do more.

While part of the problem certainly derives from the directives to public servants from Congress and their political superiors, agency leaders and professionals in the ranks are too willing to comply and concur. They know how the system works and adapt to it: The status and pay levels of personnel are determined not by acres of wilderness protected, nor by species of wildlife rescued from endangerment, but by the volume of timber cut or numbers of people served. The administrator of a National Forest or National Park with two million visitors is higher up the ladder than the man or woman at another facility with two million acres of wilderness and half as many visitors.

Many of these personnel lack philosophy or feeling for wilderness, having been trained in forestry and range schools, rooted in traditions of agronomy, to manage and

manipulate, to convert "resources" into commodities. Wilderness to them is merely another commodity, okay in its place as long as it doesn't interfere with production of commodities that really count.

They want to impose management on wilderness, too, screening out insects, lightning fires, and other natural disturbances, rather than to identify and defend them as valid parts of a dynamic primitive landscape. Good science needs control areas where manipulation is minimal, where wildlife communities are allowed to regulate themselves. Wilderness is meant to do that. Considering that animals are heavily manipulated almost everywhere else, a few places ought to be reserved for systems to work without human intervention.

The Forest Service likes to claim it invented wilderness, citing Carhart, Leopold, and Marshall, the wilderness pioneers who worked in its ranks. But Carhart's pleas for preservation were unheeded and he left the agency in despair in 1923; Leopold was dispatched from the Southwest to an office position at the Forest Products Laboratory in Madison—then he quit too; Marshall died in 1938, after which much of his wilderness work was undone. Now, the Forest Service points to its corps of wilderness rangers, which does indeed include competent and committed people but mostly at the lower levels. When it comes to predator control in wilderness or clearcut logging to the wilderness boundary, the decisions are made by district rangers and forest supervisors, the "line officers," often with different sympathies. The people in the agencies who care deeply about wilderness are frustrated by institutional lethargy and bureaucratic unwillingness to meet the mandate of the law.

The National Park Service in my thinking is the most culpable, precisely because it is mandated to protect and preserve yet has done precious little to implement the Wilderness Act. Its leaders claim the agency's own basic legislation is adequate, but all the evidence shows a continuing willingness to back away from preservation, to sacrifice wilderness to mass recreation—including snowmobiling, the least appropriate kind—and accompanying commercial development. The National Park Service has deliberately kept classified Wilderness small. In a letter to the editor of an internal Park Service periodical, *Park Science* (August 1992), Rick Smith, associate regional director of the Southwest Region, questioned his agency's commitment.

When was the last time we took a strong stand on major environmental issues such as overgrazing on public land, irresponsible mineral development, or the failure to add to the nation's Wilderness Preservation System? When was the last time we told the ORV people to take a hike?

While I applaud the concept of "leading by example," what examples are we going to demonstrate? We aren't progressive about recycling, we don't promote the

use of alternatives to fossil fuels, we don't do much about getting visitors out of their cars, we favor commercial interests over private users in such areas as river permit allocations, we allow snowmobiles and outboard motors in pristine places such as Voyageurs and Grand Canyon, we permit development in major resource areas, we spend more money fighting drugs than ARPA violations, we urge our superintendents to do more with less when we should have the courage to tell them to do less with less, and every year we lose ground in the preservation and protection of cultural resources.

Citizens everywhere are way ahead of the paid professionals. In 1990 I went to a conference on preservation of public lands in the state of Maryland. Initially I thought Maryland had no public lands, confusing the term "public lands" with the public domain of the West. Yet at the conference I learned of the Maryland Wildlands Committee's campaign to work within state parks and forests for a Maryland Wildlands Preservation System, explained as follows:

Our primary goal is to protect the natural diversity of Maryland ecosystems, including biological community, species, and genetic diversity. We still lack desirable representation of Maryland ecosystem diversity, e.g., boreal bog, limestone forest, tidal marsh are missing. We still urgently need to add a few large unfragmented areas of forest wherever they are least disturbed and most valuable ecologically.

These last big blocks of forest are hard to find within State lands... Complicating the problem is the competition among different interests: timber industry (which wants to cut), wildlife management (which wants to open up forest for edges advantageous for certain species), Wildlands people (who want to keep the forest ecosystem flourishing for all species), and the [State] Forest Service (which would like to keep everybody happy, but manage primarily for traditional forest goals).

The story is similar elsewhere in the world. In December 1994 I visited the Galapagos Islands as part of an international group of scientists and conservationists. In briefings to the group, the executive director of the natural resources department of Ecuador, INEFAN, and the superintendent of Galapagos National Park both stressed the need to satisfy demands for commercial development by the islands' growing population. Yet we were met at Puerto Ayoro, the main settlement, by a delegation of thirty-plus, children included, with an altogether different message. Their mimeographed appeal included the following passage:

We ask you to join forces with us to save our islands, as a last chance for mankind to show an ability to live in peace with nature... The islands require the concerned involvement of people everywhere to find solutions that will never harm the natural function of the Galapagos ecosystems.

The Galapagos already is a Biosphere Reserve. That helps, but clearly doesn't protect it. Ten years ago I tried to get Virgin Islands National Park in our own country removed from the list of Biosphere Reserves because it was poorly administered. The National Park Service was doing terrible things—expanding a highway, tearing down hills and uprooting palm trees to make way for parking lots, sacrificing park resources for the tourist industry. In response to my proposal, I received a stern letter of admonition from William Gregg Jr., director of the biosphere program for the National Park Service, insisting that the park "is making major strides in developing the scientific basis for addressing important problems." To me, that seems to mean enabling research personnel to get more funding to conduct more studies and park managers to defer action, instead of acting on the strong, irrefutable evidence already at hand.

The Biosphere Reserve is a good idea. So are biodiversity, deep ecology, and conservation biology, but sometimes they come off as buzzwords, trendy new approaches



to avoid facing chronic old problems. Wilderness represents the ultimate in land preservation; yet today, thirty years after Zahniser, fifty years after Leopold, Wilderness designation by law, without more, cannot save the wilderness. I visit the wildest and remotest areas and find them degraded by misuse and overuse, with vanishing species of wildlife driven to their last refuges. The balance of the public estate, bordering wilderness but largely surrendered to private exploitation, cannot provide the buffering wilderness needs. And beyond the public lands, conditions steadily worsen, with inevitable negative influence on wilderness.

Protecting wilderness by law no longer suffices to protect wilderness. A wholesome natural environment reflects a wholesome human environment—it's impossible to have one without the other.

The world we live in is divided between those who do not have enough and those who have more than enough. It grieves me that the United States in a presumably enlightened age should lead in widening the gap between the underprivileged—the homeless, hungry, and hopeless—and the overprivileged who want still more.

Society needs transformation. Martin Luther King Jr. saw three major evils—racism, poverty, and militarism—and found them integrally linked. I see the degraded environment as a fourth major evil, joined with the others, all symptoms of a sick society.

I like to speak of the common language that calls us home, of spiritual dimensions of the natural world that bring people together to recognize difference of appearance but unity

of source, and that help to heal and enrich human heart and soul. I find support in the world's great religious traditions, all appealing to children of the universe to live in harmony with the earth. Despite their differences, religions acknowledge similar mysteries of origin, similar mysteries of destiny, and the search

for a world society where peace prevails. Wholeness, respect for all life, and the integrity of creation link the most profound values of all philosophies.

The blessings of nature are meant to be shared, but not with blindness that sanctions destruction. Society needs to develop universal respect for nature, to learn to draw from nature with restraint, to reshape the concept of power, from domination and conquest into the power of peace and service. Wilderness helps us do that. It breaks down artificial barriers between people bred to believe they are different from each other by reason of class, color, race or gender; wilderness offers teaching, real teaching. A natural area, no matter how small or imperfect, is a classroom filled with learning in all kinds of fascinating subjects. Marshes offer scenes three hundred million years old, the same environment that produced the first vertebrates to walk on land. Salt marshes demonstrate a link in the ecology of the entire ocean, acting as nursery or feeding grounds for fin fish and shellfish. The desert shows the frugality of plants and animals that have adapted to endure where water is scarce and undependable. Wilderness, large or small, reveals how living creatures struggle for water, sunlight, soil nourishment, and space; how some grow because others die, decay, and decompose, and how others benefit through cooperation or partnership.

One lesson leads to another. Eugene Odum, the renowned ecologist of the University of Georgia, has long stressed the need to preserve a substantial portion of the biosphere in a natural state to sustain the quality of human life and carrying capacity of the Earth. In a paper titled "Natural Areas as Necessary Components of Man's Total Environment," presented by Eugene Odum and his brother Howard Odum before the thirty-seventh North American Wildlife and Natural Resources Conference in 1972, "natural environment" is defined in terms of function as that part of humankind's life-support system operating "without energetic or economic input from the power flows directly controlled by man."

...cities need the protection of an adequate life support system, many elements of which natural environment provides free of charge. Without natural recycling and other work of nature, the cost of maintaining quality life in cities would be prohibitive...true value of a man's total environment is determined by the diversity interaction between the "developed" and the "natural" environment and not only by the worth of each as a separate component.

Consistent with his life's work, Eugene Odum has devoted much of his later career to agricultural ecology and to links between rural and urban areas in Georgia. In *Georgia: Images of Wilderness*, published in 1992, he wrote:

A major reason for preserving lots of natural areas as well as prime farmlands lies in their value in providing vital and mostly non-market life-support goods and



services such as clean air, clean water, good soil and so on...As land prices rise and shortages develop, people often complain that natural area preservation is an unaffordable luxury because "we can't eat scenery." We can reply by saying, "But we can breathe and drink it..."

Thanks to the influence of Odum and others, ecology is now readily accepted in conservation circles; in 1964, the year of the Wilderness Act, the idea was new. Still, more questions wait to be answered than have yet been asked; much more needs to be learned not only in science but in understanding how wilderness connects with education, ethics, and religion. We need to learn more about the physical and psychic therapeutic qualities of wilderness, the contributions of individuals who have helped to save it, and the connection between the ongoing destruction of wilderness and the social issues of chauvinism, poverty, and militarism.

In looking back, as part of the process of looking ahead, history proves to me the inestimable value of designating Wilderness through law, of strengthening protection of public lands from the pressures of intrusive development. With agencies buffeted and weakened by winds of patronage and high level interference, Wilderness designation is critical.

Wilderness inspires the search for undisturbed beauty and the serenity of wild places. It documents earth history and change, with baseline landmarks against which to measure human alteration of the rest of the earth. It documents human history, too, and democratic government.

Perhaps the best of all messages is that to heal the earth is to heal the soul. Such recognition empowers individuals to face the world with hope and heart to make it whole again. ■

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When edges of color
sink under the palm of earth
and a universal gray unites grass with trees
and trees with trees

like fingers spreading wide,
finding they have webs

the frogs pull out from their horded banks of day
and celebrate the mud-dark reach of pond
into sky and trees.

At night these frogs fly with their song
trailing them like a lifeline,
curling into the trees and moving
into the leaves and sky
on the crest of the pond's
secret explosion.

The men and women in the cabin
hunch under the shoulders of the forest
and listen to the night revolutions
as they stare at their fingers of light,
their lifeline,

watching
for webs.

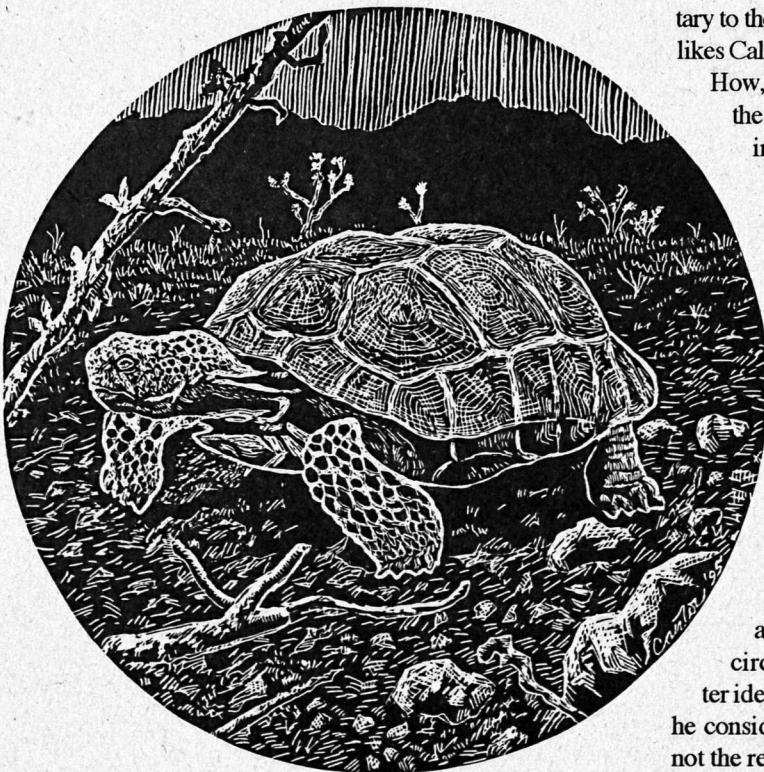
—Chris Schimmoeller (Frankfort, KY)

Wilderness or Biosphere Reserve: Is That A Question?

by Mary Anne Vogele

IN THE WINTER ISSUE of *Wild Earth* J. Baird Callicott, Reed Noss, and Dave Foreman argue about the appropriateness and efficacy of the wilderness idea. Callicott says that he doesn't want "to discredit the *areas* designated 'Wilderness'" but to "criticize... the *concept* of wilderness." (Emphasis his.) Noss says that he and Callicott agree about much but differ in that Noss sees issues such as transition zones and sustainable livelihood as complementary to the wilderness idea. Callicott calls them alternatives. Foreman likes Callicott personally but thinks his critique is badly misdirected. How, Foreman wonders, can Callicott love wilderness but fault the idea of wilderness? This argument is more a misunderstanding of perspective than a substantial disagreement.

One major cause of the misunderstanding is that insufficient attention is paid to distinguishing criticizing a thing from criticizing an idea of a thing. In order to address that distinction let's consider an emotionally neutral thing, a circle. Pretend that you don't know what a circle is and you ask me. I draw a circle and say, "A circle is an arc continued to such a point that the arc becomes continuous." Just then a passerby, Euclid by chance, introduces himself and says, "Pardon me, but by Pythagoras and Aristotle, that's a poor definition of a circle. A circle is a two dimensional figure in which all points are equidistant from the center. Thank you and good day." Euclid, in criticizing my description of a circle, says nothing good or bad about any real existing circle. He just says that my idea of the circle is lacking, and provides what he considers to be a better idea of a circle. In this same way, Callicott is criticizing what he considers to be "the *received* wilderness idea" (emphasis his) not the real wilderness.



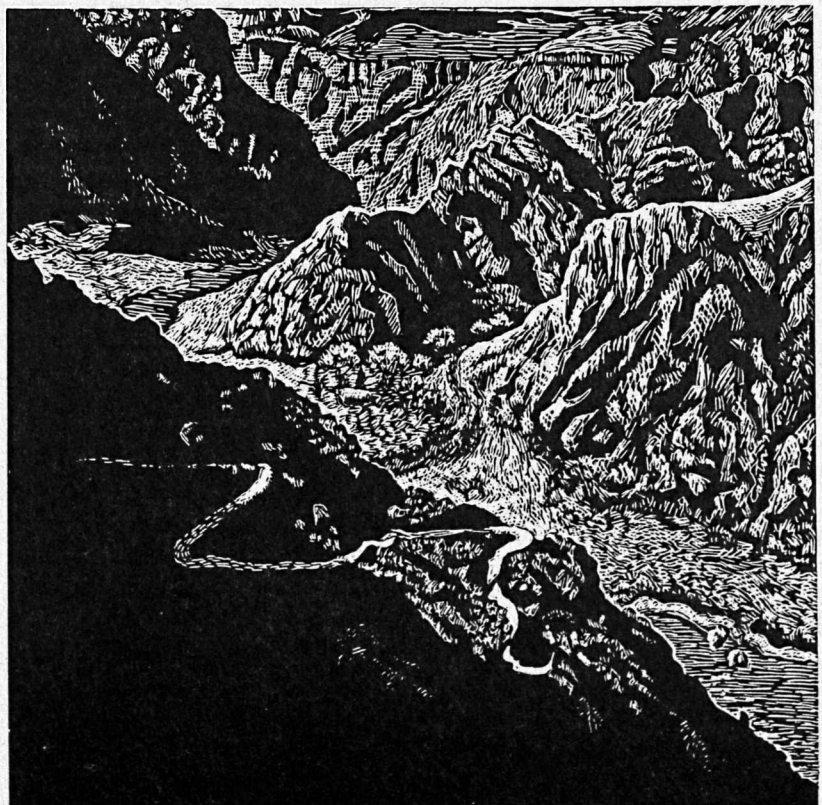
Let us take an example more dear to our hearts, the Greater Salmon/Selway Ecosystem (GSSE) as discussed by Howie Wolke in *WE* Summer 1993. Located in and around the fat end of the Idaho panhandle, GSSE has its center in the Frank Church River of No Return, Gospel Hump, and Selway-Bitterroot Wilderness Areas, comprising over five million almost roadless acres. Callicott, Noss, and Foreman would all agree that this wild area should be roadless, unlogged, unmined, undrilled, and ungrazed. Furthermore, they would agree that it should be joined to other wilderness areas and both core and corridors should be protected by buffer zones. Noss and Foreman include this wilderness core with buffers and corridors in the Wildlands Project model. Callicott thinks that the term "biosphere reserve" would be more universal and more politically persuasive. The GSSE is its wild self no matter what we call it. Conversely, if we pave it, log it, graze it, and mine it, it will no longer be a wild land no matter what we call it.

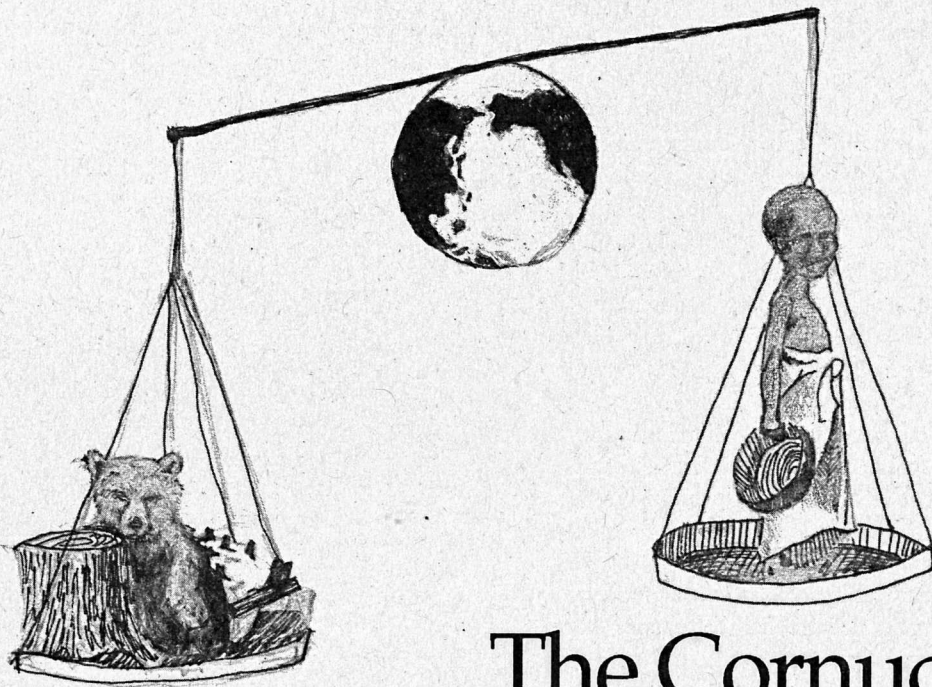
Another factor in the argument is that Callicott casually asks more of the idea of wilderness than it can reasonably deliver. Callicott argues that wilderness as currently conceived is "zoning the planet" into no use and any use zones. He quite correctly argues that wilderness cannot survive if issues such as sustainability, global warming, and increasing ultraviolet radiation are not addressed. He is mistaken, however, to assert that an idea of wilderness is deficient because it does not address these issues. Just as an idea of a circle need not also define a square, the idea of wilderness need not define sustainable technology, even if real wilderness is dependent upon the development of such a technology.

The problems with the modern, global-trading, industrialized culture are many and broad enough that not all aspects can be addressed simultaneously. This does not mean that in defending wilderness we discount injustice, pollution, prejudice and exploitation. It only means that without focus we will get little or nothing accomplished. "Wilderness advocates," as Foreman points out, "are not anti-people." As he also points out, without focused defense of wilderness, we wouldn't have any left.

Dave Foreman characterizes any debate within the conservationist community about the value of the idea of wilderness as "an off-to-the-side little fracas at most." The same is true of the Callicott, Noss, Foreman debate. They all want more wilderness protected as areas where nature's natural processes can play themselves out in their entirety with minimal human intervention. Their argument is how best to refer to and defend wilderness areas. They do not differ about the fundamental value of wilderness but only about how best to express this value to the unconverted.

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The Cornucopia Scam

Contradictions of Sustainable Development

THE PATH to real sustainability cannot be found by simply amending the programme of sustainable development—it is too deeply buried in the human-centred, expansion-oriented worldview of industrial society. Sound policies can be developed only on the basis of a sound value system. The main contours of a distinctively ecological way of valuing, thinking about and doing things would appear to be:

- Acceptance that humanity is not above and apart from the rest of nature.
- Recognition that there is intrinsic value in all naturally occurring life and landforms separate from any utilitarian value they may have for humans.
- Acceptance of an ethos of 'treading lightly' in all relationships—between humans and other species as well as within human society.
- Commitment to organisational structures and technologies compatible with sustained ecological diversity, including genetic boundaries between species.
- Commitment to cultural diversity among people providing that it is compatible with overall environmental integrity and stability.
- Recognition that in all things—including human numbers, per capita consumption, institutional size, technological innovation and interference—there is a limit beyond which growth yields decreasing returns or faces insuperable barriers.
- Recognition that, taken as whole, human society has overexpanded, and that the primary goal must be to reduce as well as restructure the demands currently placed upon environmental systems.

Part 3 Not Sustainable Development, Development of Sustainability

by Sandy Irvine



The primary task today is to reduce human impacts upon the environmental systems, including other forms of life. Though individual lifestyle change is certainly vital, the most important challenge is to bring the institutional framework into harmony with that goal. Diversity, sufficiency, and stability would become the critical yardsticks of progress in a sustainable earth society, not the development processes of homogenisation and expansion.

Human numbers, per capita consumption levels, land uses, and technologies will have to be limited to levels that do not deplete non-renewable resources faster than safe and sustainable substitutes become available; do not consume renewable resources faster than they replenish themselves; do not exceed the safe absorption capacities of local watersheds, soil systems, and airsheds; do not endanger the continued existence of other species; and neither exploit other species, except for essential purposes, nor inflict avoidable pain and suffering.

These are not easy aims to define or measure. Relevant evidence often relates to a failure to achieve them (e.g. illness and death from pollution, exhausted fisheries); it is difficult to identify in advance specific benchmarks of success. At the very least, however, the above principles do offer a radically new agenda and framework for debate and policy development. The more detailed problems of definition should be seen as a constant challenge to evaluate and re-evaluate human impacts on the environment, to seek new ways of minimising actual and potential harm and waste. The unacceptability of many current practices is quite clear for example, once the rights of other species are taken fully into account.

Decision-making on these issues will always take place against a background of considerable uncertainty. Fortunately, though, measures to halt such anthropogenic problems as global warming will be solution multipliers since they will help resolve many other social and environmental problems. To that extent, the balance of 'opportunity costs' favours action now, even if subsequent research demonstrates that the greenhouse effect was nothing more than the mirage produced by a few overheated imaginations.

GUIDELINES AND POLICIES FOR ECOSUSTAINABILITY

The following criteria suggest a framework for judging sustainability. All proposers of developments should be required to demonstrate — in an 'Ecological Improvement Statement' — how the proposal would lead to a higher rating on such criteria than that scored by the current land use.

Technological Products and Processes

- Avoidance of harmful changes to flow of heat in and out of Earth's environmental systems
 - Avoidance of harmful changes to volume and rate of mineral cycling within environmental systems
 - Biodegradability
 - Avoidance of harmful changes to pH balances in both surrounding and distant ecosystems
 - Avoidance of toxic chemicals
 - Avoidance of net human additions to background radioactivity
 - Reduction in human-generated noise
 - Reliance upon 'failure-tolerant' equipment and systems
 - Reversibility
 - Reliance upon ambient sources of energy and raw materials
 - Decreasing dependence upon finite resources
 - Reliance upon renewable resources within rates of natural replenishment
 - Minimisation of energy loss in production and processing
 - Encouragement of product durability, reuse, repair, and recycling
 - Maintenance of the purity of water and integrity of aquatic ecosystems
 - Topsoil conservation
 - Retention or restoration of native vegetative cover
 - Minimised livestock
 - Bias toward technologies that communities can afford and that do not aggravate social divisions'
- ### Social, Economic, and Political Framework
- Promotion of self-reliance, at an individual as well as a community level
 - Human scale in organisational frameworks



- Flexibility in organisational and technological systems
- Emphasis on economic activities and structures that create added value and retain profits within local community
- Payment of financial, health, and other costs by beneficiaries of an activity
- Placing of 'essential needs' of everyone before demands for luxuries from minorities
- Maintenance of cultural diversity, provided it is compatible with ecological diversity
- Freedom of information about proposed developments and other innovations

In case this list is thought fanciful, note that a growing number of buildings, such as the new Ecover factory in Belgium (complete with meadow roof!), incorporate many of the above points. There are similar examples in energy supply, agriculture, and forestry—despite an economic framework stacked against them. The same applies to the success stories in the field of small-scale, community enterprises. Also many instances of product regulations, not least the famous purity laws in the German brewing industry, demonstrate that business enterprise and public protection can be harmonised.

Of course, high 'scores' in some respects cannot always be compared meaningfully with lower ones elsewhere. One crucial test can resolve such conflicts: whether it maintains and, if necessary, restores biodiversity. No other issue provides so clear and challenging a parameter. Therefore, the test policy to resolve conflicting priorities should be the maintenance of viable native populations and the habitats required. Granted, no fixed baseline of species diversity and richness in changing ecosystems exists, but the rate of extinction now is orders of magnitude above normal levels.

In most situations no one policy will suffice. A mixture is needed, including direct taxation, incentives, regulation, exhortation, and especially education. The following are suggested as a possible core programme:

- Promotion of population reduction, including tax and welfare incentives for those parenting fewer than two children, as well as provision of a rounded sex education and free contraception
- Taxation of energy and raw materials (including water metering) to promote an economy based on minimised inputs and maximised recycling of outputs; corresponding decreases in rates of personal taxation (which otherwise will be strictly progressive); 'turnover tax' system to discourage excessively large business enterprises; upper limits on personal wealth and similar limits on land and company holdings; use of 'green' tariffs to regulate and reduce foreign trade; opposition to GATT and Uruguay Round liberalisation; reform of currency, banking, and other financial services plus accountancy procedures in line with ecosustainability
- Regulations setting ecological standards and codes of conduct for processes, products, and consumer/employee relationships; requirement of annual and published environmental and social audits of an institution's activities; public process of assessing and controlling scientific and technological innovation; a policy of 'guilty until proven innocent' regarding proposed innovations
- Ecological land use zoning, including the setting aside of sufficient land for non-human life forms; taxation of windfall profits from land ownership; freeze on current road, airport, retail park, leisure complex developments etc.; restriction of future building developments to already degraded sites, especially within 'inner city' zones; statutory protection of remaining wetlands, old-growth woodland and other wilderness or comparatively species-rich areas; public funding for the rehabilitation of degraded ecosystems
- Cancellation of Third World debts and many so-called 'development' projects, especially export-oriented schemes; ecologically tied aid for family planning, clean water, and other health promotion measures
- A policy of 'non-aggressive defence'; renunciation of nuclear, chemical, and biological weaponry; withdrawal from alliances incompatible with those principles; support for democratic reform of UN, and global action against dictators and others who threaten general peace and security
- Emphasis of health expenditure on preventive and public health programmes
- Education about, and *for* the environment: the values, knowledge and practical skills to lead 'conservator' lifestyles;



- 'ecoliteracy' to be treated as important as literacy and numeracy
- Public investment to facilitate the above, including programmes of industrial conversion (e.g. of shipyards to the production of offshore wind turbine platforms) as well as conversions of farming and forestry on ecological lines
 - 'Bioregional' and localised structures for governance; a shift from traditional property rights (those claimed by nations as well as individuals) to new ones conditional upon the meeting of ecological standards; revisions to the legal system to redress the balance which, at present, protects those who damage the environment and mistreat other life forms; 'legal standing' for non-human life forms.

Many of the above measures are inherently labour-intensive (e.g. repair and retrofitting work) and will take people off the dole queues. By contrast, as argued above, growth-oriented policies tend to encourage automation and job shedding. However, it is vital to avoid the left-wing trap of promising a return to 1950s-style full employment. In today's unsustainable economy, the creation of more jobs on traditional lines might offer temporary relief but cannot create longer term security. Traditional Keynesian public investment or 'pump-priming', for example, will simply eat up physical resources and dry out the 'ecological well' (the New Deal programmes of the Roosevelt administration caused great environmental damage and it was the advent of war that really soaked up unemployment). There is an urgent need for large-scale public investment but within a strictly ecological framework.

HARMONISING SOCIAL AND ENVIRONMENTAL POLICY

Contrary to what is often alleged, a more ecological approach necessarily involves a social agenda. Indeed, as Ray Dasmann argued back in the 1960s, all human activities must be managed in the light of their environmental impact. The emphasis is switched from environmental management (e.g. dams and levees) to the management of people and their artefacts (e.g. land use zoning to keep settlements away from flood plains, protection of wetlands from human encroachment, taxation of excessive water use). At a governmental level, it will be necessary to harmonise with overriding ecological goals the

policies not just of departments with more obvious environmental impacts (finance, transport, agriculture, industry, housing, defence, trade etc.) but also of educational, legal, welfare, and health services.

A more specific example might illustrate how appropriate 'social' policies could be identified. At present, there is a drive to put out to contract services once provided 'in-house'. An ecological approach would not start from some *a priori* assumption that one system is better than the other. Evidence suggests, however, that initiatives such as recycling and better waste management are more likely to flourish when staff do not come from an external and ever-changing pool of contract employees, with no experience and commitment to any particular firm. Status, security, and pay also seem to suffer in the contract system. Clearly, in these circumstances, the ecological approach would oppose contracting out, unless evidence demonstrated that such consequences could be avoided.

A stable and sustainable social structure gives all its members a real sense of participation and belonging. The leading advocate of 'steady-state' economics, Herman Daly, argues that a limit to income differentials is a critical tool for sustainability. Indeed, growth-oriented policies often have been favoured by the rich and powerful as a means of buying off demands for a fairer distribution of land and wealth, with the position of the poor usually ending up unchanged, if not worse.

The ecological programme must be thoroughly democratic: Totalitarian solutions are non-solutions since they are deeply unstable. Stalinism and Nazism, for example, destroyed human communities and environment. Interestingly, many of those who talk about the threat from 'eco-fascism' belong to political traditions which, unlike ecopolitics, denied or acted as apologists for the monstrosities committed in countries like Maoist China, where brutal oppression mirrored great environmental destruction. There are few, if any, examples of 'environmentally friendly' authoritarian regimes. The building of a sustainable society without popular consent and participation would be as unsuccessful as Prohibition was against alcohol consumption.



REINFORCING ILLUSIONS OR FACING REALITY

In terms of overall policy, 'sustainable contraction', not sustainable development, might be a more honest description of the task facing humanity. Of course, at present it is a deeply unpopular perception since we live in a culture where expansion and progress are seen as synonymous. Nevertheless, from the broad perspective of human evolution, Industrial Growth Society will prove to be a short-lived aberration. An increasing number of scientists, most notably Professor E. O. Wilson, are producing evidence that not just our physical well-being but our psychological and spiritual health depends upon the resumption of a more modest role in the totality of life. It is the transition to that goal that is so difficult, not the destination.

But we should not confuse the goal with the flexible strategies that may be necessary to popularise it. Perhaps this is the final indictment of the sustainable development bandwagon. Far from preparing society for the mammoth task ahead, it is reinforcing the complacent view that we need to make only minor changes to the way we live.

In many areas supporters of sustainable development and those committed to a deeper ecological vision can find common ground and work together. Perhaps the most important challenge of today, however, is not in terms of specific initiatives. It is of a more conceptual nature—in our hearts and minds. At the level of core values and goals it becomes clear that what may seem to be merely two different routes to the same destination are, in reality, radically different and fundamentally incompatible perceptions about both the human prospect and the place of humanity within nature's order. ○

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*Each species is a masterpiece. It deserves that rank in the fullest sense:
a creation assembled with extreme care...*
from the introduction to *Witness* by E.O. Wilson

CLEARCUT: The Tragedy of Industrial Forestry

edited by Bill Devall; San Francisco: Sierra Club Books and Earth Island Press; 1994; 98 color, 78 b/w photographs; \$50; 292p.

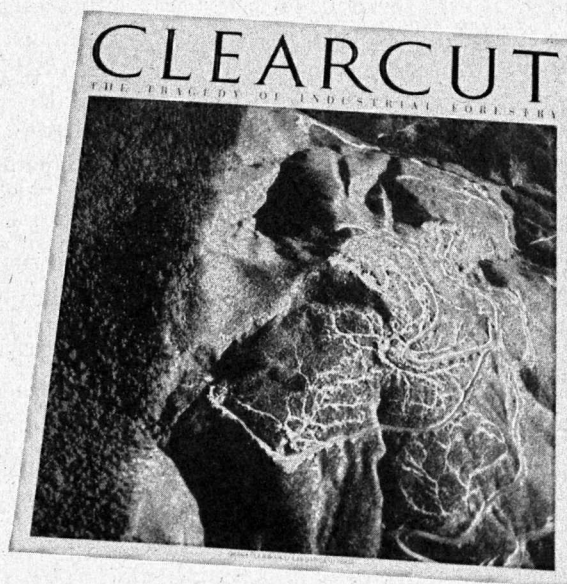
Witness: Endangered Species of North America

photographs by Susan Middleton and David Liittschwager; text by the California Academy of Sciences; introduction by E.O. Wilson; San Francisco: Chronicle Books; 1994; 200+ color and b/w photographs; \$50 hardcover; \$29.95 paper; 256p.

Though obviously assembled with extreme care, let us hope history will judge *CLEARCUT* and *Witness* masterpieces in only a limited sense—temporal masterpieces, whose influence in the culture was profound but fleeting. Would that these books—unlike the greatest art, which remains relevant through the centuries—be looked upon as curiosities by some future culture, as but snapshots of a corrupt and decadent age (an age before snapshots went extinct). For they should not exist. In no healthy culture would their production be possible: the chemical-intensive industrial process we use to store images—photography—would be neither useful nor interesting, and the imagery presented in them would be unimaginable.

These being facinorous times, though, wilderness defenders must often resort to using tools of the dominant culture; when employed creatively, seemingly moribund means can be directed toward noble ends. This is certainly true with *CLEARCUT*, which is descended from the exhibit-format books published by David Brower and Sierra Club Books in the 1960s to foster public participation in conservation campaigns. It was novel strategy then, and effective; yet, as Brower says in his jacket notes on *CLEARCUT*, “The beauty of prose and image may have been too tranquilizing,” causing readers to assume the wilderness portrayed was inexhaustible. Decades later, *CLEARCUT* (arguably the ugliest and most important coffee-table book ever) is both watershed event in publishing and brilliant conservation strategy.

The centerpiece of a national campaign against industrial forestry, *CLEARCUT* was conceived by Foundation for Deep Ecology (FDE) founder Doug Tompkins, and produced in collaboration with editor Bill Devall and photo editor Edgar Boyles. Of thousands of photographs considered, the editors chose 176, taken by some of the country’s premier landscape photographers, to “...provide a portrait of the great forests of North America as they cling to life at the end of the twentieth century... suffering from a massive, human-caused, catastrophic event—an epidemic of clearcutting.”



REVIEWED IN THIS ISSUE:

CLEARCUT

Witness

Family of Earth and Sky

The War Against the Greens

A Year in the Maine Woods

Naturalist

Fifteen prominent conservation activists and biologists contributed essays (Chris Maser, Reed Noss, Colleen McCrory, Ed Grumbine, and Dave Foreman, among them) exploring the "historical, social, cultural, and ecological contexts to explain this...epidemic." While much of the writing is eloquent, the essays are likely to be most useful to readers ignorant of current forest conservation efforts, and to citizen activists of the Sierra Club variety who have been steeped in utilitarian rather than intrinsic worth arguments for conservation. Essays, even of this caliber, seem to fade when interspersed among such potent imagery.

And the images are simply and utterly horrific. The wholesale alteration of North America's forest ecosystems by industrial forestry is of a scale not easily comprehended—the photographs in *CLEARCUT* put the devas-

tation into perspective. Millions of words have been written in recent years about destructive forest management practices, timber company greed, public lands abuses...yet the ability of language to communicate the landscape level carnage afoot (or atread and awheel, rather) in the woods is incomparably less convincing than these relatively few pictures.

Many will find the photos in *CLEARCUT*, like pictures of surgery, exceedingly difficult to stomach. For those of us who have walked into the void, literally, they are wrenching—bringing forth personal memories of clearcuts. For readers who've not ventured beyond the beauty strip to find the forest missing, *CLEARCUT* will be an eye-opener. If a book, *any book*, can open hearts and minds among the body politic, can stir the sedentary to action, *CLEARCUT* is it.

Witness

Whereas *CLEARCUT* is all about context, *Witness* portrays the vulnerability of the individual stripped of context. Photographers Susan Middleton and David Liittschwager, in association with the California Academy of Sciences, spent two years compiling photographic portraits of 100 individuals representing species listed as Threatened or Endangered under the Endangered Species Act. Of course, this represents only a small fraction of listed species, which, in turn, comprise only a small fraction of truly imperiled North American wildlife.

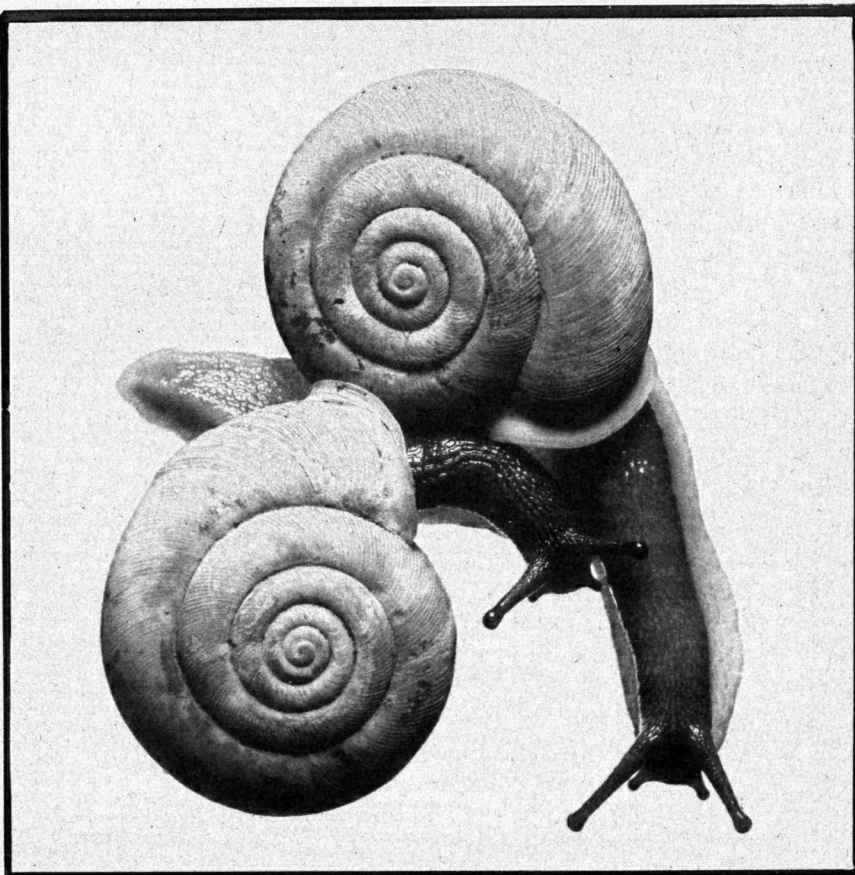
Witness is notable for its timeliness, due to the pending Congressional debate over reauthorization of the ESA, and for its subject matter. Middleton and Liittschwager wisely avoid the pitfall of focusing on charismatic megafauna; *Witness*'s most stunning portraits are of lesser known creatures like the American Burying Beetle and Furbish Lousewort.

Witness is provocative also for an artistic choice—the photographers have composed their images to contain a subject, and nothing else. Unlike traditional landscape and wildlife photography, the portraits here have no layers of foreground and background in which to wander. A viewer's gaze must meet that of California Condor, of Red Wolf, of Santa Cruz Long-Toed Salamander... or look away. A relationship is acknowledged or rejected.

This seems to me a wise, albeit risky, choice; the photographers' minimalist style leaves them no room for a misstep—each image's success or failure will be readily apparent. Additionally, the elimination of context raises questions about the nature of being—about where the individual begins and ends, and the limitations of portraiture in exploring these questions. Does the California Condor end at its wingtips, or extend to the thermals on which it soars, the carrion on which it feeds? Is a wolf in a cage still a wolf? Is a pearly mussel just its genetic information or is habitat—*context*—as integral to *musselness* as DNA?

Of necessity, photography deals with surfaces. It is inherently limited in

© Copyright Middleton/Liittschwager 1994



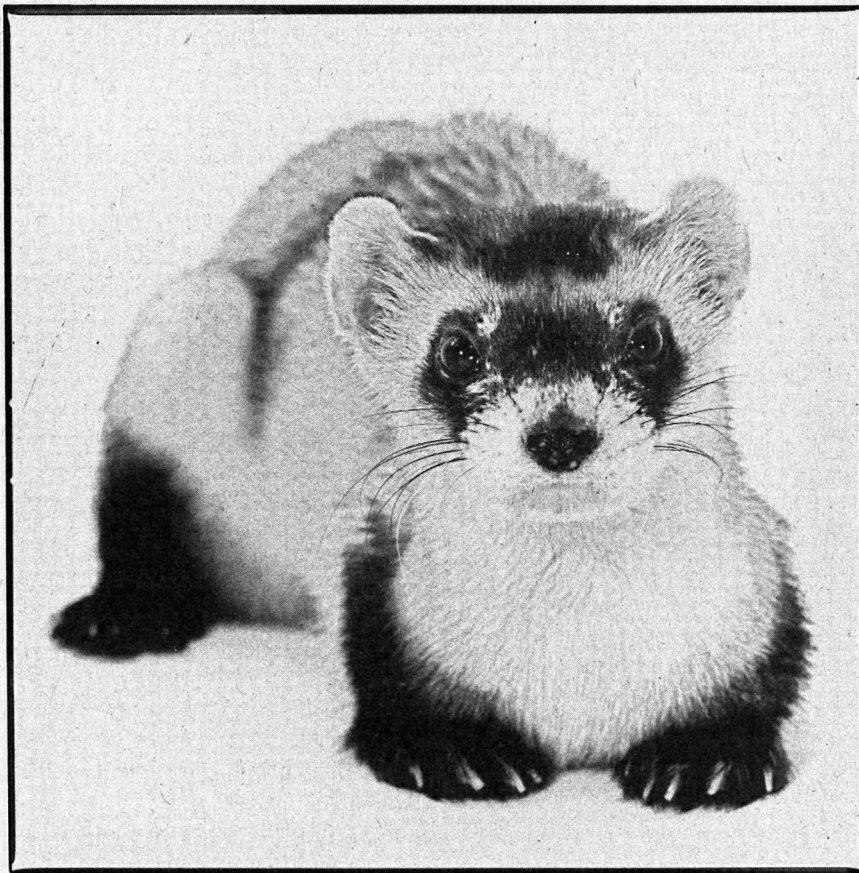
Flat-spined Three-toothed Land Snail (*Triodopsis platysayoides*) by Middleton/Liittschwager

Readings

its ability to capture a subject's essence, even more so its capacity to portray context. In foregoing even the suggestion of context, though, Middleton and Liittschwager make an intellectual and ecological point—"The absence of context, or any trace of habitat, bespeaks the precarious state of the species' homes. They are exposed and vulnerable as their habitats, the ecosystems to which they belong, are diminishing"—but they risk reinforcing, at least to the casual viewer, the human/nature dichotomy they seek to bridge.

The aesthetic consequences, however, are highly successful, partly due to this constant reminder to the viewer that the images *are* surfaces—there's no attempt to trick us into believing we're seeing *actual* nature. And with their stark style, I surmise the photographers are tacitly acknowledging the ubiquity of "nature photography" and its diminishing ability to evoke feeling. The Southwestern sunset in every truck ad, Griz on every greeting card phenomenon is conspiring to make us filter these images. *Witness's* austere style stimulates no such defenses. Consequently, the portraits are unexpectedly gripping. In an informal survey I conducted, viewers had mixed reactions to the absence of context, some finding the portraits "posed" or "unnatural," some immediately sensing the photographers' rationale. One likened them to mug shots—critters on death row. Uniformly, though, viewers were *engaged*; they found the images vaguely disconcerting, disturbing.

As well they should. The magnitude of the current anthropogenic extinction spasm has profound practical and moral repercussions. In his lovely introductory essay, E.O. Wilson speculates on this ecological cataclysm, and, in the process, touches on such weighty topics as island biogeography, genetic loss, *ex situ* conservation, and reserve design (an impressive load to heft in just four pages!). Wilson's essay and additional text prepared by the California Academy of Sciences—including species profiles, excerpts from the ESA, a resource



Black-footed Ferret (Mustela nigripes) by Middleton/Liittschwager

guide, and bibliography—help make *Witness* a peer of *CLEARCUT* as an educational tool.

Just as grassroots activists hand-delivered copies of *CLEARCUT* to Congress last year, conservationists should take copies of *Witness* when they visit their legislators this spring to lobby for reauthorization of a strengthened Endangered Species Act. While most groups are emphasizing utilitarian arguments (note the Endangered Species Coalition's medicine bottle campaign, which stresses "The medicinal value of species" and "Economic value: The Act protects jobs and strengthens the economy"), in-

dividuals might focus on *family values*—on humanity's ethical obligations to all our relations. Ecocentric activists visiting the caverns of *Homo politicus* might go armed with Middleton and Liittschwager's *family photo album*, bearing witness to the imperiled state of so many of our kin. For what human could look upon the images of Northern Aplomado Falcon hatchlings or the Dwarf Wedge Mussel and not be moved to protect their habitat? Certainly no human worthy to share a genetic lineage and planet with them. ■

—Reviewed by Tom Butler, *WE* Art Director

**FAMILY OF EARTH AND SKY:
Indigenous Tales of Nature from
Around the World**

edited by John Elder and Hertha D. Wong,
Boston: Beacon Press; 1994; \$30, 323p.

"What will a reader coming to them for the first time experience in these visions of nature from indigenous cultures around the world? Above all, great stories...." (1) begin the editors in their introduction to *Family of Earth and Sky*. And indeed great stories abound in this playful, poetic, and urgent collection drawn from the oral traditions of Africa, Asia, Europe, Australia, and the Americas.

Whereas the Western tradition of nature writing, with its roots in European Romanticism, has been built largely on the reflective personal essay, indigenous cultures from around the globe have used stories to explore the relationship between human experience and the natural world. It quickly becomes apparent in these narratives that human experience is inseparable from the natural world, an understanding that, clearly, many members of Western culture have forgotten. The editors argue that the current environmental crises necessitate a broadening of means; becoming familiar with these indigenous narratives can only strengthen the environmental awareness already advanced by Western nature writing, while providing a more global context.

A refreshing aspect of these stories is the way in which they frequently defy Western expectations. Doves, animals that our cultural traditions have associated with peace and goodness, are quarrelsome, even violent. Snakes, however, are nurturing and compassionate. Similarly, the endings of many of the narratives do not follow the Western literary tradition with a neat wrap-up, O. Henry style, or the Modern device of an epiphany. Instead, they surprise, sometimes resulting in delight and sometimes in a mild, but instructive, discomfort.

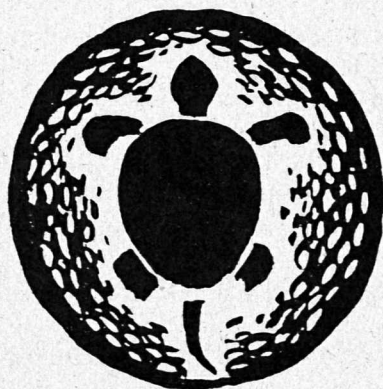
The collection is divided into four sections. The first, "Origins," contains stories that respond to the basic human questions about the creation of the Earth and

all its components. The oral tradition is readily apparent in the structure of these stories which carry the reader easily along with their captivating details and simple (but not simplistic) language. That the audience was generally comprised of all ages is also evident; continuing this tradition, both children and adults can benefit from and take pleasure in these stories. Illustrations and varied use of language, including lines of poetry in "Kalevala: The Mother of Water" from Finland, add to the surprise and enjoyment of these creation stories. Closing this section, the brief narrative (only half a page) entitled "The Origin of Death" (Hottentot, southern Africa) speaks a startling, evasive truth about the age-old human doubt regarding a life, in some form, after death.

The second section, "Animal Tales and Transformations," presents stories, engaging and often quite funny, about animals who mirror humans in their generosity and kindness, and their anger and selfishness. Through these stories, we see more clearly the animal in ourselves. In the strengths and weaknesses of these animals, moral lessons are revealed, often echoing Western parables, as in the conclusion of "Gratitude: The Hunter and the Antelope" (Nupe, West Africa): "There comes a time for every man when he is treated as he has treated others" (105).

"Tricksters," the third section, focuses again on animals, but the editors have wisely chosen to highlight stories whose unifying instructor "teaches by negative example" (193). These stories are the bawdiest of the collection, thanks to their id-driven (in twentieth century Western terminology) central character who takes the form of Fox, Raven, Spider, Hare, Bluejay, Coyote, and, yes, even Man. An example of the Trickster in his finest form, from "The Winnebago Trickster Cycle" (central United States), features the Trickster (Coyote) in cahoots with his "younger brother," his anus, to repel potential (and eventually successful, despite his best efforts) thieves.

The final section, "Tales to Live By," fittingly brings the stories into the



present by incorporating contemporary writers from indigenous cultures. Their meditations reflect on how their traditions speak to current global environmental problems and, by doing so, cast the previous stories in a graver light. Leslie Marmon Silko opens the section with "Landscape, History, and the Pueblo Imagination," in which she reminds us of what has been revealed in the previous stories, that the narratives, and human beings, are inextricably parts of the earth and sky: "So long as the human consciousness remains *within* the hills, canyons, cliffs and the plants, clouds, and sky, the term *landscape*, as it has entered the English language, is misleading. 'A portion of territory the eye can comprehend in a single view' does not correctly describe the relationship between the human being and his or her surroundings. This assumes the viewer is somehow *outside* or *separate from* the territory he or she surveys" (248-9). Survival of the ancient Pueblo people depended upon this understanding, and upon the cohesiveness that storytelling bestowed on a group. Implicit in her essay is the idea that this dependence, of all humans, persists.

The other meditations are equally compelling, both in their exquisite use of language and their environmental imperative. N. Scott Momaday implores us to focus our human imagination, from which this collection of narratives is sprung, "upon the remembered earth.... We Americans need now more than ever before—and indeed more than we know—to imagine who and what we are with respect to the earth and sky.... We Americans must come again to a moral comprehension of the earth and air. We must live according to the principle of a land ethic. The alternative is that we shall not live at all" (296-9).

John Elder and Hertha D. Wong's achievement in bringing together *Indigenous Tales of Nature from Around the World* can help us a great deal in this crucial imaginative process. ■

—Reviewed by Sheila McGrory-Klyza, poet and Lecturer in English at the University of Vermont.

The War Against The Greens

by David Helvarg, Sierra Club Books; 1994, \$25, 502p.

A few years ago, after an alleged "tree-spiking" incident here in Maine, I started receiving telephone death threats, hate mail, and many bills for magazine and newspaper subscriptions sent to various alterations of my name (Harry Dickless, Guy Cockless...) who led such organizations, according to the mailing labels, as Earth Homos, Nature Nazis, and Geek Gags. While the mailing labels were funny, the tone of the harassment was not.

As I looked into it, I was surprised to find that the harassment did not originate locally, but from southern California. This was a mystery until Judi Bari, herself the victim of a terrorist anti-environmental bombing, sent me a fax of a newsletter from the Sahara Club, a motor bikers' group in southern California. This newsletter gave names and addresses of environmental activists, along with phone numbers, vehicle descriptions, and license numbers with inferences and suggestions about using this information.

As I read more widely, I quickly discovered that my own personal experience was minor compared to the beatings, rapes, burned houses, poisoned animals and even deaths experienced by some other activists. I also became aware that these were not random, isolated incidents, but part of a new backlash aimed at the environmental activist community. I learned that this was actually part of a coordinated effort, a new movement, if you will. With the political scene becoming even bleaker on this continent, and the probability of violence toward the earth and the activists who defend it ever greater, I would advise anyone wishing to speak out for the earth to know what they will be up against, to know from whom they will be hearing.

A good way to begin would be to read David Helvarg's new book *The War Against the Greens: The "Wise Use" Movement, The New Right, and Anti-*

Environmental Violence. Helvarg's book takes us back a few years to give us some history of key players in the story. We are introduced to Wise Use Movement spokesperson Ron Arnold, who says "We're out to kill the fuckers. We're simply trying to eliminate them. Our goal is to destroy environmentalism once and for all." Helvarg describes the Wise Use philosophy as "primarily concerned with protecting below-cost mining, grazing, and logging on public lands and agricultural access to cheap federal water." The self-styled East Coast version, the property rights movement, "opposes the Endangered Species Act, wetlands protection provisions of the Clean Water Act and other perceived 'preservationist' threats to private property." As Ron Arnold puts it, Wise Use is carrying on "A holy war against the new pagans who worship trees and sacrifice people." Helvarg states that these anti-green activists are outraged that "because of government restrictions on wilderness and wildlife," "trees are being left to rot in the forest," "fish are dying of old age," and "fresh water is just flowing out to sea."

These anti-environmental warriors are supported by a wide array of institutional backers—from the timber, mining, grazing and chemical industries to the NRA, the Farm Bureau, and recreational vehicle manufacturers. Many of these groups adopt names for their groups that seem to imply a green attitude (National Wetlands Coalition, created by miners, utilities, and real estate developers to open wetlands to development; Abundant Wildlife Society, started by fur trappers and hunters to oppose wolf reintroductions and to work against the Endangered Species Act; the Global Climate Coalition, which seeks to convince the public that global warming is a myth...). Wise Use groups receive corporate donations and profit from their links to corporations in many other ways (companies pay for workers' memberships in groups, pay for workers to take time to go to demonstrations; timber company supervisors encourage workers to read the Sahara Club newsletter...).

The book gives us a good background in general; for more specific information on each group I recommend *The Greenpeace Guide To Anti-Environmental Organizations*.

Wise Use spokespeople travel the country giving lectures and workshops, including workshops on harassment. Chuck Cushman has earned the nickname "rent-a-riot," and Rick Siemans of the Sahara Club gives paid workshops on activist harassment. This can lead to further alliances, with troubling racist overtones, as in the Pacific Northwest, where anti-Indian groups are making links with Wise Users, and as with the adoption of anti-environmentalist themes by Aryan/Neo-Nazi groups. Helvarg speaks of Aryan Nation members working with Wise Use activists, and gun rights advocates creating self-described "armed militias" to resist the federal government and its "preservationist" backers.

The anti-environmental movement needs enemies, and it needs to define them in a way making it possible to maintain credibility while attacking them. Thus, they have created the "eco-terrorist." According to Helvarg, private investigator Sheila O'Donnell perceives a well thought-out strategy: "...calling an environmentalist a terrorist sets up a fear dynamic. It makes the police and private security firms begin to worry...It sets the stage for a counterreaction and makes

anti-environmental violence seem like an acceptable response." Helvarg notes that fund-raiser Alan Gottlieb has said it helps to have an "evil empire" to open potential contributors' wallets.

The media, for the most part, seems to have bought the eco-terrorist tag. The anti-environmentalists have friends at the *Wall Street Journal*, *Fortune*, *US News & World Report*, *Readers Digest*, the *New York Times* and the *Washington Times*. Talk show hosts such as Rush Limbaugh and G. Gordon Liddy, columnists George Will and Pat Buchanan and many more keep their movement in the news. The movement also has its own stable of book authors writing pseudo-scientific books to counter claims made by environmentalists. Add the various periodicals, computer networks, etc., and you have quite a varied communications network in place to get out the ideas of the anti-environmental groups. In his chapter "The Media is the Message" Helvarg goes into some depth on this particular issue, using reporter Keith Schneider of the *New York Times* as a case in point. (Schneider wrote about dioxin for the *Times* while the *Times* owned 80 percent interest in a Maine papermill and 49 percent interest in three Canadian papermills. Two Canadian Indian tribes sued the *Times* for polluting tribal waters with dioxin and other chemicals, yet this was not mentioned until reported by the *Village Voice*.)

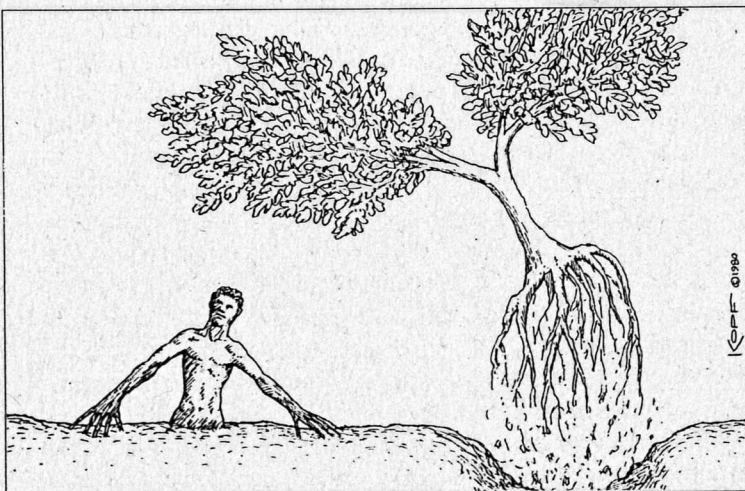
The real terrorists are the individuals and groups carrying out acts of terror and violence against environmental activists today. In my own home region I can cite the burning of

Maine forest activist Michael Vernon's house, while he was asleep upstairs (but escaped by leaping from the building). In New Hampshire similar acts of arson were carried out against activists Jamie Sayen and Jeff Elliot. Such fires are also on record in Vermont, New York's Adirondacks, and all across the nation. Former Interior Secretary James Watt has said, "If the troubles from environmentalists cannot be solved in the jury box or at the ballot box, perhaps the cartridge box should be used." This is echoed by the Wise Users, the Sahara Clubbers, the "rent-a-riots" of the anti-environmental movement as they continually use hatred to raise the level of confrontation. Helvarg quotes Dan Rather on CBS Evening News: "Fighting to save the environment could put you on the endangered list." Helvarg compiles a chilling list of violent actions against activists, and gives us a few of the stories in depth.

Lois Gibbs of the Citizens Clearinghouse on Hazardous Waste says, "40 percent of people protesting toxic waste sites and incinerators around the country have been intimidated." Private investigator Sheila O'Donnell thinks that many of the attacks target women because they are "the backbone of the environmental movement," but also because "women get targeted and men feel guilty they weren't there to defend them. It raises the fear level, and frightened people are less effective organizers. It has a kind of sub rosa effect. People don't get involved as readily."

Besides the phone calls in the night, the threats, the fires, the dead animals and other personal assaults, are the lawsuits filed against environmentalists. Known as "Strategic Lawsuits Against Public Participation" (SLAPPs), these are another way of draining environmentalists' energy, time, and funds by tying them up in frivolous but costly lawsuits.

Who do you turn to when the harassment begins? First of all, many activists are still unaware or only newly aware of the organized harassment that will be directed against them. For many of the larger environmental groups this



violence is too hot an issue; and they may ignore it, hoping it goes away, or they may join the media in denouncing the activists who are coming under attack. As I found myself, there is precious little organized support. This helps the forces of hate. Helvarg writes: "Without a push from the environmental lobby, public law enforcement agencies...are unlikely to seek new ways of giving themselves extra work by pursuing anti-environmental extremists."

Dick Beamish of the Audubon Society feels that environmentalists need to work together and stand up to the extremists: "this tiny faction has set the terms of the debate these last three years and will continue to do so until we decide to get out there and be as forceful as we have to in order to stand up to them."

For myself, the first step in standing up to them is to learn who they are. All who intend to try to help this planet survive in diversity and health should read David Helvarg's book. Many other issues are given space in the book: "takings" law, the role of the FBI in many of these incidents (as in the case of Judi Bari), the role law enforcement plays in protecting corporate industry from community pressure, and more, much more. This is a book full of the surfaces of information, inviting us to learn more, work together, and resist much. It has its shortcomings, but they are far outweighed by the value of getting this information out to the public.

As Jamie Sayen, despite being an arson victim, said to the author, "These guys who inspire this stuff...are not going to last, because they are only negative. They only know what they are against. They have no vision. They will have some limited success as demagogues for a while, but the question really is how to swat them off before they do too much damage." Reading this book is a good way to start. ■

Reviewed by Gary Lawless, environmental activist, publisher, poet, and owner of Gulf of Maine Books (134 Maine St., Brunswick, ME 04011). Gary's books of poetry include Sitka Spring and First Sight of Land.

A Year in the Maine Woods

by Bernd Heinrich; Addison-Wesley (170 Fifth Avenue, New York, NY 10010); 1994; \$22; 259p.

Anyone freed from a job to spend a year in a cabin in the Maine woods would face the temptation to toss out the alarm clock and snuggle deeply under the covers, emerging well into winter to linger over a double espresso. Bernd Heinrich sets his alarm clock for 3:50 a.m., records the dawn chorus of birds, and still laments not having enough time to spend as a naturalist. So precious is his woods-time that he uses only two spoons, a coffee mug, and a big kettle to prepare and eat most of his meals. This one-pot cooking regime frees him to focus on natural history observations, which the reader will value even more than his cooking lessons: see how to sauté voles on page 177. Bernd's discipline as an ultra-marathon runner and scientist makes *A Year in the Maine Woods* a rich, detailed book readers will savor.

Bernd begins his journey in the early summer when he takes leave of his career as a mild-mannered zoology professor at the University of Vermont and sets off to "taste the world up close as I did as a child." As a boy in Germany, Bernd spent six years as a refugee in northern Germany's forests subsisting on birds, mice, roots, and berries. Later Bernd moved with his family to Maine where he learned to track, hunt, and wield an axe. But Bernd is not a boy and his 40 years of careful observations enrich this book in a way the childlike enthusiasm never could.

The central characters of the book are the plants and animals that inhabit the Maine woods throughout the seasons. Some are as fleeting as spring migratory warblers, others as stalwart as resident ravens. Or the ubiquitous cluster flies that Bernd vacuums out of the windows and counts—12,800 or nine and a half cups full, level—so the readers will know what he means when he says he has "a lot" of them in his cabin. All of his descriptions carefully separate

observations from conclusions: "This morning I saw a junco with its bill full of dry grass fly to a sedge tussock at the edge of the raspberries, disappear under it, and then come out empty-billed." Bernd could easily have said, "I saw a junco today building a nest in the sedge tussock." But this is *not* what he saw. Not only more interesting, such descriptions have the kind of details that future naturalists can build on.

His keen observations are further enhanced by his delicate illustrations, as full of life as his woods. A squirrel laps maple syrup from a sugar lick created by biting the tree and allowing the water to evaporate from the sap; a caterpillar creates a hiding place by rolling up a leaf and stitching it with silk; buds unfurl in the spring; and a luna moth flies off the page at us. Each drawing gives North Woods watchers new things to look for as we hike through these forests.

On the tail of *Ravens in Winter*, Bernd's newest book is fresh and alive. After braving one of the great Maine blizzards by throwing on his coat and entering the storm, for instance, Bernd sets out on an engaging search for survivors. "...my main goal still was to find a miracle—a live golden-crowned kinglet. It was -13°F this morning. Could this bird, which when plucked is no bigger than the end of your thumb, keep warm enough to survive?"

The focus on the woods eclipses Bernd's interactions with people. The farther his friends and family reside from his defined home, the more two-dimensional they become. It is as if the Maine woods themselves give the people their life. Bernd's neighbors' reactions to him are, of course, as individual as the people he meets. His behavior—such as cruising around collecting dead calves for raven bait—is regarded by some as a bit odd. (This leads to a humorous and also frightening incident when Bernd discovers that spikes he has been using for climbing trees have disappeared from his pick-up the same week that an "eco-terrorist" calling himself or herself "Raven Watcher" begins a tree spiking campaign!) Stopping to inquire after dead

calves, Bernd answers the queries of a local farmboy: "I admitted that I had no 'useful' purpose in mind such as controlling Coyotes and that I simply wanted to feed ravens to watch them."

Over the course of the year, we grow to accept eating a caterpillar to see whether it is sweet, which also means it has the antifreeze glycerol. We watch unblinking as a putrid cow is hoisted (almost) into the back of Bernd's truck. However, Bernd's tolerance, his affection for neighbors in the North Woods, and his unwavering commitment to a reasoned voice create an incident in the book that will disturb *Wild Earth* readers. While hiking out to check on his raven bait, Bernd comes upon a man who is running packs of dogs for sport after Coyotes. Bernd asks how the Coyotes are caught in this way, since they can't be treed like raccoons.

"Sometimes we head 'em off and shoot 'em. Other times the dogs catch 'em—I keep puttin' relays of fresh dogs on 'em—eventually he tucker out."

"I [Bernd] thought of the beautiful sounds of the coyotes I've heard so many times, and I saw in my mind's eye a coyote driven to total exhaustion, then torn apart by a pack of hounds. I also thought of coyotes chasing deer until total exhaustion, then tearing them apart. There was no point to my being judgmental. 'Good luck,' I said and drove on."

This interaction flushes a covey of ethical questions, including how *can* Bernd compare Coyotes hunting deer to men running relays of well-fed dogs after Coyotes? Here, Bernd's even, well-reasoned narrative voice creates the most provocative incident in this elegant book. ■

Reviewed by Alicia Daniel, Associate Director of the Field Naturalist Program, and colleague of Bernd Heinrich's at the University of Vermont.

NATURALIST

by Edward O. Wilson; Shearwater Books, Island Press (1718 Connecticut Ave. NW, Suite 300, Washington DC 20009); \$24.95

Naturalist is the autobiography of Edward O. Wilson, Harvard biologist, eloquent environmentalist, and author of two Pulitzer Prize-winning books: *On Human Nature*, and, with coauthor Bert Hölldobler, *The Ants*, a massive reference book he claims would kill a man if dropped from a three-story building.

Wilson's opening chapters, which focus on his childhood enchantment with nature, will make inspiring and instructive adventure tales for the next generation of naturalists. He would leave his summer home on Florida's Paradise Beach early in the morning and spend entire days alone, "monster hunting" on the shore: staring for hours at a jellyfish trapped in the shallows, fishing off a dock, watching the water for the swift passing shade of a giant stingray. This child's freedom to roam within wild, open spaces was a precious opportunity, lacking in the lives of so many children today.

One of the most interesting things about Wilson's memoir is the way in which this solitary, curious, and ex-

tremely rational child manages adversity, and uses loss to focus himself more finely upon his overriding goal—to make a major scientific contribution to the study of nature. In his seventh summer, while fishing on a dock, Wilson pulled out a pinfish, which has ten needlelike spines on its dorsal fin. He yanked too hard; the fish flew out of the water and into his face. One of the fish's spines pierced the pupil of Wilson's right eye—an accident, he reflects, that "determined the sort of naturalist I would become." He now had full sight in one eye only: he lost stereoscopy, but gained the ability to make out fine print and the hairs on small insects. He could not fully appreciate creatures that are studied from a distance, such as butterflies and birds. A hereditary hearing loss in the upper registers left him unable to distinguish the calls of birds and frogs. These two events conspired to focus the young biologist on ants: small, silent creatures that live close to the ground. "I would thereafter celebrate the little things of the world, animals that can be picked up between thumb and forefinger, and brought close for inspection."

At 9 the boy gained entrance to the "magic kingdom": his father rented an apartment within walking distance of the National Zoo, and a five-cent streetcar ride to the Smithsonian's National Museum of



illustrations from *Naturalist* by Laura Simonds Southworth

Natural History. There a boy from a working class neighborhood entered "a fantasy world made weirdly palpable by federal largesse": a world class zoo and natural history museum, free and open seven days a week.

Wilson describes how at Harvard he met Thomas Eisner, a committed entomologist who, "having been towed from one locality to another, anxious and insecure, turned to natural history as a solace." In 1951, Eisner, like Wilson, was on the threshold of the serious part of his career. They spent 1952 in search of insects across North America, traveling fast and free in a '42 Chevrolet that Eisner, a German Jew whose family had fled Nazi Germany to eventually settle in Uruguay, named Charrua II, after the old Amerindian warrior tribe. "Naturalist hobos," they slept on the ground, ate canned foods, and washed under a faucet. In this way, Wilson writes, "we saw most of the major ecosystems of North America close up, and all we learned in that remarkable summer cemented our lifelong passion for field biology."

In an inventory of his handicaps and skills, Wilson humbly admits that he writes "smoothly." In fact, he writes beautifully—fueled by passion, graced with verbal dexterity and originality, taking evident pleasure in working with words. He also has a rare facility for writing accounts of scientific research and controversy that read like compelling tales of adventure, discovery, and intrigue.

In an effort to isolate the chemicals in secretions ants use to make trails that communicate the location of food to one another, Wilson dissected ant abdomens the size of a grain of salt. Ever adaptable, he incorporated his natural hand tremors into his technique, "turning the needles and forceps into little jackhammers." Proceeding by the process of elimination, he crushed various ant glands on the sharpened end of a birchwood applicator stick. Then he pressed the tip down on a surface of glass, and smeared the semi-liquid matter in a line leading away from the ant nest. The experiment eventually succeeded when the ants tumbled over one

another in an attempt to follow a trail Wilson had laid.

Wilson's 1975 book *Sociobiology: The New Synthesis* put him at the center of one of science's longest raging, and still current, controversies: nature vs. nurture. He describes this volume as the systematic study of the biological basis of social behavior and the organization of complex societies. The first 26 chapters deal with social microorganisms and animals: corals, social insects, and social vertebrates such as apes. Chapter 27, on "generic humanity," inspired public wrath. Wilson says he intended to present facts from the social sciences interpreted by hypotheses on the biological foundations of human behavior. His critics accused him of supporting the ideological doctrine that human social behavior is determined by genes. Fifteen scholars in the Boston area formed the Sociobiology Study Group and denounced the theory in a letter to *The New York Review of Books*, linking it to racism and Nazi ideology. Three years later, at his speech to the American Association for the Advancement of Science, demonstrators dumped a pitcher of ice water on Dr. Wilson's head, chanting "Wilson, you're all wet."

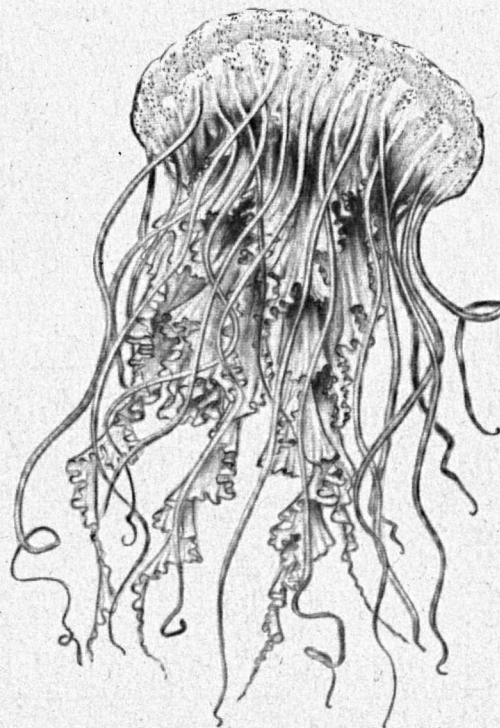
Although, in retrospect, Wilson regrets having included human beings in his theory, thereby entering an "intellectual and doctrinal minefield," he points out that attacks upon it were "political, not evidential." He remains fascinated with the question of what he calls the gene-culture coevolution: How have genetic evolution and cultural evolution interacted to shape the development of the human mind? He still believes sociobiology is an idea whose time will come.

In his final chapter, "Biodiversity, Biophilia," Wilson describes his debut as an environmental activist, a position he assumed in

response to widespread ecosystem destruction and species extinction.

Naturalist concludes with a return to the dreams and fantastic adventures with which Wilson's story begins. Acknowledging that much of the world's wilderness is gone, its largest species already documented and seen, Wilson dreams of reliving his vision in the 21st century as a microbial ecologist. "Into that world I would go with the aid of modern microscopy and molecular analysis. I would cut my way through clonal forests sprawled across grains of sand, travel in an imagined submarine through drops of water proportionately the size of lakes, and track predators and prey in order to discover new life ways and alien food webs . . . The jaguars, ants, and orchids would still occupy distant forests in all their splendor, but now they would be joined by an even stranger and vastly more complex living world virtually without end." ■

—Reviewed by Mary Troychak, Editor of *Wings: Essays on Invertebrate Conservation*, a biannual magazine for members of the Xerces Society (10 Southwest Ash St., Portland, OR 97204), an international invertebrate conservation organization.



The Wildlands Project Update

continued from p. 5

In cooperation with the regional committees, we will develop a continental plan that staggers work among the twenty regions. Five to seven regions will be identified for concentrated efforts beginning now. Once work there is well under way, another five to seven regions will be emphasized, until all regions are mapped. This doesn't mean regions not being focused on will not receive support from us, or that we shouldn't be working on long-term reserve design everywhere now. It does recognize our limited resources and, perhaps more important, it allows us to learn from work in some regions before going on to others.

At heart, wildlands reserve design is an ongoing process without any real end. In five years, however, the goal remains to have peer-reviewed, conservation-sound proposals for every region of North America knitted into a whole that recaptures the living wildness that once thrived here.

Project staff are also working on keeping participants in the process informed of progress on a more regular and timely basis. *Wild Earth* remains the primary voice of Wildlands, but a newsletter with greater frequency and much shorter time between writing copy and distributing it is needed. The newsletter would be written by Wildlands staff and regional people.

Without the hard work of thousands of you there would be no Wildlands Project. Without the many who have contributed financially, there would be no Wildlands Project. We thank you.

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Deep Ecology Workshop

The Way of the Mountain Center and the Aspen Center for Environmental Studies will sponsor a workshop on deep ecology 14-18 August 1995. Workshop presenters will include: Dolores LaChapelle, Max Oelschlaeger, Robert Greenway, Penny Woodward, and Jody Cardamone. For information, write: AECS, POB 8777, Aspen, CO 81612.

Property Caretaking: Environmentally Responsible Employment

Property caretaking has become an increasingly popular career for environmentally conscious job-seekers. Many are finding that caretaking is a satisfying occupation that makes a positive contribution to land preservation. With the help of caretakers, landowners can avoid selling out to developers while maintaining the integrity and productivity of their property. A growing number of farmers, homesteaders, camps, and nature preserves are making use of qualified caretakers. This mutually beneficial relationship allows landowners to pass on their knowledge about their land to someone who will work to preserve that land for future generations. For a free report on how to get started in caretaking, or on how to find a caretaker for your land, send a self-addressed, stamped, business-sized #10 envelope to Thea Dunn, Editor, *Caretaker Gazette*, HC 76 Box 4022, Garden Valley, ID 83622-9729.

Provocative Parables on Desert Ecology

Ethnobiologist Dr. Gary Paul Nabhan and photographer Mark Klett have collaborated on a book that artfully weaves together the essential threads of Sonoran Desert culture and nature. *Desert Legends: Re-storying the Sonoran Borderlands* portrays the rich and dynamic nature of desert communities, stressing the interdependence and diversity of native cultures, plants, and animals. Klett's photographs combined with Nabhan's ecologically informed parables offer a stunning portrait of the borderlands and provide a new set of images and stories to inspire and guide future conservation efforts. For more information contact Pattie Fowler, Community Relations Coordinator, 602-883-3018, Henry Holt and Company, Inc., 115 W. 18th St., New York, NY, 10001; \$45.

Land Trust Alliance's 8th National Rally

The Land Trust Alliance's 8th National Rally—the largest land conservation conference in the country and the only national conference for and about land trusts—will be held 15-19 October 1995 at the Asilomar Conference Center on California's Monterey Peninsula. More than 60 sessions will be offered on topics including land transactions, tax strategies, creative financing, public relations, partnerships, land management, and non-profit management. The conference offers opportunities to network with over 700 land trust practitioners from across the country. Registration begins in May 1995. For more information contact Andrea Freeman, 202-638-4725.

National Hierarchical Framework of Ecological Units

The US Forest Service, along with other agencies such as the Bureau of Land Management and the Fish and Wildlife Service, published a 20-page document dated 29 October 1993 titled *National*

Hierarchical Framework of Ecological Units: ECOMAP, USDA Forest Service, Washington DC. The Framework is a mapping system that basically defines ecological units of various sizes, with smaller units nested within larger ones. The document makes clear that the primary function of the Framework is to facilitate management for more efficient commodity production, but it can also be used by wilderness advocates in planning reserves and in constructing arguments for making reserves a reality. To obtain a copy, write the US Forest Service, US Department of Agriculture, 201 14th St. & Independence Ave. SW, Washington DC 20250.

Boycott Mitsubishi Campaign

Rainforest Action Network (RAN) is spearheading the Boycott Mitsubishi Campaign, a worldwide effort to stop Mitsubishi Corporation's ecologically destructive activities. The Mitsubishi Corporation is one of the world's largest corporate destroyers of tropical, temperate, and boreal forests. It is the trading company of the Mitsubishi Group, consisting of 190 interlinked companies and hundreds of related firms, which together comprise the world's largest industrial and financial empire. Mitsubishi logs or imports millions of cubic feet of timber from the Philippines, Malaysia, Papua New Guinea, Bolivia, Indonesia, Brazil, Chile, Canada (British Columbia and Alberta), Siberia, and the United States (Alaska, Oregon, Washington, and Texas). Mitsubishi is devastating thousands of square miles of forests every year and contributing to the disintegration of many indigenous cultures.

RAN is urging organizations to boycott all products or services from Mitsubishi companies, including: Mitsubishi automobiles, trucks, bicycles, televisions, VCRs, fax machines, microchips; Nikon cameras; Kirin beer; Value Rent-a-Car; and the Bank of California. Individuals or groups interested in participating in the campaign should contact the Rainforest Action Network at 450 Sansome, Ste. 700, San Francisco CA, or 415-398-4404 to obtain organizer's manuals, videotape, stickers, and posters.

Compendium of Information on the "Anti-Environmental Backlash" Available

The latest issue of *The GreenDisk Paperless Environmental Journal* focuses on the anti-environmental backlash, containing a wealth of information on the property rights movement, "takings," risk assessment/cost benefit analysis, unfunded mandates, the "wise use" movement, and violence against environmental activists. Included are essays, reports and resource listings as well as excerpts from David Helvarg's recently released book *The War Against the Greens: The "Wise Use Movement," the New Right and Anti-Environmental Violence*. The disk also contains the regular features in each semi-monthly issue of the journal—the complete text of press releases, action alerts and reports as well as an index to scores of environmental publications, an events calendar, database of organizations, and much more—all in a keyword searchable format. *Wild Earth* readers may receive a free copy of this issue by contacting The GreenDisk, PO Box 32224, Washington, DC 20007. Internet <greendisk@igc.apc.org> Phone 1-800-484-7616, then enter code #3475. Please make sure to indicate a preference for the IBM or Macintosh edition.

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 microflora 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 Jan. 1, April 1, July 1, and Oct. 1 for spring, summer, fall, and winter issues, respectively. *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, 134 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 & 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).
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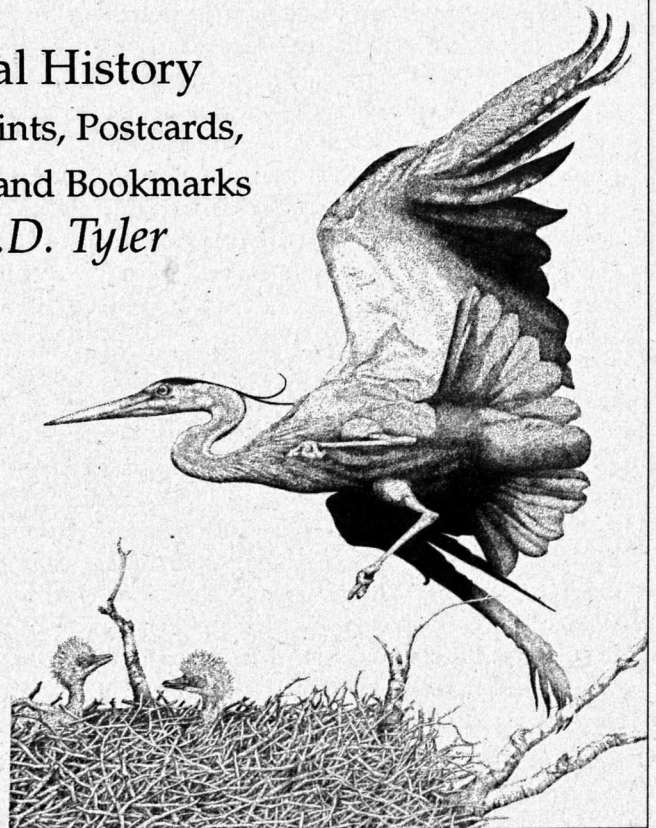
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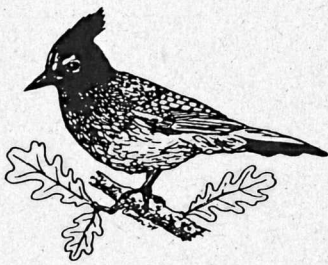
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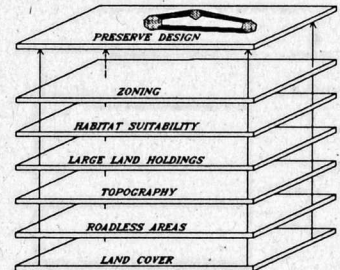
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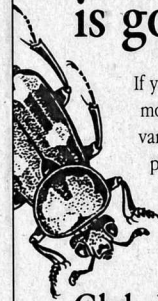
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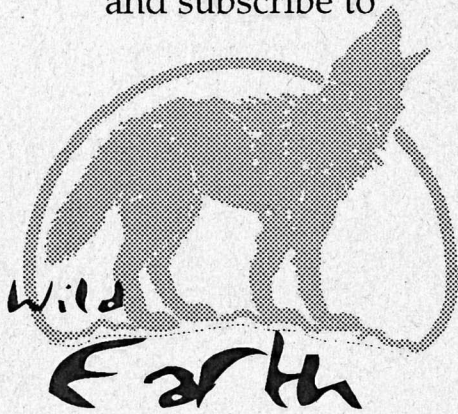
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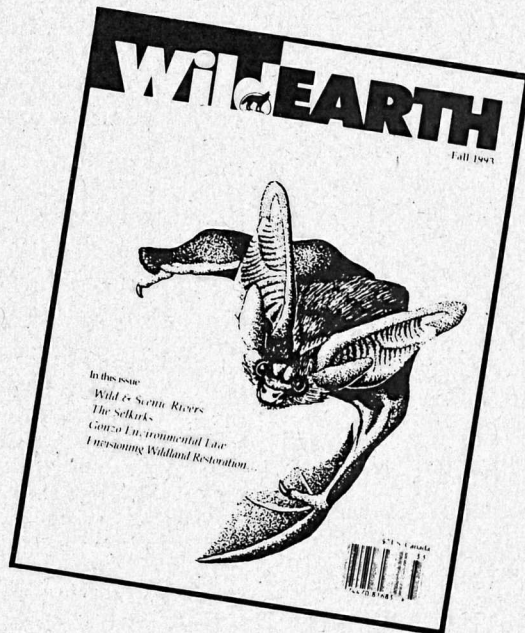
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Born to Run

Pronghorn (*Antilocapra americana*)
pencil drawing by Martin Ring



IMAGINE RUNNING OVER 50 MPH, viewing the landscape with a 360 degree field of vision as if through high-power binoculars, bounding easily over 25-foot-wide streams... and you're now in the cloven hooves of North America's fastest runner, the Pronghorn (fastest since our Pleistocene forebears deprived the Cheetah of its prey base here, leaving it to survive only in Africa). Despite their chunky bodies, thin legs, and cumbersome scientific name (*Antilocapra americana*), Pronghorns can maintain high speeds for long distances: paces of 45 mph for over four miles have been recorded (and, of course, these probably were not the best of Pronghorn athletes). At two days old, a Pronghorn fawn could, if the whim possessed it, sprint past a galloping horse.

Though commonly called "antelope," the Pronghorn is not closely related to the ungulates that rightfully carry that name: they live in Africa; *Antilocapra americana* has never been out of North America. Like the Bison, the Pronghorn was once an extremely numerous ungulate in the West, with Pronghorn numbers estimated at 40-50 million in 1850. They number only about 1% that now, but still roam much of their original range, which covers most of the West from southern Canada south to northern Mexico.

What threatens Pronghorns? Livestock, of course. Cattle and sheep "compete for forage" with Pronghorn and other native grazers (indirectly; they don't leg wrestle or duel). Other threats include oil exploration and coal strip mining. Two Pronghorn subspecies, the Peninsular and the Sonoran, are listed as Endangered. Unfortunately, Pronghorns have very few guardians. Persons keen to defend and befriend the New World's fastest runner should support the Biodiversity Legal Foundation, POB 18327, Boulder, CO 80302. —JD

The work of artist Martin Ring (aka Brush Wolf; 550 W. Sandbar Circle, Louisville, CO 80027) will be well known to WE readers; he designed our wolf logo and has contributed illustrations since our inception: Ring grew up exploring wild areas in Colorado and received a BFA in illustration at Colorado State University. His artwork, which focuses primarily on North American animals, has appeared in environmental journals for over a decade. He spends two weeks each year searching for Grizzly sign in the San Juan mountains. —TB



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