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Wild EARTH

Winter1993/94

Dave Foreman's

The Evolving Wilderness Area Model

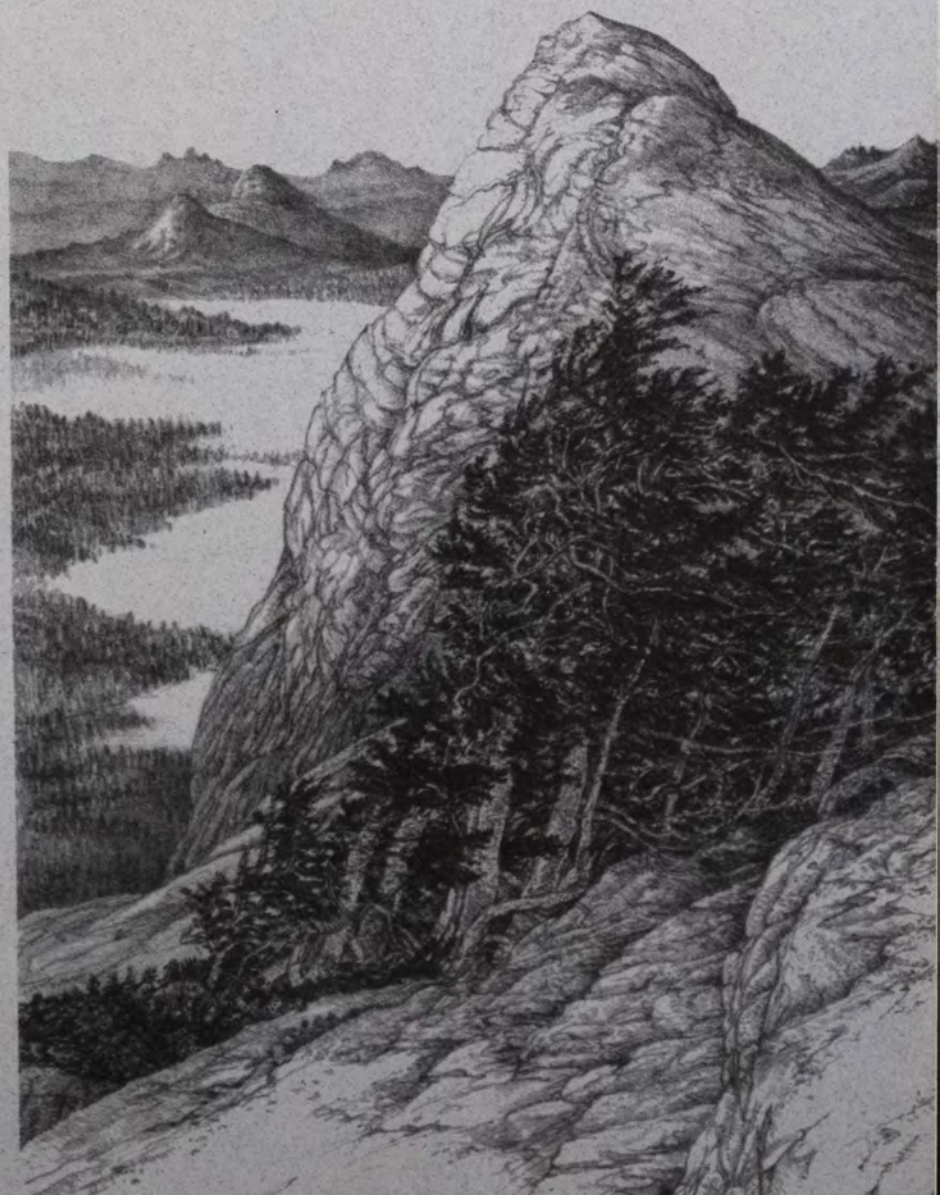
Endangered Invertebrates

Exotic Pests of US Forests

Gonzo Environmental Law

Yellowstone to Yukon Wilds

Northern Forest



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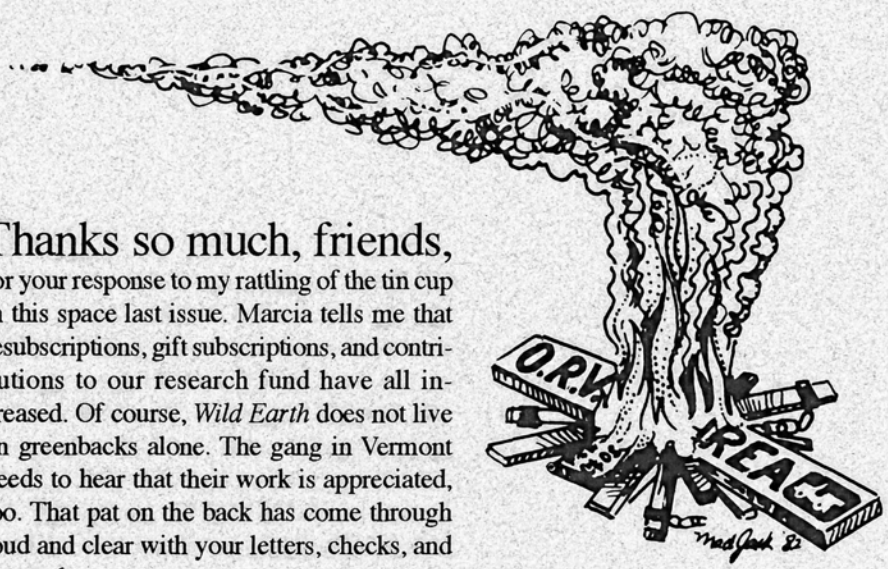
Around The Campfire



Thanks so much, friends,

for your response to my rattling of the tin cup in this space last issue. Marcia tells me that resubscriptions, gift subscriptions, and contributions to our research fund have all increased. Of course, *Wild Earth* does not live on greenbacks alone. The gang in Vermont needs to hear that their work is appreciated, too. That pat on the back has come through loud and clear with your letters, checks, and renewals.

But the promotion of a magazine can never lag. So keep those checks and letters coming. Help us cut our costs and your hassle: Send in your subscription renewal promptly after receiving it. Encourage others to subscribe. Send in a contribution to the research fund so we can continue to bring you thoughtful articles and fine wildlife art. Kathleen Fitzgerald, *Wild Earth's* ball of fire assistant editor, will be moving into the position of outreach director and devoting more of her time to promotion efforts in the future. If you can help promote *Wild Earth*, contact Kathleen at our Vermont office.

Tom Butler, Marcia Cary, and Kathleen organized a bang-up fundraising event at the University of Vermont in November. Archdruid David Brower and I spoke to eight hundred people at a welcoming of *Wild Earth* to Vermont.

The weekend following, Marcia, Kathleen, and John Davis helped organize the New England/southeast Canada vision map meeting for The Wildlands Project. TWP board member Jamie Sayen, conservation biologist Steve Trombulak, TWP executive director David Johns, the Wild Earthlings, Brower, and I plotted with two dozen of the region's leading ecologists and conservation activists on how to encourage the rewilding of the North Woods. Special thanks to Bobbie Hawks and Michael Wilson at Sagamore Great Camp in the Adirondacks for hosting us in fine style. All agreed that the vision mapping process for The Wildlands Project could have no better send-off. Sunday evening, Dave and Anne Brower sat with a few of us around a fireplace over a couple bottles of good wine. We were at Unkus, J.P. Morgan's former retreat near Sagamore. I'm sure the robber barons were spinning in their graves over what was being hatched in their erstwhile lair. Politics, like ecology, is a round river.

John and Kathleen have rounded up a great issue for you this Yule. Wildlands Project board member Roz McClellan presents a work in progress: a Wilderness Recovery Network on the National Forests of Colorado. Roz and her compatriots have outlined a sophisticated application of the conservation biology approach to landscape protection. She sets the standard for regional groups working to create the North American Wilderness Recovery Strategy. Her work should also encourage other National Forest activists to focus on getting Wildlands Project alternatives into the next round of Forest Plans. Thanks, Roz, for leading the way.

continued on p. 2

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On the cover: *Wind, Rock, and Ice* by Davis Te Selle

Around the Campfire...continued

Heading north, Harvey Locke, board member of The Wildlands Project from Calgary, Alberta, offers a first glimpse at a grand vision: a connected network of large mammal reserves from the Yukon to Yellowstone. As we go to press, Northern Rockies experts from Canada and the United States are meeting in Alberta to fine-tune this proposal.

Speaking of the Northern Rockies, the first Wilderness bill to incorporate conservation biology principles is the Northern Rockies Ecosystem Protection Act (NREPA), introduced this year by Representative Carolyn Maloney (D-NY). In this issue, I use NREPA to trace the evolution of Wilderness Area and National Park advocacy from an emphasis on scenery and recreation to an emphasis on biodiversity. I also use NREPA to look at the change in conservation political strategy and, along the way, encourage the large national conservation groups to put their shoulders behind NREPA and move it down the congressional trail.

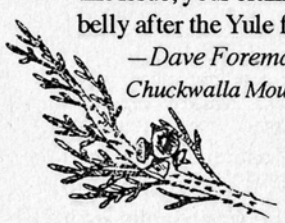
Luring us away from our exclusive infatuation with charismatic megafauna is R. Wills Flowers with "Endangered Invertebrates and How to Worry About Them." Now, I'm a large mammal and I most like to associate with other large mammals—especially those who eat their steaks even rarer than I eat mine. But I like bugs of all sorts, too. I've had a soft spot for them ever since a Brown Recluse Spider nibbled on my back five years ago. My buddy Doug Peacock growls that it ain't wilderness unless there's something bigger and meaner than you haunting it. That spider argued convincingly that it doesn't always have to be bigger than you. Flowers argues even more convincingly that we should be more worried about what we are doing to them than what they might do to us.

Some bugs, however, are doing it to healthy ecosystems. Faith Thompson Campbell looks at the "Exotic Pests of American Forests" in this issue, identifying the particular devils from afar who are damaging specific North American tree species.

There's much more of course. After reading this issue, your brain should be as stuffed as your belly after the Yule feast. Happy Trails.

—Dave Foreman

Chuckwalla Mountains, California Desert



It's What We Do...

We thank people, but not often enough. So I wish to give thanks now to some of the many people who have helped *Wild Earth*'s Vermont crew recently. Our fall work schedules were hellishly hectic, partly due to organizing Wildlands Project/*Wild Earth* events, but we were bolstered by the support and wisdom of these people, among others: John Elder; Stephanie Kaza (whose beautiful book *The Attentive Heart* I reviewed, all too briefly, last issue); Chris Klyza; Steve Trombulak; Brad Meiklejohn, Jeff Meyers, Alicia Daniel, and the rest of the University of Vermont's Field Naturalists (who co-sponsored recent events with *Wild Earth*); all the Sagamore meeting participants; Bobbie Hawks and Michael Wilson (Sagamore hosts); Anne & David Brower (who offered us so many good ideas on the magazine that we may yet reach the multitudes); Paulette Roy and Paul Rezendes; Wendell Berry; Gary Snyder; Rick Bass and Dennis Sizemore (who spoke on Round River Conservation Studies at Middlebury); Peg Millett; Dana Lyons; Aimie Mostwill; Bruce Springsteen (the highest manifestation of urban culture); Rowan Jacobsen (whose fine-filter proofreading spared us many embarrassments this issue, and will henceforth); my mother, Mary Byrd Davis (who continues to help *Wild Earth* from my folks' home in Kentucky, especially with research too difficult for me to do); and as always Dave Foreman and David Johns.

All these people have offered us important insights and encouraging words. Most of them have offered future articles or art—which offers I do beseech them to manifest forthwith. (How fun must have been life in antiquity—when the woods were wild and you could speak those big old words without people staring aghast!) Sure, we have a growing glut of articles, but the ones these folks promised sound positively enthralling.

I wish also to thank the various other editors who have reprinted *Wild Earth* articles. I need to ask, however, that other publications obtain the permission of the author, as well as of *Wild Earth*, before reprinting. Such simple editorial courtesy is often forgotten in these days of computer and telephone-line transmission of articles.

Finally, since *Wild Earth* necessarily deals so much with death, sorrow, and destruction, I wish to offer a few words of hope here. In Maine a few months ago, a canid thought to be a wolf was seen, but alas, shot. Then in Maine in November, a Cougar was seen...killing a Bobcat! *—John Davis*

Wild Earth is moving into the 20th century and will soon be able to accept Visa and Master Card (possibly Discover) for subscription payments. We encourage readers to take advantage of this convenience to renew subscriptions or turn others on to *WE*. This technology is pending in our office—please call for information.

In this issue we would like to thank all who have contributed to the Wild Earth Research Fund (see page 96). Our apologies to any contributors inadvertently omitted—please let us know so that we may update our records. The Research Fund symbol WERF at the end of an article indicates that the author has been supported, in part, by the fund. Thanks to your contributions, the fund is growing. Look for the WERF symbol in future issues to see where your support goes. *—Marcia Cary*

I would like to thank David Brower and Dave Foreman for their informative and inspiring *Wild Earth* benefit lectures at UVM's chapel in November. The chapel was packed and Dave[2] sparked hundreds of people's interest in *WE*. The combination of David's final statement: "One person can make a vast difference...all of us can make the *necessary* difference" and Dave's howl left a memorable impact on all.

Great thanks also go to David and Anne Brower for sharing their ideas and time at the Sagamore meeting. Their experiences, travels, joys, sorrows and wilderness campaigns were quite an earful. All of us at Sagamore were fortunate in exchanging ideas with the Browers and I for one am looking forward to the next time our trails cross.

On behalf of the *WE* staff I would also like to thank the brown-food group, because without it *WE* would not be what it is today. Roz McClellan suggested we write this column to familiarize our readers with the staff's daily events. I wish to share our favorite day with y'all.

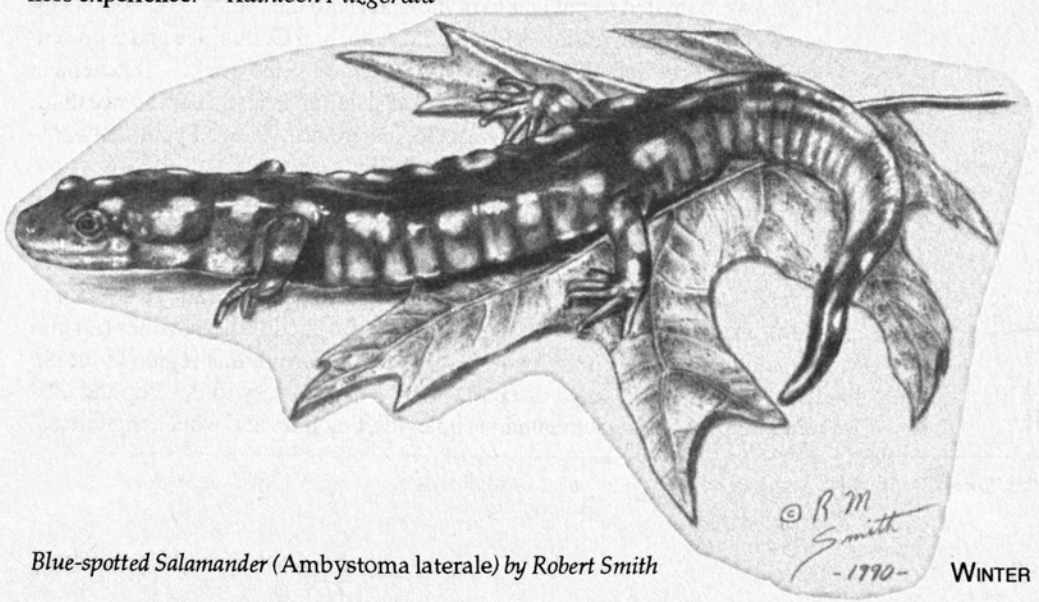
Every Wednesday we wait anxiously until 4:00pm at which point we race down the back stairs into the Daily Bread Bakery for our weekly Amazon cupcake. This is not a typical cupcake. This is a religious experience which reminds us of the interlinking cycles of nature. As in the natural world, if you take one single ingredient out of the Amazon cupcake the whole will be spoiled.

I could say the cupcake reminds me of a mushroom because of its shape, but it doesn't; it reminds me of my climb up Mt. Kenya. The Amazon cupcake is a swirled gem of chocolate and cream cheese, replicating the diverse regions of Mt. Kenya. The crunchy top of the cupcake reminds me of my boots walking on the crusty snow, and the warm-gooey middle brings me back to the bog-region of the mountain. Finishing the cupcake is like reaching the summit of Mt. Kenya—you have to push yourself to the end. And, when you are on top of Mt. Kenya and when you have finished your last precious morsel of the cupcake, you "kick back" in total euphoria. So, that's what we do. If you are ever in the Richmond area on a Wednesday around 4pm come join us for a wilderness experience. —*Kathleen Fitzgerald*

More like a loaf of unleavened bread than an Amazon cupcake, *Wild Earth* is sometimes accused of being heavy, dense, and hard to chew. A number of readers have suggested we lighten things up. To this end, we're pleased to welcome Vermont cartoonist L.J. Kopf to our pages. Look for L.J.'s art on pages 13 and 34 this issue (and in his book, *Into Every Life a Little Edge Must Fall,* available from Fantagraphics Books, 7563 Lake City Way NE, Seattle, WA 98115; 1-800-657-1100).

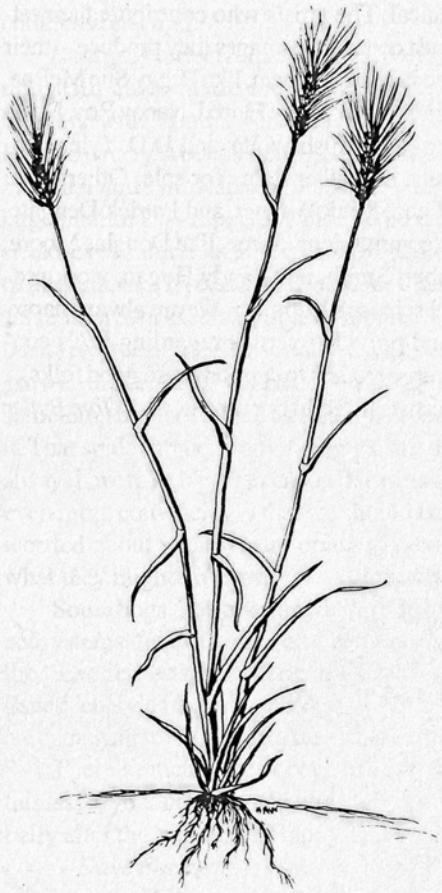
One of the pleasures of producing this periodical is the interaction the staff necessarily has with talented artists and writers. *Wild Earth* would be considerably less appealing (and decidedly more turgid) without the extraordinary artwork produced by the magazine's illustrators. We are deeply in their debt. (Most especially to de facto staff artist Chuck Ouray, whose superb maps grace each issue.)

Clearly, *WE* readers concur with these sentiments, as we receive ever more frequent requests for permission to reprint artwork; thus, we need to utter here a caution and mild rebuke. *Wild Earth* (with rare exceptions) does not own the images printed herein; we have only received permission from their creators to use them. We cannot and do not grant permission for their use in any other periodical, brochure, flyer, etc. To do so without written permission from the artist is illegal; more important, it is unethical. The artists who contribute their talents to *Wild Earth* must control the images they produce—their livelihoods depend on it. Many of them, like Peggy Sue McRae, Darren Burkey, William Crook, Gary Eldred, Nancy Roy, Davis TeSelle, Martin Ring (aka Brush Wolf), and D.D. Tyler, produce notecards, prints, and other items for sale. Others, like Bob Ellis, Heather Lenz, Mark Wagner, and Patrick Dengate, primarily depend on commissions. Some, like Douglas Moore, Robin Peterson, Robert Smith, and Sandy Hogan, work professionally as natural science illustrators. We are always happy to answer queries and provide referrals regarding *WE*'s contributing artists, and urge readers to support these good folks... as well as the other artists listed in our masthead. —*Tom Butler*



Blue-spotted Salamander (Ambystoma laterale) *by Robert Smith*

The Wildlands Project
Update



Playing with maps is fun. This became obvious at the first Wildlands Project vision map meeting which took place in November at Sagamore Lodge in Adirondack Park, New York. The setting for the meeting could not have been better. Sagamore is a beautiful old camp in the heart of Adirondack wilderness. It is delightfully ironic that we met in what were originally second (third? fourth?) homes to the Durants and Vanderbilts—some of the great robber barons of generations past. There we were—scientists, planners, policymakers, conservation activists (including moderates like David Brower and Dave Foreman) and many combinations thereof—brought together because we share a belief, to varying degrees, in the possibility that humans have the "generosity of heart and greatness of spirit" to allow wildness to be renewed on this continent.

The major goal of the weekend meeting was to create a preliminary vision map, using 1: 500,000 scale USGS maps and mylar overlays, of a system of protected cores, corridors and buffer zones for the Greater Laurentian Region (GLR*) of North America. The map is to be used as a basis for more detailed work and to frame the discussion of what needs to be done here to protect and restore native biological diversity. Representatives from Nova Scotia, Quebec, Ontario, New England, New York, Pennsylvania and New Jersey were invited to put pen to mylar and share their knowledge of this region with the GLR Wildlands Project Coordinating Committee and representatives of the continental Wildlands Project. Through the weekend, excitement grew as people saw the maps begin to take shape and gained confidence that a connected system of wildlands is ecologically and yes, even politically possible—given enough time. All things are relative....

In addition to preliminary mapping, many other important steps were taken. The region was defined and named with boundary lines drawn to encompass southeastern Canada, all of New England and New York, the northern 1/3 of Pennsylvania and northern New Jersey (roughly based on Bailey's ecoregion map). These fluid boundaries also encompass Atlantic coastal zones (no pun intended). The most prominent geophysical feature in this region is the St. Lawrence River. We also discussed data sets necessary to develop the ultimate vision map, implementation strategies, timelines and work assignments.

* Ed. question: Shall we pronounce this "Glory?"

illustration by Helen Wilson

The GLR Coordinating Committee, which could serve as a model for Wildlands groups in other regions, was created to facilitate proposal development and to prevent needless duplication of work. Steve Trombulak, Greater Laurentian Region Wildlands Project Science Director, will oversee mapping and data collection and review proposals for scientific accuracy. Marcia Cary, Associate Regional Science Director, will assist with mapping and data collection and will maintain a regional project clearinghouse. Jamie Sayen and John Davis, GLR Conservation Directors and TWP board members, will review proposals for continuity and accuracy from the perspective of wildland activists. Kathleen Fitzgerald will serve as Outreach Director.

Anyone who is interested in helping with the GLR Wildlands Project, or who knows of relevant work in progress, please contact the Coordinating Committee through *Wild Earth.*

The excitement meandering through this meeting, the same excitement that is making its way across the continent as more people realize the possibilities of The Wildlands Project vision, touched the devoted participants and the skeptics alike. It seemed appropriate to end the meeting outside. If you think North American Wilderness Recovery is not possible, you have never seen forty scientists, planners, policy-makers and activists howling together across a landscape once largely denuded but now growing back into healthy mature Laurentian forests.

—Marcia Cary, GLR Associate Science Director

The Tucson office of The Wildlands Project is experiencing a sudden glut of help from two volunteer interns, Dana Backer and Jay Nelson. The big question is how long will this largess last. While Dana awaits word on a Peace Corps sponsored trip to Africa, she will handle the phones and work on projects for credit through her graduate program in Environmental Biology.

Jay Nelson is also passing time in Arizona. Jay is on his way from Alaska to Southeast Asia. After the winter freeze lifts in Central Asia, he will return north toward Alaska by way of the Mongolian outback.

Jay has brought a wealth of knowledge with him from years of work on environmental issues, and Dana has supplied the energy of youth. The wave is cresting and Maria and I are paddling hard to stay on top of it. Bruce Gray, a Tucson local who helped around the office, was much appreciated; but these two brave souls are our first full-time volunteers and as such are serving as the Guinea Pigs of our fledgling intern program. The Project extends them a hearty thanks.

In the past, *Wild Earth* has published our cry for interns. With the help of Dana and Jay and the good responses received, we are working to establish an effective program as funding becomes available and the Project continues to grow. Please write or call the Tucson office if interested in helping: 1955 W. Grant Rd., Suite 148A, Tucson, AZ 85745.

—Rod Mondt, TWP Programs Coordinator

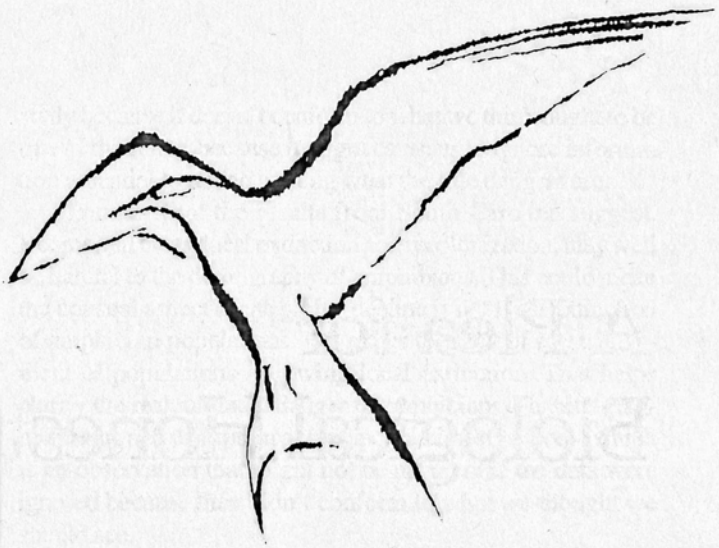


illustration by Rose Craig

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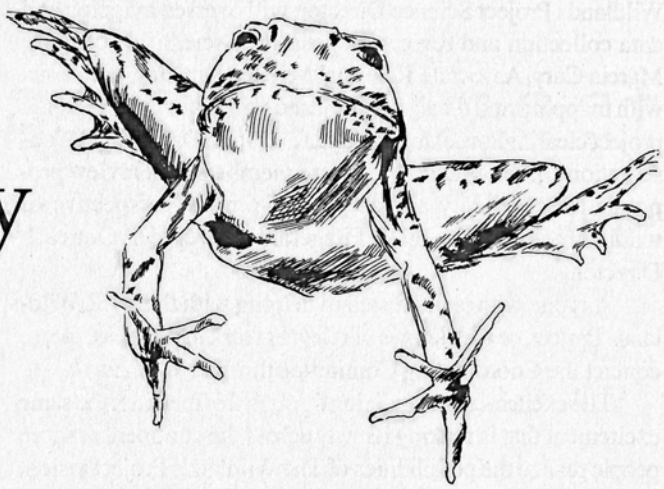
A Plea for Biological Honesty



by Steve Trombulak

Imagine for a moment that you are at a conference on the ecological consequences of timber-harvesting practices in North America. Several papers have been presented on the effects of clearcutting on neotropical migrant songbirds. Later that day, you overhear two environmentalists talking in the hall.

A: Did you hear the talk by Smith?

*B: Yes. I just can't believe that the migrant songbirds **aren't** affected by clearcutting. We know clearcutting is bad. There **must** be an effect.*

A: I agree, but I'm not surprised. The study was funded by the timber companies. It makes sense that the results would come out the way they did.

*B: We should prepare some kind of rebuttal to the study. It might give folks the incorrect message that clearcutting **isn't** bad.*

A: You're right. Also, let's talk about the other organisms that live there. If it isn't birds that are affected, it must be something else like salamanders.

Does this conversation sound familiar to you? I've been to dozens of conferences and, as a conservation biologist, have had hundreds of conversations with people about the results of field research projects. In my experience, the attitudes expressed in the conversation above are rather typical. These attitudes are counter-productive for the environmental movement.

I completely support the mission of protecting and restoring biotic diversity on Earth. I believe in the application of the principles of ecology and conservation biology to the development of conservation strategies. I believe there is evil in this world and we must struggle against it. But I also believe we need to be very careful about interpreting ecological studies and avoid using only the data we "like" and arguing against data at odds with our preconceptions.

The conversation above reflects three fundamental errors that work against us in our efforts to restore biotic integrity to the world and improve our practice of inhabitation. The first is

If data are collected in a rigorous manner and reported honestly, then we ignore the conclusions at our own peril... and the natural world's.

the notion that just because the timber industry funded the research, the results must be biased or fabricated. Maybe they are, but it's a bad assumption. It would mean the scientists doing the work were dishonest or ignorant, which are very serious accusations. Besides, the flip side of the coin is that research done by scientists sympathetic to the environmental movement demonstrating an environmental problem should be ignored simply because the scientists doing the work are "biased." The resultant war-of-experts-attrition would quickly lead to scientific research being completely ignored in policy debates since both sides would immediately dismiss data based on who collected it rather than on its merits. Clearly, we do not want such a situation.

The second, more serious, error is the assumption that if birds (for example) are not negatively affected, then something else "must" be. That assumption puts us in the undesirable position of having created a moving target for what we want restored ecosystems to look like. Imagine this scenario: For years the environmental community argues at meetings and in print that timber-harvesting practices are bad because they cause a decline in neotropical migrants. Environmentalists focus on this issue and create the public perception that this is **the** reason why timber harvesting should be regulated. Never mind that among ourselves we acknowledge multiple problems associated with habitat destruction. In public debate we have highlighted the central importance of birds. Then, if credible data emerge that birds are in fact **not** threatened, the impression left

illustration by Chris Schimmoeller

is that all is well. If we react to this discovery with, "Oh yeah, well maybe it doesn't hurt birds, but it hurts (for example) salamanders," we send the message that (a) we don't know what we're talking about, and (b) we don't know what will make us happy. Shouldn't we be pleased if birds are not hurt by timber cutting? It seems not, because our reaction is merely to move on to the next taxon that we can fret over. What's a forester to do? Why develop a dialog with environmentalists if nothing will make us happy and we keep on looking for something in trouble until we find it?

I may be overstating my case, but I want to clearly expose the fallacy of the "moving target" approach to re-structuring humanity's relationship with the rest of nature. We need a better strategy. We need to think about what we want—I suggest the four basic Wildlands Project goals Reed Noss described in his conservation strategy article in *Wild Earth*'s Special Issue—and how we'll know when we have it. With respect to forests, for example, we need to be able to say what we think a healthy forest is. This isn't hard. All it takes is some foresight to identify all of the taxa that we think, based on the best available scientific knowledge, are good indicators of the suite of ecosystem components and processes that must be present and functioning before we feel the forest is healthy: soil microbes and other invertebrates, vascular plants, beetles, fungi, birds, salamanders, just to name a few. By articulating the suite of organisms we see as good indicators of forest health, we send the signal that it takes more to make forestry practices sound than just not hurting birds, and that we will recognize such practices when we see them.

The third and greatest problem with our hypothetical conversation is that we have prejudged what "must" be right. Forget what the data say; intuitively we "know" what should be happening. This kind of pseudoscientific analysis must be avoided at all costs because at best it wastes a great deal of time and at worst it prevents us from focusing on information that might lead us to real insights and solutions.

Consider the global decline of amphibians. Several species of amphibians, in diverse habitat types around the world, have disappeared and probably gone extinct, and many others have shown drastic declines in population densities to the point where they may well represent the living dead. This has led the scientific community to argue that amphibians are under some kind of environmental pressure, possibly caused by humans, which may result in the global extinction of amphibians as a group. The media have reported it, and the environmental community has happily adopted amphibian decline as another example of human destruction. Recently, however, a group of ecologists in South Carolina reported on their 12-year study of population changes of amphibians in a small pond that has experienced no direct disturbance from humans. Their results show that increases and decreases in density are a natural part of the demographics of amphibian populations in this area, and cast doubt on the argument that global amphibian declines are related to human activity. Should environmentalists dismiss this study because it doesn't conform to what we think ought to be true? I think not, because it might cause us to ignore information essential to understanding what the true dangers are.

Ponder what the results from South Carolina suggest. Booms and busts, local extinction and recolonization, may well be natural to the demography of amphibians. This could mean the unusual aspect of the global decline is not local extinction of amphibian populations, but rather the lack of reestablishment of populations following local extinction. That helps clarify the real, ultimate danger to amphibians—habitat fragmentation and disruption of metapopulation structure—which is an observation that might not be apparent if the data were ignored because they didn't conform to what we thought we should see.

There are other possible examples of how data that run counter to our expectations actually tell us things we very much need to know: lakes in the Adirondack Mountains may regularly undergo cycles of acidification (if true, what are the ecosystem processes that allow the biotic components of the lakes to recover); climate cycles may regularly cause Red Spruce to be pushed out of broad areas where they are currently found (what then are the essential landscape features that allow them to persist in refuge sites); and neotropical migrants may not be negatively affected by forest management (suggesting that species with long-distance locomotion skills may not view forest fragments as traditional "islands").

I'm not saying that any of these interpretations are true, but rather that we will never know what the truth is if we ignore the data because they don't tell us what we already "know." If data are collected in a rigorous manner and reported honestly, then we ignore the conclusions at our own peril... and the natural world's.

None of this means intuition is useless. Many theories derive from an intuitive feel for what might be true. But it cannot tell us what **is** true; that only comes from careful—and honest—tests of the theories.

I do not offer this plea so we will stop challenging the results of scientific studies. That, after all, is part of the scientific method. But we should be careful about **why** we challenge the results. If we attack based solely on emotional biases, we run the risk of ignoring something important, and commit one of the sins we most abhor in our opponents. Further, we need to more clearly describe what we are trying to achieve and how we will recognize it. Otherwise, we stand little chance of engendering the revolution in ethics required to achieve a lasting transformation in how we inhabit the Earth.

Steve Trombulak is a professor of biology and environmental studies at Middlebury College, and Science Director for the Greater Laurentian Region of The Wildlands Project. See Steve's bat article in this issue. He says if John Davis is ***real*** *nice to him and shares some of Tom Butler's homebrew with him, he might cover Mudpuppies and other salamanders for* Wild Earth *soon.*

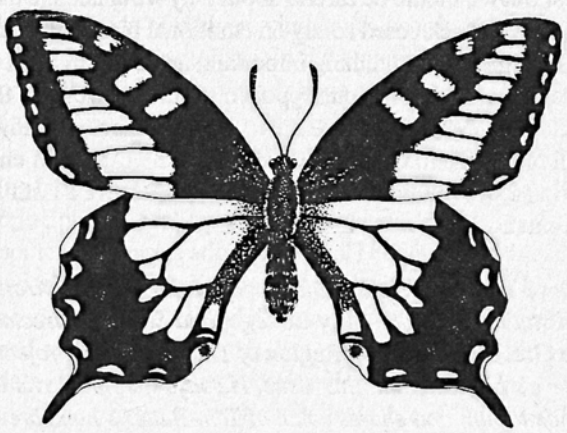
A Plea for Political Honesty

Editor's note: The opinions expressed in this article are those of the author and do not necessarily reflect the views of others associated with* Wild Earth *or The Wildlands Project. If aspersions must follow, let them be cast at the author. (Personally, I think he equivocates and temporizes too much.)* —JD

by John Davis

Steve Trombulak has just explained well why we must strive for biological honesty and forthrightness. I wish to briefly argue here for political honesty and forthrightness. First, though, let me emphasize that I use "political honesty" in a sense very different from what people usually mean when they speak of political credibility or political realism. If ever Wildlands Project goals are embraced by mainstream politicians, it will mean 1) we've won our struggle, or 2) we've lost our vision. The latter seems more likely, since winning the war against the war against Nature may take decades. By "political honesty," I mean being honest about the political (and social and economic...) implications of our project—North American Wilderness Recovery.

Let me also preface my remarks by saying that, despite the concerns I express below, I believe The Wildlands Project represents the most honest and ecologically realistic conservation campaign on the continent. Most of my concerns actually apply more to big environmental groups—especially the mainstream groups that seem to want to make members think they can have their cruise and their coral reefs, too, so to speak. Nor are my concerns indicative of disagreement within Wildland ranks. Wildlands proponents show remarkable unity of purpose and goals, and I intend to continue following their lead whether or not my points are judged valid; but I do want to air my misgivings to encourage dialog.



For I fear we're being a bit disingenuous. I fear we're not telling the whole story. Perhaps the radical implications of what we advocate should not be disclosed to the unconvinced. Maybe political frankness is strategically unwise...but let's at least discuss among ourselves whether forthrightness might actually benefit wildlands and in what ways we might be more candid with potential wildland proponents (i.e., the public).

To set the context for my claims, I quote the best concise statement yet offered of The Wildlands Project's aims. While TWP's Mission Statement offers an eloquent explanation of what North America needs, Reed Noss in the same *Wild Earth* Special Issue on The Wildlands Project offers four ecological goals that really ought to be emblazoned over the doors of every land management office in the country:

* *A longer version of this article may appear in* The Wildlands Anthology *(due out in 1994), edited by David Burks.*

Zelicaon Swallowtail by Sandy Hogan

1. Represent, in a system of protected areas, all native ecosystem types and seral stages across their natural range of variation.

2. Maintain viable populations of all native species in natural patterns of abundance and distribution.

3. Maintain ecological and evolutionary processes, such as disturbance regimes, hydrological processes, nutrient cycles, and biotic interactions, including predation.

4. Design and manage the system to be responsive to short-term and long-term environmental change and to maintain the evolutionary potential of lineages.

Others will disagree, but some wildland advocates believe that the vast bulk of North America must be allowed to become wild again, if we are to achieve these four basic goals. Those who disagree will have a particularly hard time with Reed's wonderful phrase "in natural patterns of abundance and distribution" (for which—even without considering his other immense contributions—he deserves canonization, if he wants it). Sixty-five million Bison, for instance, will not abide extensive corn fields. Which brings us to the first way in which I think we need to be more straightforward:

1) We need to be very clear about scale, spatial and temporal. Spatially speaking, we are probably being less than honest if we imply that North America's biodiversity can be saved in a system of reserves covering a minority of this continent's acreage. For what little it's worth, I'll venture to suggest that fulfilling the basic four Wildlands Project goals would require that at least 90% of the continent as a whole (including ocean waters to the edge of the continental shelf) be protected as wild habitat, as soon as possible. Of course, in some heavily developed regions, reserves will be small initially, but they can and must expand.

In temporal terms, we may leave people a bit befuddled when we talk about ours being a project of centuries. Yes, ensuring the opportunity for long-term prosperity of all (remaining) native species and processes entails centuries of work (and non-work), but much could be accomplished quickly. Most dramatically, the US could secure well over half a billion acres of potential wilderness and actual wilderness with a few pen strokes (of the President and some governors), by banning commodity extraction on and motorized use of public lands. We could save over 10 million sparsely inhabited acres in the Northern Forests simply by allocating a few billion dollars of federal money (the cost of a few Stealth bombers) to purchase lands from timber companies, which are trying to pull out anyway. Canada offers similar prospects. Much of the continent remains undeveloped and could be quickly secured if the political will can be mustered.

2) We sometimes talk about a future ecological reserve system as if it can be superimposed upon the existing socio-political systems of this continent. Any decent road atlas belies such a hope. In the immortal words of Jamie Sayen, "Industrial civilization is incompatible with biodiversity." Quite likely, industrial civilization will eventually collapse of its own accord. It may, then, be counterproductive to alarm people by proclaiming the need to dismantle industrial civilization. Let's not, though, pretend that TWP's goals can be reached without systemic changes. The role of The Wildlands Project may not include calling for these systemic changes, but let's be prepared to discuss them.

3) We should look askance also at technology. Almost all modern technologies are built and used at the expense of the natural world. In the near term, wildland proponents will rely upon many modern technologies (telephones, computers, cameras, etc.) to spread their message; but we should at least entertain the possibility that a future wild world will be free of motors, firearms, electronic equipment, and the like.

Even in the short term, serious questioning of technology could benefit biodiversity. In many reserves, wildness could be ensured simply by banning destructive technologies, without needing to ask people to relocate. As I argued in *Wild Earth*'s Special Issue on The Wildlands Project, the problems in the Adirondacks would mostly disappear, and extirpated species would likely reappear, if motors and firearms were banned from the Park.

4) We should not paint the battle for biodiversity as an all or nothing struggle. This would cause people to despair and surrender; for the odds of complete victory are infinitesimally small (100 species will go extinct tomorrow, if recent estimates be true). Every acre saved is a victory; every hectare, 2.5 victories.

5) It is incumbent upon Americans (especially those of us urging others to change) to simplify their lifestyles, to consume less. North America will not become wild and healthy again with Americans maintaining their current levels of consumption. Again, The Wildlands Project has enough work without adding efforts to convince people to be frugal, but let's set good examples. Wildland proponents who need to use cars, planes, computers, fax machines, electric hair dryers (seriously, they exist!) and other machines to do their wildlands work will do so. Those who can do without machines should.

This fifth point brings up the related need to restore human as well as natural communities. Creating economies based on restoring rather than destroying Nature will require healthy self-sufficient human communities.

To conclude, we should employ the tactics and voice the ideas that will save the most habitat. If publicizing unconventional ideas like the above will only turn people away, then maybe we'd best keep our most radical notions to ourselves. I believe, however, that we underestimate people's biophilia—suppressed but smoldering still, deep within—and the appeal of primeval wilderness if we assume we must refrain from speaking hard truths. Intelligent people throughout the world are ready to end the war on wildlife. A paradigm shift is in the air; the North American Wilderness Recovery Strategy is the way to put it on the ground.

John Davis is Editor of Wild Earth *and serves on The Wildlands Project board of directors.*

Letters

RESPONSE TO "THE PRESENCE OF THE ABSENCE OF NATURE"

Paul Faulstich's article, "The Presence of the Absence of Nature: Environmental Ethics and Prehistory," in the Summer 1993 issue of *Wild Earth*, seeks to establish an ecological framework for archaeologists to interpret prehistory. He writes that "...archaeologists have not been champions of contemporary ecological perspectives" and that "The paradigm I am advocating merges ecological and anthropology perspectives." He also writes "I have no guidelines for an ecologically-correct expression of the discipline." While I agree with the need for archaeologists to make their findings more relevant to such current problems as overpopulation, I also think that Faulstich does a great disservice by implying that a body of ecological knowledge doesn't already exist in the disciplines of archaeology and anthropology. As the short discussion below hopefully points out, anthropologists have long been using the science of ecology to answer some of the riddles of human adaptation.

Ecological principles have been part of anthropological research since at least the 1950s. Among anthropologists, Steward (1955) advocated an ecological framework to understand human adaptation to the environment. This approach informed the work of Rappaport (1967,1971) in New Guinea and that of Netting (1968,1977) in Nigeria. The work of both Rappaport and Netting forms the basis for cultural ecological studies that are common among field anthropologists today. Helm (1962) wrote an influential article titled "The Ecological Approach to Anthropology." A more recent work is "Ecological Anthropology" by Hardesty (1977). There are numerous other examples.

Faulstich calls for archaeologists to take a systems approach and "In their own works, archaeologists

STATEMENT OF PURPOSE

Wild Earth is a non-profit periodical serving the biocentric grassroots elements 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 working with The Wildlands Project to complete, and subsequently publish in book form, a comprehensive proposal for a North American Wilderness Recovery Strategy.

Erratum

Two key pieces of graphic information were inadvertently deleted from John Davis's Noteworthy Articles column (*WE* fall 1993). The sentence in question read:

"Quite likely, deep penetration of amphibionts into hyporheic zones of large alluvial rivers is a universal phenomenon, although river pollution and flow regulation may have extirpated these unique species in many locations."

It should have read:

"Quite likely, deep penetration of amphibionts into hyporheic zones of large alluvial rivers is a universal phenomenon [☺], *although river pollution and flow regulation may have extirpated these unique species in many locations* [☹]."

The Art Director regrets the omission. —*TB*

can begin relearning the vocabulary of ecology..." Early attempts by archaeologists to build an ecological-systems framework began in the late 1950s (Beardsley et al. 1956). Commencing in the 1960s the work of Lewis Binford was pivotal in arguing an ecological-systems approach and in advocating archaeology as anthropology (Binford 1962,1965). Kent Flannery (1968) used systems theory in attempting to understand early Meso–american culture. Flannery later worked with Michael Cole (1968) in using the niche concept to explain adaptations to seasonal cycles and microclimates in Mesoamerica. In North America archaeologist Thomas (1972,1973) used a cultural ecological framework in attempting to understand Western Shoshone adaptation to prehistoric Great Basin environments. Many archaeologists and anthropologists were reading the works of Eugene and Howard Odum in the 1960s and 1970s and became interested in the energetics of ecological and cultural systems. R. and P. Watson (1969) provide an overview of cultural evolution and human behavior from a comprehensive ecological framework.

Additionally, beginning in the late 1960s and early 70s, archaeology experienced the paradigm shift that Faulstich advocates. This "New Archaeology" was problem-process oriented in the sense of attempting to understand the prehistoric record in terms of environmental change, population pressure and changes in social organization (Binford and Binford 1968). This approach was fundamentally ecological. Basic research focused on reconstruction of past environments and placed human culture in the web of ecological relationships. Research also centered on the elaboration of regional subsistence-settlement systems. Culture was no longer an assemblage of artifacts that changed stylistically over time but represented fundamental adaptation to various local ecosystems. Ecological adaptation was a guiding principle in explaining cultural evolution. Johnson and Earle (1986) present a synthesis of economic, cultural, and ecological perspectives in explaining the evolution of human societies. This work also contains an excellent bibliography of recent anthropological and archaeological research. Recent archaeological work here in southwest Oregon attempts to use an ecological approach in understanding human adaptation to changing climatic conditions (Spencer 1989). There are numerous examples from all over North America/Turtle Island of ecologically oriented archaeology.

If Faulstich is in fact offering a new paradigm, I think it would be prudent to discuss and critique some of the before mentioned works. Faulstich also seems to want anthropologists to be more vocal in their critique of industrial society and to offer possible solutions to the ecological crisis. One has only to read the work of Diamond (1974) and Harris (1979); both of these anthropologists take a neo-Marxist perspective in their "search of the primitive."

I agree with Faulstich that much can be learned about the environmental problems we face today by learning about cultural adaptation to environmental changes in the past. Should archaeologists help "Dream Back the Pleistocene?"

In some ways I believe we already are.

Michael Keown, POB 1345, Cave Junction, OR 97523

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REJOINDER FROM PAUL FAULSTICH

Although I appreciate Michael Keown's interest in my essay, he does a very slippery thing with his criticism; while my paper specifically addresses issues of *archaeology*, Keown's critique draws primarily from work in *cultural anthropology*. In arguing *his point*, then, Keown actually reaffirms *my point* that archaeology—as practiced in the mainstream—is not a discipline of applied environmental advocacy. Even within his useful but sketchy cataloguing of ecologically-oriented anthropology, Keown omits some of the most interesting works, such as those by Sahlins (1960), Bateson (1972), and Douglas (1972).

Certainly Keown cannot believe that archaeologists have fully seized their opportunities to illuminate the nature and causes of the human predicament. Other than the two papers that I am not familiar with (Spencer 1989 & Thomas 1972), the archaeological works Keown cites do not take an advocacy stance, nor do they present an environmentalist's perspective. In my essay I advocate an ecologically relevant archaeology, which is substantially different from ecological archaeology as it has been academically practiced.

Keown is exactly right when he notes that I want archaeologists to be more vocal in their critique of industrial society and to offer possible solutions to our current crisis. Archaeologists, after all, should be among the first to understand the evolutionary posturing of humans in nature. I am simply suggesting that we archaeologists take full advantage of our perspective on the convergence of ecological and cultural processes. Contrary to what Keown suggests, systems theory and the now-old "New Archaeology" do not represent examples of the paradigm shift that I advocate. A new paradigm, in my mind, should not be simply academic, but should concern itself with the social and ecological consequences of knowledge and action.

My essay didn't even touch on the resistance of many archaeologists to embrace issues of indigenous rights—another tributary of our current crisis—or the fact that many contract archaeologists are little more than developers' pawns. Sure, there are exceptions to my criticism, but that is hardly the point. The point is that we are on a crash course with this planet, and each of us needs to be accountable for our actions. As I suggested in the paper, archaeologists are uniquely positioned to speak out on critical environmental issues and to lend substantial insight into our ecological crisis. Let's hear some more voices raised in defense of biodiversity!

My article was not intended to insult. I wrote it, in part, as a wake-up call to archaeologists. I applaud Keown if his own work confronts issues of environmental degradation, but I can't help wonder about the roots of his defensiveness.

Dr. Paul Faulstich, Pitzer College, Claremont, CA 91711

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WILL WILDERNESS GO THE WAY OF THE WOLF?

For the past two years, activists have been defending the Cove and Mallard roadless areas on the Nez Perce National Forest in Idaho. The Forest Service (FS) has planned 8000 acres of clearcuts and 149 miles of new roads but efforts by those camped in Cove-Mallard have all but ground the project to a halt. Those who organized and took action during the long, wet summer of '93 were stalling the roadbuilding for a reason; we were waiting for a lawsuit to be filed which would legally stop this illegal project. On September 15 the lawsuit finally came.

Among other violations committed by the Forest Service the lawsuit cites impact to the Gray Wolf. Ten years ago the Thomas v. Peterson case, listing impacts to the wolf, stopped a nearly identical sale in the Cove-Mallard area. It seems pretty clear that wolves inhabit Cove-Mallard. In the ten years since Thomas v. Peterson there have been 43 wolf sightings in the sale's assessment area. Darlene Lavelle, a Forest Service biologist, reported hearing a pack in July of 1992. The Forest Service's own 1988 survey concludes that "wolves are present in Cove-Mallard." If laws like NEPA, which require the FS to maintain viable populations of native vertebrate species and take no action that threatens their continued existence, still have any meaning, the lawsuit will be won and Cove-Mallard will be spared just as in Thomas v. Peterson.

Unfortunately, Cove-Mallard is not the only timber sale in Central Idaho's expansive ecosystem, the Greater Salmon-Selway. At six million acres the Salmon-Selway, as described by Howie Wolke [summer 93 *WE*], is the largest wilderness in the temperate US. If we are to conserve biodiversity on a landscape level, the Salmon-Selway is the place to start.

Seven National Forests encompass this ecosystem. The roadless (RARE II) areas in these Forests are critical to rare species that depend upon seclusion and interior forest habitat. Like Cove-Mallard, these roadless areas are contiguous with existing Wilderness Areas or serve as biological corridors which link the system up. My point can be made, and much verbiage saved, by examining the RARE II areas on one of these National Forests, the Nez Perce.

There are 16 roadless areas on the Nez, totaling over half a million acres, 300,000 of which border designated Wilderness. Twelve of the 16 areas are reported by the Fish and Wildlife Service's (FWS) Endangered Species Program to have "reported sightings, known habitat components, or travel corridors" for the Gray Wolf. The Nez Perce Forest Plan proposes to build roads and destroy forests in all of the Nez's RARE II areas. This would further isolate the Greater Glacier/Continental Divide Ecosystem from the Greater Yellowstone Ecosystem. Plans like this must be stopped. With activism on

the rise in Idaho, legislation like NREPA, and legal action like the lawsuit to stop Cove-Mallard's demise, it seems as though they can be.

Enter the FWS with their wolf reintroduction plan. Three parts of the proposal, the "non-essential, experimental population" label, the designation of all wolves (naturally recovered or not) as "non-essential" animals, and the drop of land use (logging, mining, grazing) restrictions for wolves, seem to involve more than just efforts to placate wolf opponents.

Does the FWS think these concessions will change the hearts and minds of the anti-wolf contingency? Will they drop their guns and kill wolves no more? Or does the FWS, perhaps under political pressure, have a larger, more terrible, scheme in mind? You cannot recover the wolf without protecting its habitat, so why does the FWS proposal attempt to do so? Maybe because those who control the FWS have a motive different from wolf recovery.

The drop of land use restrictions and the "non-essential" label remove an obstacle standing in the way of nearly every timber sale in the roadless areas of the Greater Salmon-Selway. If this proposal is enacted, the laws that have been used to prevent logging and roadbuilding in places like Cove-Mallard will be compromised throughout the Central Idaho and Greater Yellowstone ecosystems. Oppose this plan in every way you can. Act now for the wolf and all the Wild. [Contact Ancient Forest Bus Brigade, Rt. 1, Box 14C, Lenore, ID 83541.]

Ron Constable

GREETINGS FRIENDS AT WILD EARTH:

My name is Ric Valois, founder of the Environmental Rangers—Biodiversity Defense, here in Sun River, Montana. I read your request for feedback on how you're doing and what might be lacking. First, let me say that *Wild Earth* is the best mag in the new (and real) conservation movement. Your articles are visionary and right. I have no complaints about *Wild Earth*, but I do have a suggestion as to what you might add to make it better. I see in the environmental movement a gathering of information unprecedented in the history of our species. This is good. I am dismayed at the lack of coordinated effort by those able to work "on the front lines," though. I am not criticizing anyone, for I myself am one on the front lines doing the grunt work. *Wild Earth* could really help by having a network clearing house, a who's who of expertise to speed up our ability to respond to earth destruction.*

The Environmental Rangers are guardian angels of public lands.

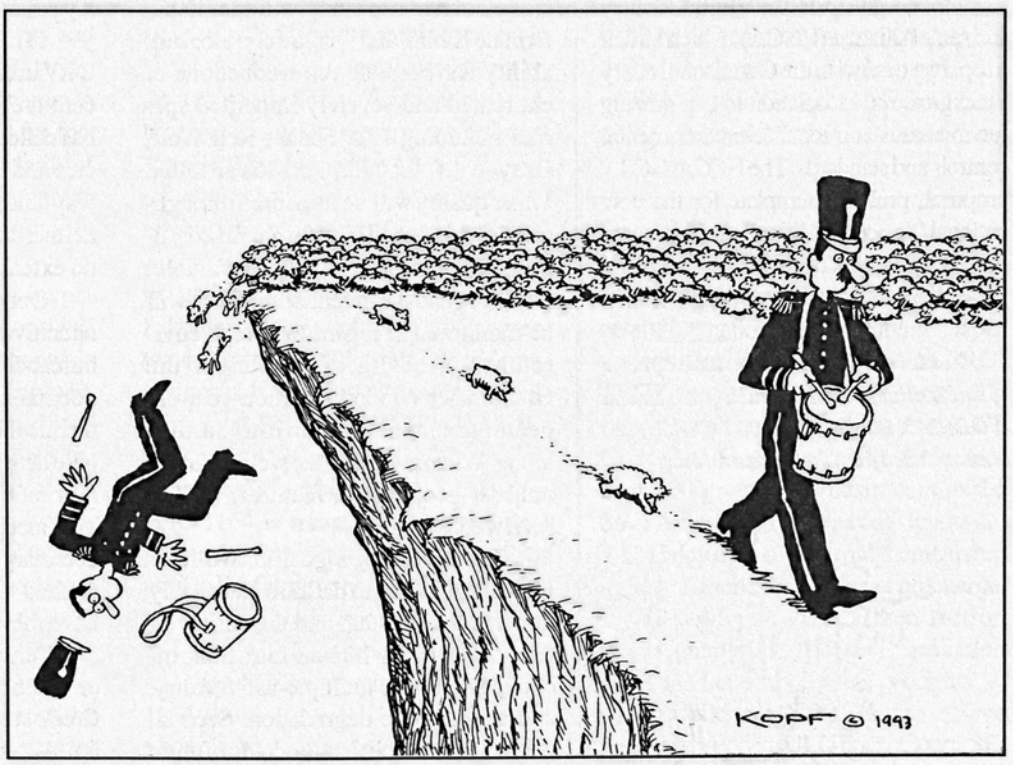
- We will lead bushwacks into areas that are closed to the public by the extra active industries and government. We can get you in and out again.
- We supply video work in "hot areas."
- We will be witnesses at any ESA case.
- We will be body guards for activists afraid of physical confrontation.

When in the field we will ensure the safety of any activist against police brutality or local retribution. We will feed and shelter any biocentric activist going down the road. This includes your four legged friends also. We do horseback as well as footwork, as the situation warrants. We will do investigative work of ADC activity, poachers, or animal abuse.

When you are at the end of the line on the front line, call in the Environmental Rangers!

Ric Valois, Heart of the West Ranch, Environmental Rangers, Biodiversity Defense, 103 Dracut Hill Rd., Vaughn, MT 59487

[*Editor's note: Ric's networking idea sounds good. In the future, we'll offer this service through our Announcement section. This time, we'll keep Ric's own offer of services with his letter.]



LIVESTOCK AND THE 'WORST OF ALL POSSIBLE WORLDS'

Following Senate defeat of a Congressional compromise to Secretary of the Interior Bruce Babbitt's compromise to the environmentalist compromise proposal to tighten environmental standards and raise fees for public lands grazing, Babbitt has legal authority to proceed on his own. Nevertheless, in apparent horse-trading precipitated by the threat of ten Republican members of Congress to vote against NAFTA unless grazing reform is stymied, Babbitt has backed down. (The two Colorado Republicans tying grazing to their vote on NAFTA, voted 'yes' on the trade pact.)

Instead, Babbitt pledged to visit a Colorado coalition once a week for eight weeks to facilitate a consensus deal on public lands grazing. The coalition members were jointly chosen by the office of Colorado Governor Roy Romer and Reeves Brown of the Colorado Cattlemen's Association, according to Doug Young, Romer's principal grazing staff assistant. The environmental principal of this closed group is the High Country Citizen's Alliance (HCCA), which struck a separate deal with the Gunnison County Stockgrowers Association to cap grazing fee increases and localize environmental controls and standards. The HCCA/GCSA proposal, probable template for the new national "concensus," furthers the process started by James Watt of privatizing the public lands by stripping oversight from a larger community of interests. WEN

—Michael Robinson, executive director of the Colorado wolf restoration group Sinapu (POB 3243, Boulder, CO 80307), which has been excluded from the Babbitt meetings.

WILSON CREEK WATERSHED WILL BE WATCHED

The Southern Appalachian Biodiversity Project and Friends of Grandfather Mountain will coordinate a comprehensive biological inventory of the Wilson Creek Watershed on Grandfather Mountain. Wilson Creek encompasses much of the south slope of Grandfather Mountain, the highest, oldest, and most biologically diverse mountain in the Blue Ridge chain.

This inventory will include field studies on critical indicator species such as Black Bear, Mountain Lion, Southern Flying Squirrel, Saw-whet Owl, Peregrine Falcon, and Hellbender; endemic and endangered species including salamanders, Brook Trout, and freshwater mussels; breeding bird and neo-tropical migrant populations; rare and disjunct high elevation mosses, worts, and lichens; complex plant and aquatic communities and community interactions; old-growth and potential old growth forest stands; and forest community types, especially examples of rare Appalachian Cove Forest. The study will aim to determine habitat and wildlife corridor suitability for possible reintroductions of extirpated and severely imperiled species including Elk, Fisher, Red Wolf, Gray Wolf, Cougar, and River Otter. Water quality will be measured throughout the watershed. Atmospheric conditions, including acid rain, ultraviolet radiation, and the greenhouse effect, will be monitored in regard to overall environmental health. Examples of the Grandfather Window, a billion-year-old geologic anomaly known to surface along Wilson Creek, as well as other unusual geophysical features, will be reviewed.

The inventory's goal is two-fold: First, we will aim to define a reasonably intact natural system and the variety of threats posed by human intrusion, including tourism, multiple-use forestry, and atmospheric degradation. Second, we hope to establish a model for future efforts throughout the Southern Appalachian bioregion.

The Wilson Creek watershed presents a rare opportunity to study a unique natural area that has retained a high degree of biological integrity but is not fully pristine or protected. A comprehensive research project should not only reveal the makeup and interactions governing ecological health, but also pinpoint the signs and causes of environmental degradation. Grandfather Mountain contains more rare, threatened and endangered species than any other mountain in eastern America. More varieties of salamander exist here than at any other site on Earth. Over half the known breeding birds in the state are believed to nest on this one mountain. The Lost Cove and Harper's Creek segments of the watershed have been proposed for Wilderness, and are known to contain stands of virgin forests. The watershed encompasses private land, Blue Ridge Parkway land, and US Forest Service land. All the proposed study area is accessible for purposes of research, but also for the millions of visitors driving the Blue Ridge Parkway. The Wilderness bill has languished in Congress for over a year, and has lost its vocal support.

The Forest Service maintains an ORV area nearby and has clearcut adjacent areas. The National Park Service has collected some data on sensitive species and habitat on its Blue Ridge Parkway land, but like the Forest Service, has neither time, money, nor inclination to do extensive fieldwork.

Our object is to initiate a model cooperative research project that bypasses bureaucratic impositions, and produce a document defining an ecosystem and threats thereto. An in-depth survey will give activists data to support wilderness restoration and species reintroductions. The final goal is to prescribe the measures necessary to preserve and restore the watershed to full biological capacity, and have these measures passed into law.

Persons interested in volunteering or financially supporting the Wilson Creek study, please contact: the Southern Appalachian Biodiversity Project, POB 3141, Asheville, North Carolina, 28802. *—Miles Tager, FOGM*

illustration by Susan Pedicord

WILDLANDS, CONGRESS, AND YOU

To many people working on land protection agendas, the affairs of the US Congress seem a distant distraction. Yet the strategies employed by people working in the spirit of The Wildlands Project often include interaction with the federal government. While the most direct contact is with employees of various agencies and in some cases with the courts, the underlying body of law created by our Congress provides a structure to the processes used to move wilderness visions toward reality. How well the laws are enforced by our government is conditional to both local and national level politics. Members of the Save America's Forests coalition share a commitment to the creation of laws that clearly direct our government to protect and restore natural forests in all parts of the US, and to the development of a political base that will cause environmental laws to be better enforced. Groups engaging in congressional politics fill an important niche in the diverse Wildlands process.

Many of the key legislative themes of the Save America's Forests platform are expressed in the Forest Biodiversity and Clearcutting Prohibition Act (H.R. 1164). First and foremost, the bill is a program to fix the laws that create problems for forest advocates—it would provide clarity of purpose to federal agencies and improve citizen access to environmental justice in the courts.

Second, the bill provides a framework in Congress to support regional initiatives. Because H.R.1164 is a nationwide proposal, citizens from every congressional district in the US have used it to educate and politically engage their elected delegates. Because no one in Congress acts alone, this broad education improves the prospects for any regional proposal that requires legislation or other congressional action for its success.

Third, pushing H.R.1164 has given political training and expertise to hundreds of forest protection advocates across the country. These skills will be called on more and more as wildland proposals move nearer to realization. As the power of the forest protection movement grows, its effectiveness has been reflected in the strengthening of the text of the Forest Biodiversity bill. As a result of H.R. 1164's increased support in Congress, the Sierra Club and the National Audubon Society both recently endorsed the bill and are beginning to organize their chapters behind it.

Presidents Reagan and Bush deliberately violated environmental law, causing the courts to regulate the federal agencies. The Northwest "spotted owl" lawsuit is an example of this. The new administration, however, is negotiating compromise solutions with both industries and environmentalists for public and private lands that fall beneath the standards set by our current laws. It is a strategy to regain authority from the courts while continuing to provide largesse to exploitative industries. While the administration attempts to improve the environmental compliance of the federal agencies, it is trying to lower the legal standards they must meet. This compromise process will not protect the environment.

Because Congress is in effect the behind the scenes moderator and limiting factor in many Administration deals, citizen action in Congress at this moment in history will have a significant impact on the way we use land well into the next century. For example, the current Northwest "Option 9" situation (the Administration-initiated negotiation of the "spotted owl" lawsuit) is a reflection of forest activists' overall weakness in Congress. Local activists felt obliged to negotiate with the Administration out of fear that Congress would vote to override and undo the environmental laws—e.g. the National Environmental Policy Act (NEPA) and the Endangered Species Act (ESA)—underlying the successful lawsuit. Support for H.R. 1164 is translating into political power for forest advocates that will be used in the future to hold onto good existing laws and to advance many land issues.

Now with 78 cosponsors in the House and a pending Senate reintroduction, H.R. 1164 would:

- end clearcutting and even-aged logging on all federal forests
- stop roadbuilding into 60 million acres of federal roadless areas
- mandate the protection and restoration of native biological diversity on all sites managed for timber
- institute citizen enforcement provisions like those of the Clean Air Act and Clean Water Act.

The bill's tenets were developed by experienced activists from around the country who knew what specific changes in law would help them achieve their goals. We encourage you to call the House document office at 202-225-3456 to order a free copy of H.R. 1164 so as to understand and offer improvements to this bill as it progresses. The ultimate language of this act will reflect the level of effort by those who would benefit from its success—you!

While Save America's Forests has built support in the US Congress for National Forest protection, the coalition has simultaneously assisted local forest protection efforts throughout the nation. Save America's Forests offers quick and concise communications on all US forest protection fronts to coalition members via its Fax-Action Network, and its quarterly DC Update newsletter. The Fax-Action Network has given many regional issues nationwide attention, and has created a unified voice in Congress when action is needed there. *—Mark Winstein, SAF cofounder*

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The Northern Forest

Working Forests That Would Rather Not

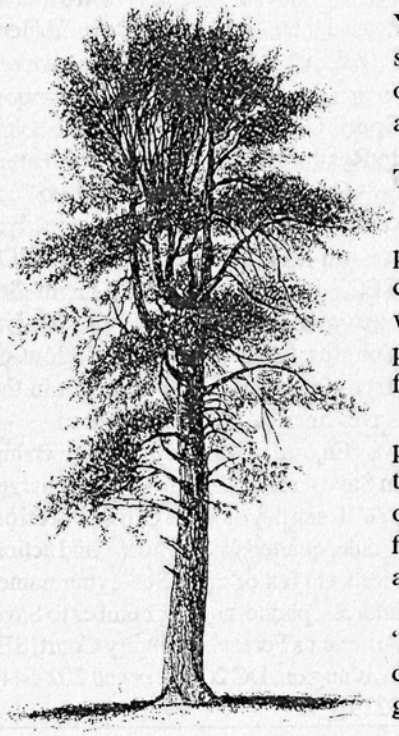
by Mitch Lansky

THE NORTHERN FOREST?

Until 1988, even though I live in the region, I'd never heard of the 26 million acre "Northern Forest Lands," which stretch from the Tug Hill and Adirondack region of New York to the Canadian border in northern and eastern Maine. People here in northern Maine refer to our portion of this vast, mostly undeveloped area as the "northwoods," or "the wildlands." Few here ever considered that our forest might have something in common with the forests of New York, let alone Vermont.

The area is linked, however, both biologically and politically. Biologically, the region defined by the Northern Forest is an extension of Atlantic Canada's "Acadian forest," a complex intermingling of Red Spruce and Balsam Fir with northern hardwoods (punctuated by occasional White Pine and Eastern Hemlock stands), plus a sprinkling of Northern White-cedar, Black Spruce, and Tamarack bogs. In addition, the region contains all the streams, rivers, lakes, and bare-topped mountains one would expect from a landscape only recently (geologically) evacuated by glaciers.

While some of the more spectacular natural areas include public lands, such as New York's Adirondacks, the Green Mountains of Vermont, the White Mountains of New Hampshire, and Baxter State Park of Maine, the Northern Forest is dominated (84%) by private ownership. This makes the Northern Forest controversies distinct from those swirling around the National Forests of the Pacific Northwest.



THE WORKING FOREST

Over 60% of this private land is owned by a handful of large landowners, mostly paper companies. The Northern Forest is attractive to paper companies because of its location near major markets, its abundant supply of water for mills and hydro-power, and its vast supplies of spruce and fir, whose long fibers are favored for making high-quality papers. Some companies, such as International Paper, Champion International, and (the former) Diamond International, have (or had) holdings across the four-state area.

The state of Maine contains the bulk of the Northern Forest, yet has less than 5% public lands. Industrial landowners control nearly eight million acres of Maine's forest—the largest concentration of industrial ownership in the United States. These large landowners assert that their timberlands are a "working forest." Unlike wilderness areas, these forests are not lazy and shiftless, full of overmature, decadent trees; they are producing active, young, thrifty trees full of fiber.

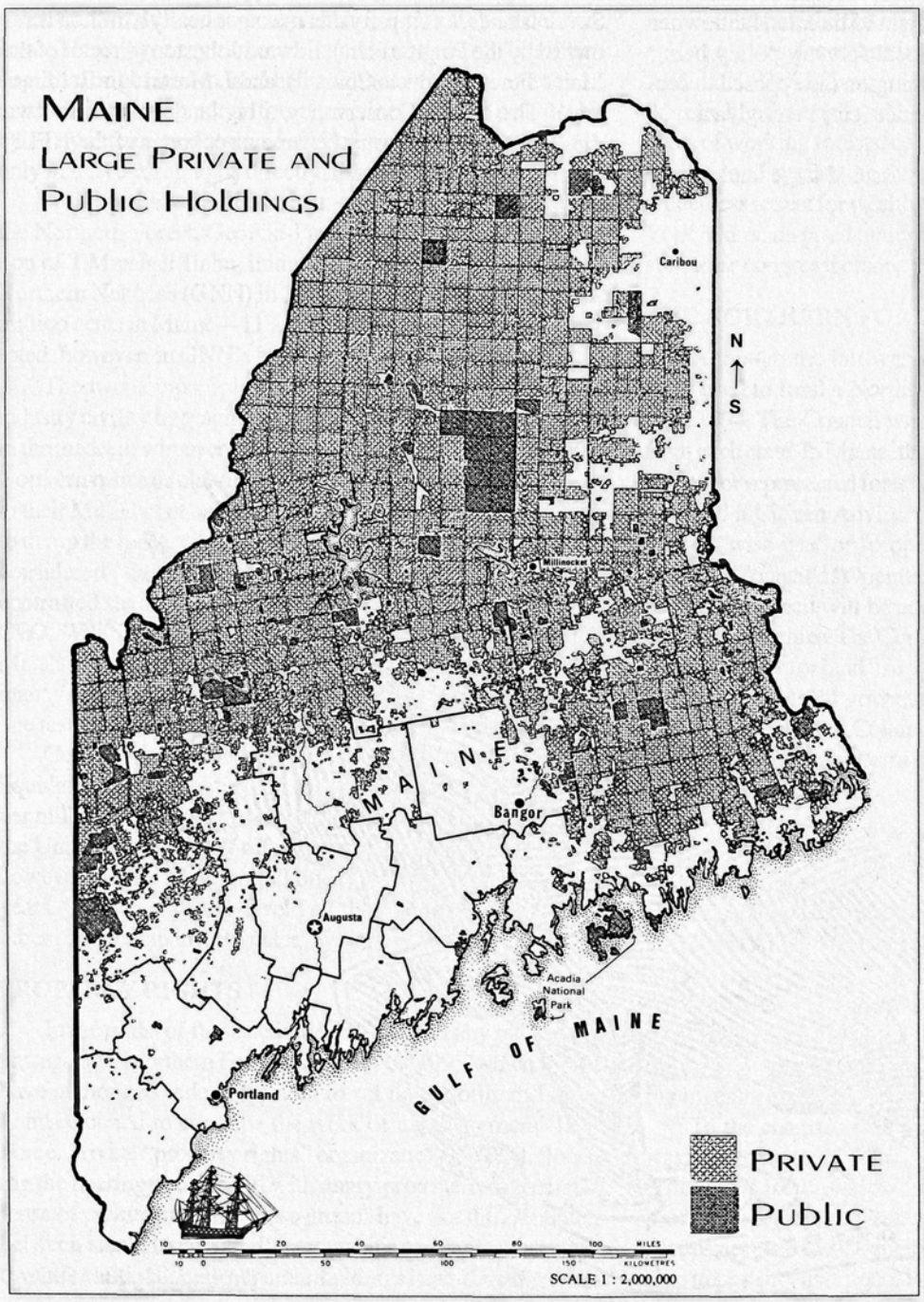
The lands of the paper companies and other large landholders have acted as a de facto, "multiple-use" park. Millions of acres have no development excepting logging and attendant roads. People have taken for granted that they could use company logging roads to go to favorite hunting, fishing, or canoeing locations. Riparian regulations, passed in Maine

in 1972, insure that those who paddle on a remote river or lake can feel surrounded by forests as long as they do not penetrate the mandatory buffer of trees.

Until recently, this arrangement seemed secure, even when the lands changed hands. In the late 1970s, for example, Boise Cascade bought out the holdings of the Oxford Paper Company (a division of Ethyl Corporation) and Brown Paper Company (a division of Gulf and Western) in Maine with no seeming ill effect.

In 1982, British financier Sir James Goldsmith did a leveraged buy-out of Diamond International, which owned over a million acres (including 58% of my town) in the four state region. "Takeovers," said Goldsmith, "are good for the public, but that's not why I do it. I do it to make money." He soon sold the mills to James River Corporation (making back most of his initial investment), but he transferred the lands to one of his French companies (Occidentale) and the land simply changed name—to Diamond Occidental.

In 1985, Champion International was the "white knight" rescuing (i.e., buying out) St. Regis Paper Company (which owned most of the town adjacent to mine) from the likes of Goldsmith and Rupert Murdoch. In all these cases, the "working forest" kept working for industry.



THE "THREAT"

In 1988, Diamond Occidental decided to unload its lands. Most of the land in Maine went to James River and to Fraser Paper Ltd. (a division of the Canadian conglomerate Noranda, which also owns Macmillan Bloedel). But in the rest of the region, people started to panic. The lands were bought by Henry Lassiter in New York, and Claude Rancourt in New Hampshire and Vermont—and these guys were developers. The working forest was threatened!

Conservation groups and government officials began a mad scramble for funds to purchase the most important lands. In July of 1988, the state of New Hampshire, The Nature Conservancy, the Society for the Protection of New Hampshire's Forests, and the US Forest Service were able to purchase the 40,000 acre Nash Stream watershed with state and federal funds. Because they were buying from Rancourt instead of Diamond, the price had inflated. Indeed, Senator Warren Rudman (R-NH) had to threaten Rancourt with a taking by eminent domain to get the price to a more reasonable level. Even then the deed left Rancourt the right to mine extensive gravel deposits on the holding.

THE NORTHERN FOREST LANDS STUDY

In the same legislation that provided funds for this purchase, Congress, at the behest of senators Warren Rudman and Patrick Leahy (D-VT), also appropriated funds to conduct a Northern Forest Lands Study (NFLS) and to set up a 12 member Governors' Task Force to study the issue and make recommendations.

Maine's Commissioner of Conservation, Robert LaBonta (formerly a timberlands manager for Scott Paper Company) was at first wary of federal involvement in Maine forestry affairs. He expressed concern that such involvement would lead to purchases and regulations that would threaten landowner rights. He raised the specter of local forestry policy being dictated by bureaucrats from Washington (as opposed to corporate executives in Georgia, Connecticut, Pennsylvania, or New York).

Rudman and Leahy, however, assured large landowners that the NFLS would strengthen, rather than threaten, the status quo. "The current land ownership and management patterns," they wrote, "have served the people and forests of the region well. We are seeking reinforcement rather than replacement of the patterns of ownership and use that have characterized these lands."

Maine's governor, John McKernan (whose brother Robert was at the time a lobbyist for the paper industry in Washington, DC) appointed Task Force members who had no intention of inconveniencing Maine's large landowners. The three Maine members were Edwin Meadows (commissioner of the Department of Conservation and a former official with Seven Islands, a company that manages nearly a million acres owned by the Pingree heirs), Edward Johnston (director of the Maine Forest Products Council), and J. Mason Morfit (director of The Nature Conservancy, a big landowner in its own right). The paper industry became a supporter of the NFLS, despite their earlier concerns.

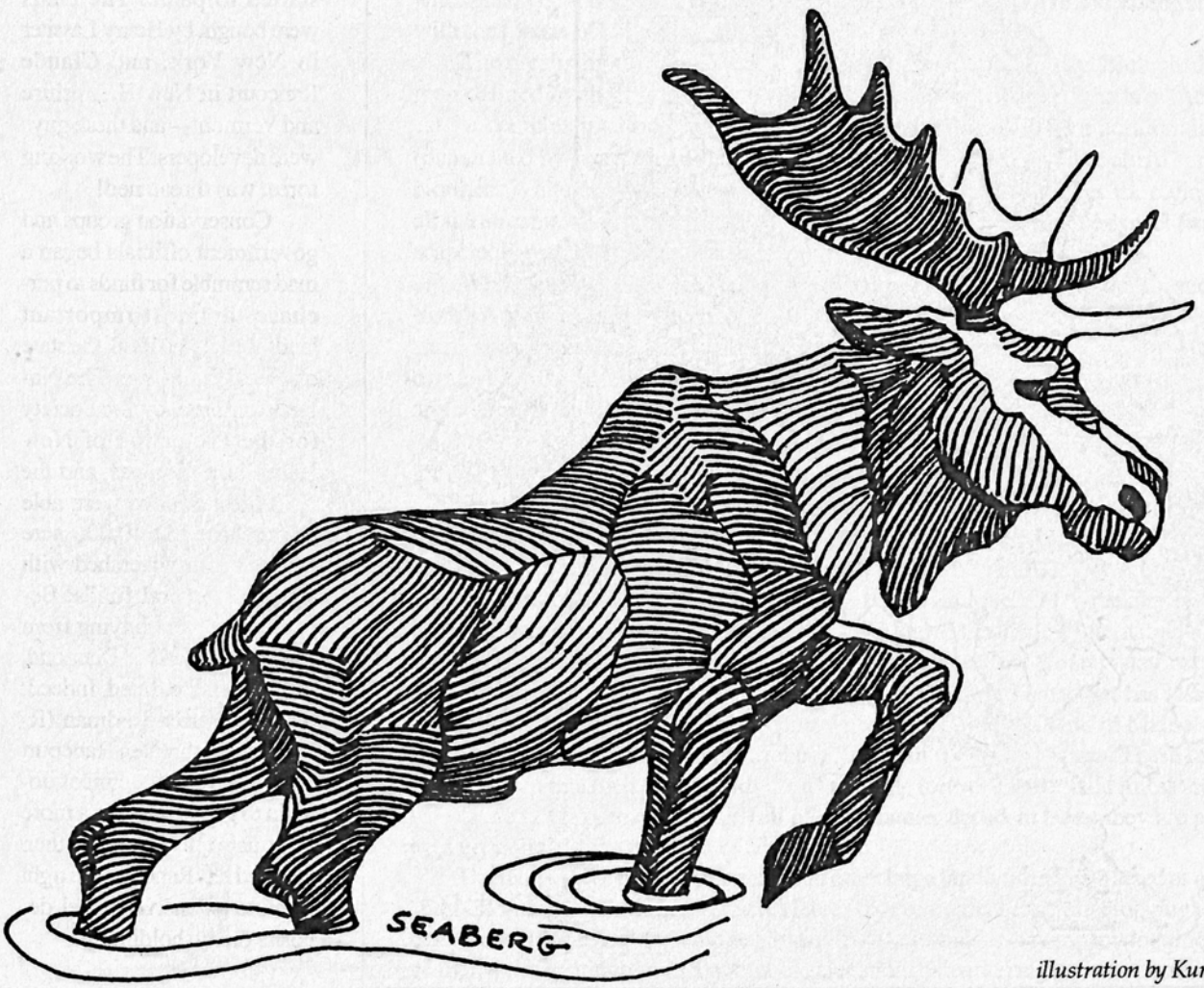


illustration by Kurt Seaberg

The final draft of the NFLS, published in April 1990, argued that the major threat to the Northern Forest was coming from real-estate development and listed various strategies to protect the region's "working landscape." Many of these strategies involved financial benefits for large landowners in the hope that the resulting higher profits would convince the landowners not to sell their forests to developers. These strategies included purchase of easements (where the government buys rights of development), reductions in state and federal income taxes (especially capital gains and inheritance taxes), reductions in property taxes, and various other "incentives."

The forest industry opposed zoning and "greenline" strategies that would lead to comprehensive planning in defined areas. They were very nervous about discussions of "biodiversity" that might lead to land being withdrawn for preserves or to restrictions being put on forest practices. Despite active lobbying by national and regional environmental groups, the NFLS only had five paragraphs directly discussing forest health.

As if to emphasize the insecurity of the industrial lands of the Northern Forest, Georgia-Pacific (G-P), under the direction of T.Marshall Hahn, initiated a hostile takeover of Great Northern Nekoosa (GNN) in 1990. Great Northern owned 2.1 million acres in Maine—11% of the state. G-P was most interested, however, in GNN's holdings in the Southeast.

The two companies broke with a long tradition of intra-industry civility by waging an unflattering public-relations war in the media to win over the Maine public and politicians. Great Northern officials claimed they planned to invest new money in their Millinocket-area mills. They claimed that G-P planned to dump the mills, which, according to G-P memoranda, were considered "dawgs." Furthermore, Great Northern officials contrasted the "decentralized style of management" of their CEO, William Lagid, with the "testicle escrow" of G-P's T. Marshall Hahn. "We're all friends," Hahn has stated, "but our managers know they have to perform. I like to say they have one testicle on deposit."

Conservationists and state officials feared that G-P would liquidate its GNN holdings in Maine, which included two paper mills and the largest private hydro-power dam complex in the United States, to pay off its prodigious debt. G-P officials, however, promised not to sell off its holdings for at least two years. One year later, G-P sold all the Maine holdings to another paper company, Bowater.

PROPERTY RIGHTS

In the midst of these activities, Senator Leahy pushed for passage of a "Northern Forest Lands Act" in 1991, which would have authorized federal funding to set up a Northern Forest Lands Council to continue the work of the Governors' Task Force. Private "property rights" organizations reacted, flooding the hearings on this bill with angry protesters. In their defense of private property, these groups have not differentiated between small, local, family ownerships and large, absentee-owned, multinational-corporate holdings, and thus have become effective defenders of the paper-industry status quo.

These groups pointed out that the threat of real estate development had been overstated—only a fraction of 1% of the defined area had been developed in the last decade. They declared that the real threat to the Northern Forest was power-hungry environmentalists and government. They further argued that the government, under the guise of environmental protection, would either seize their properties (through eminent domain), or cancel their right to use their lands (through restrictive regulations). Regional "greenlining," they argued, would put too much power into the hands of non-elected government officials who were not accountable to the local citizens.

To illustrate the threats to the working forest, they reprinted select quotes from environmentalists, such as National Audubon's Brock Evans, who challenged environmentalists to "dream big dreams" and buy it all. The image of millions of acres of working forests, currently contributing to the regional tax base and supporting thousands of jobs, being turned into a wilderness retreat for wealthy, gaudily-dressed Boston and New York hikers, inspired hundreds of angry rural citizens to pressure their congresspersons to withdraw support for the bill.

THE NORTHERN FOREST LANDS COUNCIL

Although the bill was withdrawn, other federal sources were used to fund a Northern Forest Lands Council (NFLC) until 1994. The Council was expanded to have four members from each state. In Maine, the members were either forest landowners or represented forest landowners for a living. Each state also had a Citizen Advisory Committee that included members of "wise-use" or "property-rights" organizations.

The Council's "Operating Principles" clearly state its limits: "The Council will be advisory only. States shall retain all existing authorities. The Council will have no regulatory power. Responsibility for land use planning and regulation will remain with state and local governments." Furthermore, in its "Mission Statement," the Council declared that its aim is to "reinforce the traditional patterns of land ownership and uses of large forest areas..."

THE NORTHERN FOREST ALLIANCE

In December of 1990, 18 state, regional, and national environmental groups (later expanded to 24) formed the Northern Forest Alliance to coordinate groups' efforts on Northern Forest issues.

The Alliance is by no means a monolith. Member groups do not all agree on the need for large ecological reserves. They do, however, agree on the need for some reserves and for doing inventories to see what natural areas need protection.

To the chagrin of "property-rights" groups, the Alliance was able to pressure the Council to set up (late in the game) a "Biological Resources Subcommittee," to address the need to protect the region's biological diversity. The "property-rights" groups accused the Council of straying from its original mission to protect "traditional land uses." Protecting biodiversity,

apparently, is not "traditional" to the area. They claimed it would be unwise to base policy on conservation biology—a new, unproven science. For them, the benefit of the doubt should go to industrial forest practices and the market economy, which have a proven record.

FINDINGS AND OPTIONS

In September 1993, the subcommittees of the Council released their Findings and Options for the Northern Forest. As with other NFLC documents, the Findings and Options are based on the premise that the problem is development and the solution is to reinforce the status quo.

The Council's subcommittees looked at seven issues that, it claimed, required a regional perspective. [See Brad Meiklejohn's NFLC article, this issue.] The Council chose not to address such issues as forest practices, climate change, acid rain, forest health, or labor costs. It declared that "the states can and should address these issues individually." This puzzled people who failed to see how any of these problems could be remedied on a state basis. How will the Maine legislature, for example, solve the problems of global climate change or interstate commerce?

In October, a special issue of *The Northern Forest Forum*, edited by Jamie Sayen, published a series of scathing critiques of the Council's Findings and Options. I led off with a critique of the underlying logic of the Council's Mission. I questioned the assumed happy coincidence, posited by the Council, that what the large landowners do in pursuit of profit is good for the forest and local communities. I pointed out some of the problems connected with the large landownerships:

- forest degradation;
- simplification and fragmentation of wildlife habitat;
- worker exploitation;
- pollution of air and water;
- industrial leverage over timber prices;
- minimal contributions to the tax base;
- domination of local economies deterring economic diversity;
- rural poverty.

These problems—combined with the large-scale use of whole-tree, mechanized clearcutting, aerial herbicide spraying, and export of raw sawlogs—could all be considered, according to Council definitions, "traditional uses" of the land. Nonetheless, they are not traditions worth supporting.

BEYOND THE BEAUTY STRIP

The "property rights" advocates were correct in claiming that real-estate development of large landholdings only occurred on .15% of the Northern Forest lands (39,000 acres out of 26 million acres) over a ten year period. This development, however, is not scattered at random throughout the Northern Forest; it is concentrated in areas with high amenity values—e.g., around lakes and rivers. Most of the industrial forest—with no public roads, no local communities, no access to waterfront, only commercial forestry—is at no risk of being converted into condos and McDonalds.

Shorelands are also the areas that state regulations protect from large clearcuts. Loggers have called these buffer zones "beauty strips," because they hide the bleak scenes of stumps and dirt beyond. In Maine, from the late 1970s through the 1980s, large landowners clearcut at an alarming rate. Some "rolling clearcuts" eventually covered (save for the beauty strips) several townships (a township is generally 36 square miles). Hundreds of thousands of acres of spruce-fir were converted to other forest types during the 1980s. Millions of acres were converted from mature forests to "regenerating" forests. The Council, however, did not address biological conversions and fragmentation; it only addressed real-estate conversions and fragmentation.

Most of the Council's efforts, one could say, are really aimed at protecting the beauty strips, rather than the larger forest beyond. Most of the subcommittees seemed more interested in maintaining the illusion of a forest viewed by recreationists rather than the forest itself—keeping the forest working hard for its industrial masters.

BIOLOGICAL RESOURCES

Environmental groups gave highest marks to the newly-formed Biological Resources Subcommittee. This subcommittee does list ecological reserves as an Option (#4), and argues that design of reserves should consider scope (range of habitat types), size and number, connectivity (linking of habitats by corridors), buffers, management (what activities are appropriate), ownership, establishment (need to purchase more land), and social and economic factors. Three alternatives are listed: a) small-scale examples of sensitive and fragile communities; b) variable sizes to protect "representative natural communities" across the region; c) "establishment of a reserve system that protects habitat for the full range of native biota. Unit size would be relatively large."

In the special issue of the *Forum*, writers Steve Trombulak (Middlebury College Biology Department), and David Publicover (Appalachian Mountain Club) argued that the only one of these three options that meets the goal of protecting biodiversity in the area is #4c. This option was the most controversial discussed by Maine's Citizen Advisory Committee in September. The controversy will not go away soon.

Jamie Sayen and Andrew Whittaker proclaim in the special *Forum* issue, "The sustainability of both natural and human communities in the Northern Forest requires, first and foremost, a healthy ecosystem." To achieve this goal, the Northern Forest region faces challenges very different from the Pacific Northwest.

First, we are not talking about "preserving" virgin stands or old growth. We are a century too late for that. Nearly the entire area has been cut, sometimes severely. A strategy to protect the future of the region will have to focus on ecosystem restoration, and may involve reintroduction of extirpated plant and animal species.

Second, most of the land is privately owned. The Council listed a number of strategies, such as purchase from willing sellers, land banking (where government buys land and can either retain it or sell it later with restrictions to raise money for other purchases), and easements with management restrictions which could help piece together a landscape-scale plan to improve forest health.

The Council listed many options that might help to slow development in areas with high amenity values, such as shorelands, but it did not strongly advocate existing use zoning in appropriate areas (though this was discussed in the 1990 version of the Northern Forest Lands Study). In the 10.5 million acre unorganized territories of Maine (which are regulated by the state rather than by local governments), the Land Use Regulation Commission already has the power to draw lines around areas of special public value and zone them for existing use (timber uses rather than residential).

FURTHER CONSIDERATIONS

Critics of large ecological reserves argue that they would destroy the timber base and wipe out jobs, lead to less taxes for local governments, and destroy local control. Certain assumptions lie hidden behind these accusations. We are supposed to believe, for example, that the status quo, if maintained, would preserve the timber base and jobs. Yet the base of high-quality spruce timber has radically declined in the last ten years at industry's own hand.

Very few of the "benefits" of cutting this timber base are going to the people of Maine. Many of the profits generated by multinational landowners are being invested elsewhere, where they get higher returns. During the 1970s and 80s, much of the softwood sawtimber was shipped to Quebec for milling. Value added left the state. Many of the woods workers were Canadians. Wages left the state. Between 1984 and 1992, 40% of full-time logging jobs disappeared in Maine, even though the level of cutting was up. The major cause was mechanization.

Industrial landowners are not in business to protect wildlife habitat, create jobs, or maintain communities—they are in business to make money. If we want better wildlife habitat, more jobs, and healthier communities, we must directly address these issues, rather than hope the global marketplace, by some happy coincidence, will provide these benefits.

The timber industry in Maine has been adept at avoiding taxes, and the many tax breaks listed in the Council's Options are an example of this continuing effort. Townships with large government ownership would get payments-in-lieu of taxes, if a publicly-owned reserve system is established.

With multinational corporations owning whole townships, local control is somewhat of a joke. Sayen and Whittaker propose setting up Conservation Districts where local people would have a voice in land-planning decisions and where local communities would be the prime beneficiaries of the economic activities within their boundaries.

The property-rights argument that forest-practices regulations restrict landowner rights and constitute a taking is not new. In 1908, a minimum diameter limit of 12 inches for the cutting of pine and spruce was proposed by the Maine state legislature (it never got out of committee).* When asked to rule whether this was a taking, the Maine Supreme Court declared not:

We think it a settled principle, growing out of the nature of a well-ordered society, that every holder of property, however absolute and unqualified may be his title, holds it under the implied liability that his use of it shall be so regulated that it shall not be injurious to equal enjoyment of others having an equal right to the enjoyment of their property, nor injurious to the rights of the Community.

While it might restrict the owner of wild and uncultivated lands in the use of them, might delay his anticipated profits, and even thereby cause him some loss of profit, it would nevertheless leave his lands, their product and increase, untouched and without diminution of title, estate or quantity. He would still have large measure of control and large opportunity to realize values. He might suffer delay but not deprivation.

Property owners do not have the right to do anything they wish to "their" land. They do not own the air, the water, or the wildlife. They have obligations to the surrounding community and to future generations. Defining these responsibilities, along with landowner rights, will be a major challenge of the 1990s for the Northern Forest region—and the rest of the nation.

An even bigger challenge will be learning to live within the biological constraints of a limited forest. The philosophy of endless global industrial growth applied to the Northern Forest has already had devastating results. As Sir James Goldmith said, "Economic growth is of value for so long as it contributes to the stability of society. It is of no value if it sows the seeds of destruction." WERF

Mitch Lansky (HC 60, Box 86, Wytopittock, ME 04497) is a Maine woods advocate and author of Beyond the Beauty Strip *(Tilbury House Publishers; Gardiner, ME; 1992).*

illustration by Bob Ellis

* A Forest Practices Act was finally passed in 1989. The rules passed set a maximum limit on clearcut size of 250 acres, a far cry from the 1908 effort.

Waiting for the Wild

Ecological Reserves Considered for Northern Appalachians

by Brad Meiklejohn

I nearly gave up on the Northeast. Travels in distant deserts, mountains, and jungles taught me that wildness was long gone from my New Hampshire homeland. I stopped my longing backyard searches, resigned that wild country was elsewhere.

The soul of the Northern Appalachians still flickers, though. Young forests mask old scars, fisher and peregrine falcon have regained ground, and rumors of eastern timber wolves and catamount spark forgotten hope. From the coast of Maine west to Lake Ontario, a vast area of sparsely-populated boreal, transition, and northern hardwood forest waits for wildland recovery. Beyond expectation, the region has taken a significant political step toward recovering the wild.

If we had a dollar for every meeting held and every study done in the past three years we could have bought a nice chunk of Maine by now. Without some immediate, tangible action, the Northern Forest will continue to fade away.

On 16 September 1993 the Northern Forest Lands Council (NFLC) released for public comment its "Findings and Options." This 64 page document details the results of a two year study on the economy and ecology of 26 million acres in northern New York, Vermont, New Hampshire and Maine. According to the NFLC, the "Findings" are the facts and the "Options" are possible courses of action. The Council will make specific public policy recommendations to Congress by September 1994; draft recommendations are scheduled for release on 15 January 1994.

In this article I cover only a few key aspects of the Findings and Options. For a thorough critique see *The Northern Forest Forum*, Autumn Equinox 1993 ($3/copy, POB 6, Lancaster, NH 03584).

A total of 160 Findings and 130 Options make for a dense, chaotic and soulless document. Seven subcommittees contributed separate reports on Land Conversion, Biological Resources, Conservation Strategies, Local Forest-Based Economy, Property Taxes, Recreation and Tourism, and State and Federal Taxes. Committee work is never pretty, and here considerable disorder results from overlap, omission, and contradiction. Despite the flaws, there are scatterings of brilliance which suggest the opening of minds.

The Biological Resources Subcommittee F&Os offer real hope for wildland restoration.

- Option 4 "Ecological Reserve System" This Option recommends establishing a network of biologically-based core reserves with appropriate connections and buffers. We are given the further choice of reserve size, ranging from "relatively small" to "relatively large." At present the reserves in the Northeast are too small and isolated. We need a system of large, interconnected reserves.
- Option 5 "Complete Landscape Scale Approach" This Option recommends an integrative approach to land management, with core areas, multiple use areas,

and intensive use areas. This approach has some promise, provided that the emphasis is on biodiversity protection, not commodity production.

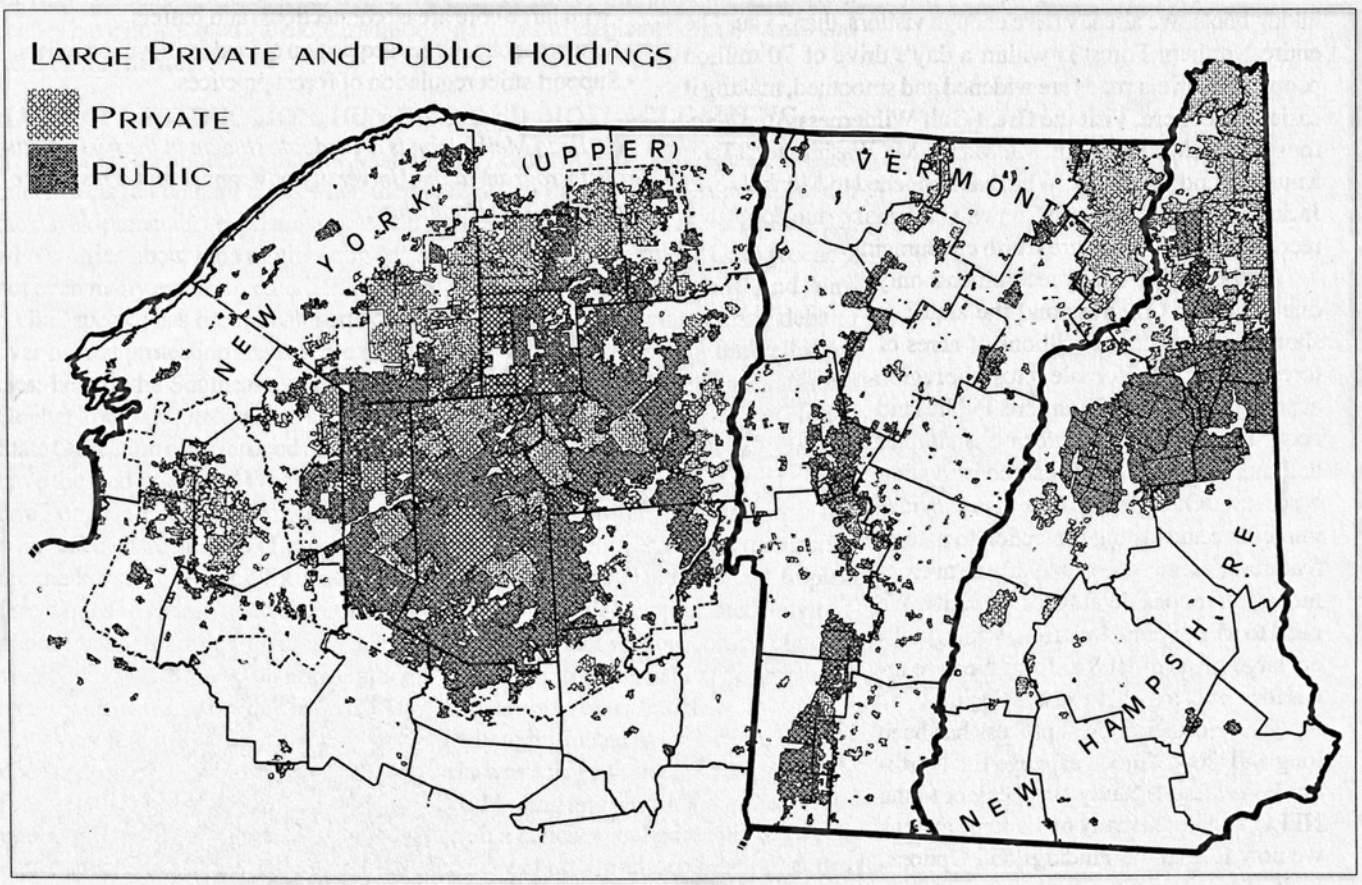
- Option 7a suggests the novel idea that public agencies be required to manage public land for biodiversity. I believe that large blocks of unmanaged public land should form the core areas for an ecological reserve system.

That these options are even presented is proof that steady pressure from biologists and concerned residents has paid off. However, because the stated mission of the Northern Forest Lands Council is to "reinforce the traditional patterns of land ownership and uses of large forest areas," the Council has ignored impacts caused by industrial forestry. Extirpated and declining species, fragmented and simplified forests, polluted and dammed rivers—all contribute to the palpable impoverishment of the Northern Forest. Special credit should go to Jamie Sayen, editor of *The Northern Forest Forum* and member of The Wildlands Project Board, who has worked tirelessly to restore the region, convincing people not to settle for the status quo.

Not everyone is convinced, though. In response to the Findings and Options, the Coos County (NH) Community Alliance (CCCA) wrote: "The vast majority of the native biota survives very well in the managed habitat we currently provide...To provide a reserve for those species would be redundant and economically repressive." In the rural Northeast there is a widespread impression that biodiversity is a vague concept with little basis in science. The CCCA claims "the definition of biodiversity is so broad as to be ultimately undiscoverable" and "...decisions with respect to biological diversity are founded in political persuasion and not in scientific discovery." To change these prevalent attitudes, concerned scientists within the region need to offer unequivocal support for protection of biodiversity.

Beyond the Biological Resources section, the Findings and Options are of mixed quality. A few surprising gems surface in unexpected places, such as the Finding from the Property Taxes Subcommittee that "the common perception that growth will lower taxes is usually wrong." Can we please put this on billboards? Unfortunately this insight is one of few highpoints in the dreary tax sections. Despite my willful ignorance of tax law, I can fairly say the NFLC put an inordinate amount of emphasis on Options that may not have any desirable effect. At the very least, any tax reductions for large timberland owners should be predicated on long-term protection of biodiversity.

Yet discussion of forest practices is nearly taboo for the NFLC. Many people assume that the primary threat to the region is conversion of large tracts of forest into subdivisions. Subdivision is indeed of concern on prime development land, but the "conversion" of forests into clearcuts and simplified tree farms is a far greater problem. Because there are few regulations on forest practices, the Northern Forest endures mas-



sive clearcuts, herbicide treatments, and monocultures. The industry-influenced NFLC has chosen not to hear the rising call for regulation of forest practices.

You might expect the Local Forest-Based Economy Subcommittee to offer insights on ways to build a sustainable future. Sadly, their Findings and Options are a mishmash of generalities and wrongheaded suggestions. My favorites are:

- Option 9 "Promote wood as a renewable resource."
- Option 6 "Promote development of Yankee Dude Ranches." (!)

To their credit this subcommittee does identify the real problem of increasing raw log exports from the region and recommends restricting log exports and encouraging wood processing within the region. As in the Pacific Northwest, raw log exports from the Northern Forest eliminate wood processing jobs and increase forest high-grading.

One important fact *not* revealed by the Local Forest-Based Economy Subcommittee is the absence of "local control" throughout the region. Multinational companies dominate the Northern Forest economy, complaining loudly at attempts to regulate their polluting, wasteful ways. Communities are held hostage to the demands of Big Paper and Big Timber, fearful that the local mill will close down and take the jobs away. This dependence on a single, irresponsible industry has backed us into a fouled corner. We need a diversified, small-scale economy which acknowledges the correlation between forest health and community wealth.

We do not need more people in Winnebagos, Subarus, or hiking boots. We already have enough visitors, thank you. The entire Northern Forest is within a day's drive of 70 million people. Each year roads are widened and smoothed, making it easier to get here. Visit the Great Gulf Wilderness Area? Not for solitude. Mt. Katahdin, Mt. Marcy, Mt. Washington? Take a number and get in line. What has happened to Moab, UT, to Jackson, WY, and to North Conway, NH, makes me doubt that recreation and tourism are worth encouraging.

If the NFLC could recommend only one action to Congress and the states, it should be: **Buy land**. Millions of acres of forest are presently for sale across the region at prices as low as $100 an acre. Public land acquisition by full fee purchase is simpler and more cost-effective than conservation easements. Outright purchase also provides immediate and lasting protection to natural features. Easements, particularly term easements, offer considerably less security. We need to identify and buy from willing sellers large tracts of land to form the core areas for an ecological reserve system.

The Northern Forest process has been long and slow. Three years ago the Northern Forest Lands Study, predecessor to the NFLC, suggested many of the same actions we now find in the Findings and Options, including creation of large reserves and regulation of forest practices. If we had a dollar for every meeting held and every study done in the past three years we could have bought a nice chunk of Maine by now. I fear the NFLC will initiate nothing more than further research and discussion. Without some immediate, tangible action, the Northern Forest will continue to fade away.

The most important development of the past five years may be that people are talking to each other and often finding they have similar concerns. The Northern Forest region has avoided the polarization that plagues forest issues in the Pacific Northwest.

But there is still a great reluctance to admit that the Northern Forest is in rough shape. Simply going along and getting along won't do. Enough study, enough meetings. Let's get to work and recover the wild that belongs here.

WHAT YOU CAN DO

The Northern Forest Lands Council plans to release Draft Recommendations in mid-January 1994. There will be a two-month period for public comment on the Draft Recommendations. For copies of the Findings and Options and Draft Recommendations, contact: Northern Forest Lands Council, 54 Portsmouth Street, Concord, NH 03301. To make a difference you should attend public hearings throughout the region and speak out.

- Support the establishment of an Ecological Reserve System with large core areas, connections, and buffers.
- Support public full fee acquisition of land from willing sellers.
- Support strict regulation of forest practices.

Brad Meiklejohn is a graduate student in the Field Naturalist Program at the University of Vermont and a resident of northern New Hampshire.

illustration by Nancy Roy

Endangered Invertebrates, and How to Worry about Them

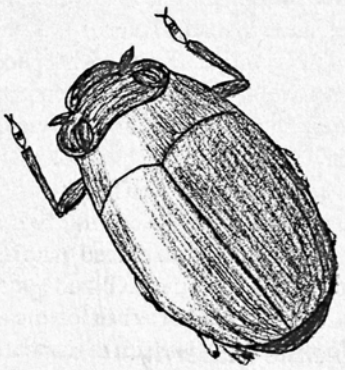
by R. Wills Flowers

As the moment of truth for the Endangered Species Act (ESA) approaches, the loudest battles may not be over Spotted Owls or Florida Panthers but over checkerspot butterflies, cave beetles, rocksnails, and water bugs. Not long ago, the possibility of insects going extinct was dismissed or ignored even by conservation activists, but now the public is starting to realize what entomologists have known for years: the present human-caused extinction spasm will fall with particular force on the millions of species of insects and other invertebrates. One can credit rainforest activists, tropical ecologists, and globe-trotting nature photographers for raising public consciousness about endangered insects: tropical butterflies and beetles have now joined the more traditional pandas and elephants in magazines and fund-raising literature.

HABITAT DESTRUCTION, HUNTING, AND BIOTIC CLEANSING

There is no argument that the vast majority of threatened, endangered and extinct insects fell on hard times when their habitat was destroyed (or "altered," to use the developmentalist euphemism). When a woodland is "altered" into a parking lot, who worries about luna moths, long-legged flies, or fungus beetles? Until recently, not even many environmentalists. In recent years, attention to "keystone" and "umbrella" species has brought all sorts of invertebrates into the picture during debates over habitat protection. Insects are often beneficiaries of keystone or umbrella species: here in the Southeast, over 350 species of insects and other invertebrates use Gopher Tortoise burrows, and some of those species are found nowhere else (Florida State Collection of Arthropods, unpublished data). And as an "umbrella" species, we have the Red-cockaded Woodpecker. This bird's requirement for large areas of mature Longleaf Pine is at the moment protecting the diverse insect and plant biotas that were once characteristic of much of the Southeast. Sometimes, insects themselves are the keystone species, for example orchid bees that pollinate important tropical forest trees. As these interrelationships become more widely appreciated, environmental activists are paying more and more attention to that vast proportion of biodiversity that is "neither plant nor vertebrate." Although stopping habitat destruction is a prerequisite for protecting invertebrates, there are also other threats.

Very few species of invertebrates are likely to be hunted to extinction. Yet, this does happen occasionally. *Xixuthrus heyrovsky* was a large, fearsome-looking beetle found on the Fiji Islands. Its larva was a fat wood-boring grub and this was the beetle's undoing. The Fiji Islanders considered the grub a delicacy and gradually ate up the entire species (Stanek 1969). With many species of butterflies, aesthetic rather than

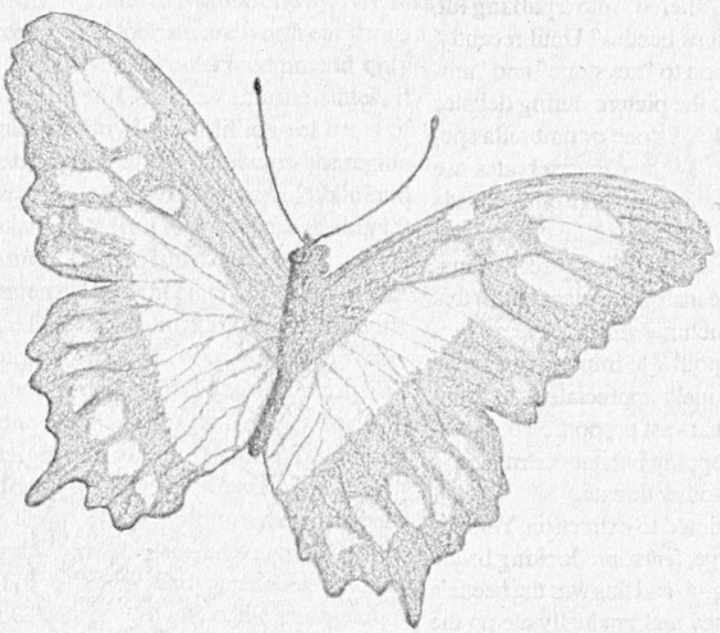


illustrations by Jennifer Wiest

gastronomic qualities have proven dangerous when humans are around. For decades, lepidopterists have debated whether collecting can endanger butterfly species and whether government regulation of butterfly collectors is necessary. Preservation, for some, means only preservation of the opportunity to collect (Zeigler 1976). In the past, some entomologists even advocated massive collecting of rare species on the theory that development was going to wipe species out anyway and their carcasses might as well be in collections. This somewhat ghoulish attitude is mercifully rare nowadays, but even today Shuey (1993) finds it necessary to remind some of us entomologists that butterflies are not stamps and that the ESA was not written specifically to annoy butterfly collectors.

The philatelic mentality is not limited to private collectors; a few museum curators have been known to try to "get a good series" of a rare insect before it was officially listed as endangered. CITES (Convention on International Trade in Endangered Species) now protects 17 taxa of butterflies, 20 butterflies are on the US Endangered Species List, and Florida and some other states limit butterfly collecting to approved research projects. To its credit, the US Fish and Wildlife Service does not limit its enforcement of ESA, CITES and the Lacey Act to the charismatic mega-vertebrates (Wade 1993), and some butterfly collectors have recently had surprise visits and uncomfortable questions put to them over how they obtained their "pretties." In contrast to the issue of habitat loss, society has shown a healthy resolve to save butterflies from overhunting. This may have something to do with the scarcity (and impecuniousness) of butterfly collectors relative to developers.

A third threat to rare insects and other animals was described in a two-article series in *The Los Angeles Times* by Maura Dolan (1992). "Private landowners across the United States are quietly waging an underground war against endangered species, killing them off or destroying their native surroundings to avoid costly government restrictions..." began the article, which ran concurrently with one of many exposés of Serbian ethnic cleansing in Bosnia. The parallels between European ethnic cleansers and our homegrown biotic cleansers are remarkable: Dolan writes of "normally law-abiding citizens...stealthily purging their property of endangered plants, animals and insects..." [sic] Insects are particularly vulnerable to this biotic cleansing, although (as a recent Florida case involving the Red-cockaded Woodpecker shows) vertebrates are not safe either.



Malachite Butterfly

Another form of biotic cleansing is the offhanded slaughter of insects in the name of pest control. Overuse of insecticides is pandemic, and in upscale suburbs the summer nights sputter and splat with thousands of "bug-zappers." These unspeakably destructive devices are practically useless as a control for mosquitos and other annoying insects but they do a magnificent job of frying large night-flying insects like silkmoths and scarab beetles. Just as birds and large mammals can be "hunted out" of a forest, many once-common insects are being trapped out of suburban woodlots by bug-zappers and streetlights.

THE LARGE SIZE OF A "SMALL" ISSUE

We have all heard how only a small fraction of the tropical insect fauna has been properly described. Less appreciated is that North America, despite all its museums and academic entomology departments, has only half of its insect and arachnid fauna recorded (Schaefer & Kosterab 1991); and the job of doing species inventories and cataloging faunas is largely going by the wayside as colleges and universities replace systematists with biotechnologists (who then lament that they can't get proper identifications for their study organisms). According to the 21 November 1991 Federal Register, 683 insects and 557 other invertebrates are now candidates for listing under the Endangered Species Act. Opler (1991) calculated that the true number in the US of insect species in jeopardy is probably close to 1500. Given the downgrading of natural history study over the last several decades, it is no wonder that we don't really know how accurate and complete the federal lists are. There is a strong suspicion that large areas of the country have been poorly inventoried, compared to a few "interesting" places, such as Florida and California. However, even with the present gaps in invertebrate surveys, federal listings still show at least one rare and potentially endangered insect in every one of the Lower 48 States except Wyoming. If all invertebrates are counted, Alaska is the only state that lacks an invertebrate species identified as endangered or potentially endangered.

DANGEROUS STATES

Perhaps the best way to start worrying about endangered invertebrates is to examine where they are found, and look for distributional patterns. Fortunately, the federal candidate list includes ranges for each listed species. Some of the species are widely distributed but at very low densities. Small states such as Delaware and Rhode Island appear because diffusely distributed invertebrates are or have been found within their borders. Of more interest are invertebrates restricted to a single state. Table 1 ranks the states with 20 or more candidate invertebrate species found within their borders. Leading the list with over 100 species each are California and Hawaii. Alabama is a close third. Florida is next with 62. The remaining states on the list have less than 50 endemic candidate species each.

Reflection on the interplay of US biogeography with human population growth reveals a lot about why certain states are found in Table 1 (a look at the Kuchler Potential Natural Vegetation Map will help visualize this). California and Hawaii with their high human population densities spilling across many small, unique habitats would be expected to have many non-human species pushed to the brink. Florida and Texas both dip into the subtropics, where a subtropical biota competes for living space with ever-growing masses of human migrants. The same applies to Arizona and Nevada, where diverse but fragile desert ecosystems are under assault from the bulging human Sunbelt. The rapid destruction of Pacific Northwest forests partially explains Oregon's place on the list. In the East, numerous endemic species in the rich variety of restricted Appalachian habitats account for Tennessee, Virginia, West Virginia and North Carolina. Similarly, Arkansas has a high number of invertebrate endemics because of the Ozarks. Alabama is an example of what one hiccup of developmentalist frenzy can do to a biota. Almost the entire roster of candidate endemic invertebrates in this state are mollusks that live (or once did) in the Coosa River. Because of some accident of biogeography, the snail fauna of this one river underwent tremendous speciation. Early malacologists knew this river as a world center of snail biodiversity. Unfortunately, the wonders of evolution never made much of an impression on the river developers, and in the 1950s the Coosa, like many other rivers, was transformed into a string of reservoirs.

Excepting Alabama, Table 1 confirms what most biogeographers would predict from simply looking at the geography of the United States: north-south mountain ranges are areas of high diversity, particularly at their southern ends and where mountains and distinctive lowland ecosystems (e.g. deserts) show complex interdigitations. Tropical and desert ecosystem refugia have their own relict populations. Given the developmentalist mantra that no square foot shall go unaltered, states with naturally high biotic diversity are the same states with high numbers of threatened invertebrates.

ENDANGERED INVERTEBRATES — THE OFFICIAL STORY

A majority of the federally listed Endangered and Threatened invertebrates—58—are mollusks (data in this section are compiled from Anon. 1992). Most of these are freshwater mussels of the family Unionidae. This intensely interesting, and once economically important, family of bivalves had the misfortune to have as its center of diversity the Tennessee River drainage. The Tennessee Valley Authority, and on the Mississippi River the Army Corps of Engineers, destroyed much of the habitat of this family—the large free-flowing rivers of "Heartland America"—for subsidized barge traffic and "recreational" lakes.

Ten crustaceans are on the Endangered Species List (ESL), four of which are cave species. We will encounter cave invertebrates frequently in the coming tabulations.

So far, listed insects only number 28 (Table 2): seven beetles, a bug, a moth, and the rest butterflies. Most of the Lepidoptera on the list suffer the twin woes of living in restricted and vanishing habitats and being desirable to collectors. Most of the other insects are simply living in very small habitats in the way of developers. One is a tiger beetle that can live only on sandbanks of large New England rivers. The Kretschmarr Cave Mold Beetle needs no introduction to Earth First!ers. One beetle, however, does not fit the "vanishing habitat" pattern.

The American Burying Beetle (*Necrophorus americanus*) is a carrion feeder once found throughout the eastern United States. For reasons not well understood, it has suffered a drastic decline and now is found only in a small area on the Oklahoma-Nebraska border and on islands off the New England coast. Some have speculated that it was adapted to feed on Passenger Pigeon carcasses. The only known ecological differences between this large beetle and its non-endangered congeners is that the American Burying Beetle favors somewhat larger carcasses. Active searching has shown the beetle is slightly less rare than originally feared and a recovery plan is in place which aims to stop further declines in known populations and reestablish new populations in parts of its former range (Haack 1993). The American Burying Beetle represents a cautionary tale that we not automatically assign human malevolence to every declining population.

The ESA requires that "recovery plans" be developed for listed species. Unfortunately, the common denominator of most plans seems to be giving away as much of the habitat to developers as possible, and hoping that intensive habitat management (such as cultivating the food plants of the caterpillars) will compensate. As species get compacted into fewer and fewer natural habitats, we may see recovery plans for one endangered species clashing with the survival of other endangered species. This has already happened in at least one case. The Ash Meadows Naucorid Bug lives in the same desert spring as the Ash Meadows Amargosa Pupfish. Habitat manipulation to benefit the pupfish has harmed the remaining naucorid population (D. Polhemus, pers. comm.).

Four listed butterflies are not native to the US. They, along with such foreign megavertebrates as rhinos, Snow Leopards, and

Nile Crocodiles, are deemed in direct peril from hunting (or collecting) and thus are listed. On the much larger issue of tropical habitat destruction, and the complicity of US citizens in this destruction, the ESA is silent.

ENDANGERED INVERTEBRATES — THE UNOFFICIAL STORY

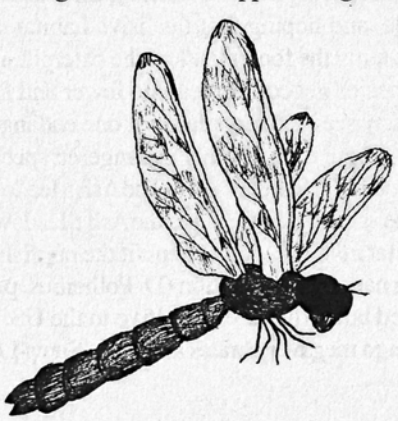
After this brief review of the current ESL, we now pass to the much bulkier Candidate List (Anon. 1991). Space permits only a very brief overview but even a hurried tabulation of what species are in jeopardy can help in determining how best to preserve our invertebrate biota.

Mollusca

Snails (order Gastropoda) 296 species in 68 genera (1 presumed extinct). This is the longest list from any of the major invertebrate groups. The destructive effects of damming Alabama's Coosa River, already mentioned, show up in this list of imperiled snails. Three genera of the family Pleuroceridae (*Elimia, Gyrotoma, Leptoxis*) and *Somatogyrus* in the Hydrobiidae make up the majority of Alabama endemics that inflate this list. Another important group is from the terrestrial snail family Helminthoglyptidae which contributes species of several genera from California and Arizona.

Clams (Bivalvia) 76 species in 30 genera (4 presumed extinct). In this list, 74 additional members of the family Unionidae (freshwater mussels) combine with the 44 already officially listed as Threatened or Endangered to reinforce the picture of an entire family of invertebrates in serious trouble. To the dam building already mentioned should be added a more recent threat: competition from introduced clams. The *Corbicula*, from Asia, and the newly introduced Zebra Mussel from the former Soviet Union are spreading throughout the eastern US. In addition to the well-publicized annoyances they cause humans, they are rapidly displacing native mussels from what suitable habitat remains.

The government attitude toward threatened invertebrates is often disingenuous, and this is nowhere more blatantly displayed than in this list of imperiled mussels. Most are placed in Category 2: no conclusive information available to support a listing. In fact, for decades there have been numerous inventories of rivers throughout the Mississippi drainage, which almost without exception have shown moderate to major declines in the Unionidae. Given the combined weight of all these inventories, it seems rather obvious that for many unionid species "conclusive" biological data are lacking because the species has become so rare that not enough individuals can be found to do a "conclusive" study. Apparently, the desire to avoid irritating powerful developers and their political ax-men (witness the Snail Darter affair and the resulting "God Squad") is driving the federal policy of ignoring the obvious.



dragonfly

Insects

Rockhoppers & Springtails (Collembola & Thysanura) 4 species in 2 genera. These belong to very primitive orders of insects. The two rockhoppers are Hawaiian endemics. The two springtails are cave dwellers in West Virginia.

Mayflies (Ephemeroptera) 14 species (+1 presumed extinct) in 11 genera. Mayflies are the most primitive living order of winged insects. Their fossil record goes back to the Carboniferous (~330 million years ago). Despite a tendency (begun by Aristotle) to view them as delicate creatures, mayflies are a very biologically diverse and geologically long-lived order. They are being increasingly used as indicators of water quality. The imperiled species are scattered throughout the country and most are in trouble because they require clean, large, free-flowing river habitat.

Dragonflies & Damselflies (Odonata) 37 species in 11 genera. This is another ancient and diverse aquatic insect order. Species in jeopardy are widely scattered and most have specialized habitat requirements such as springs, or small streams in deep forest. One species will soon be officially listed as Endangered: the Ohio Emerald Dragonfly. This species requires calcareous swamps in the Midwest, few of which remain. Almost a third of the candidate odonates belong to a group of Hawaiian damselflies of the genus *Megalagrion*.

Stoneflies (Plecoptera) 9 species in 9 genera. Another group of aquatic insects, these appear to be local endemics in isolated stream habitats. Five are from the West, two live in Mississippi, and one each in Texas and Alabama.

Cockroaches (Blattoidea) 1 species in 1 genus. Yeah, there's a roach on the candidate list. The developmentalists' propaganda ministry has been having a field day with this one, dropping dark hints that soon not a kitchen in America will be exempt from a species recovery plan. At risk of pricking all those colorful balloons of paranoia, we note that the Candidate roach is a cave dwelling species found only on Puerto Rico.

Grasshoppers & allies (Orthoptera) 34 species in 24 genera. The listed species in this group are mostly Western; a few are from Florida and Hawaii. The Western species are rare localized species adapted to some of the many microhabitats in arid regions.

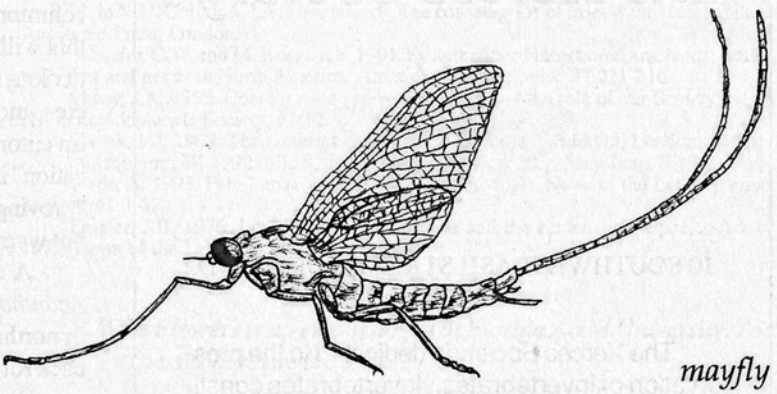
True bugs, cicadas & allies (Hemiptera & Homoptera) 47 species in 21 genera. This group would be an insignificant part of the candidate list but for 40 Hawaiian endemic species.

Lacewings & scorpionflies (Neuroptera & Mecoptera) 9 species in 6 genera. Again, Hawaiian endemics form the bulk of this group.

Beetles (Coleoptera) 256 species in 90 genera. Beetles are the most speciose living things and have adapted to almost every habitat. Since many limited habitats are now in jeopardy, the beetle faunas in these habitats are also. Examples are imperiled beetles from the Florida Keys, sand dune habitats in the West, warm springs, and other isolated aquatic ecosystems. The largest single group within the listed beetles is a block of 63 species of the ground beetle genus *Pseudanophthalmus*. All are cave species found in the Appalachian Mountain region. One ground beetle, not yet a candidate though it probably should be, is *Agonum piceolum*. This beetle is totally restricted to Northwest old growth. There may be some doubt about whether the Spotted Owl is absolutely tied to old growth but there is little doubt that *A. piceolum* needs that ecosystem and accepts no "multiple use" substitutes.

Flies (Diptera) 16 species in 13 genera. Most of these species have limited ranges, principally in Hawaii, Florida, or California. One California species, the Delhi Sands Flower-loving Fly, was officially listed under the ESA in September 1993.

Butterflies & Moths (Lepidoptera) 122 species (+10 presumed extinct) in 74 genera. This group appears to be a rather eclectic sampling of macrolepidoptera (butterflies and larger moths) from all areas of the United States. The thousands of tiny moths—microlepidoptera—are not represented on the list because we know almost nothing about most of the species. Two members of the candidate list, the Karner Blue and Myrtle's Silverspot, were placed on the Endangered Species List early this year and an additional three species are in Category 1 (evidence available to support listing as Threatened or Endangered). By far the most attention to endangered insects has been focused on butterflies, and a respectable body of literature now details their problems and chronicles attempts to preserve populations. Well-known cases include the Bay Checkerspot, the El Segundo Blue and the Pawnee Montane Skipper (Opler 1991). Preservation attempts have reinforced lessons of conservation biology: the folly of years of fire suppression in habitats as diverse as prairie and Albany Pine Bush that evolved with fire, and the importance of preventing habitat fragmentation and protecting the ability of local populations to intermingle and move between habitat patches.



mayfly

Caddisflies (Trichoptera) 79 species in 40 genera. Caddisflies are closely related to moths and butterflies. They have aquatic larvae which often build little cases around their bodies for protection. As with other aquatic insect groups we have reviewed, many caddisfly species have evolved in specialized, isolated habitats that are now threatened by human activity. Rampant development and logging are two such degrading activities, which perhaps explains why 38 of the species are from the combined area of California and Oregon. The remaining jeopardized caddisflies are scattered in the Appalachians, Florida, Texas and Arizona.

Wasps & Bees (Hymenoptera) 60 species (+3 presumed extinct) in 14 genera. All but eight of the listed species of this group are Hawaiian endemics. Most are members of the Hylaeidae, or yellow-faced bees. The present list surely does not give the full extent of wasps in jeopardy: there is no mention of any of the specialized families of parasitic wasps. These groups are enormously diverse and, in all probability, parasitize at least some of the endangered insects elsewhere on the list. This could present some interesting conundrums for restoration ecologists. If you discover an endangered wasp parasitizing your endangered butterfly how does that effect your recovery plan?

Arachnida 35 species in 19 genera. Most of these are cave species.

Crustacea 135 species in 25 genera. Again, many are cave species. Others include localized species from the Southwest and Southeast.

Other invertebrates 13 species in four phyla. Rounding out our roster of endangered invertebrates are a Hawaiian hydroid (Phylum Cnidaria, Class Hydrozoa), five freshwater sponges (Phylum Porifera, Class Demospongiae), six planarians (Phylum Platyhelminthes, Class Turbellaria), and the Oregon Giant Earthworm (Phylum Annelida, Class Oligochaeta).

Despite the incompleteness of the information on which the candidate list is based, the enumerations we have just endured shed light on what types of invertebrates are in jeopardy and where they are. In addition to geographical areas that are "hot spots" for jeopardized species (see Table 1), we can now see that certain habitats and groups of invertebrates are exceptionally vulnerable. Caves, relict sand dunes, and Hawaii turn up again and again. Even more critical is clean, fresh, free-flowing water. The scarcity of clean undammed rivers and streams accounts not only for the large numbers of endangered mollusks but also for large segments of the roster of endangered

The Xerces Society

10 SOUTHWEST ASH STREET, PORTLAND, OR 97204

The Xerces Society is dedicated to the preservation of invertebrates. Invertebrates constitute 90-95% of animal life, and contribute in fundamental ways to ecosystem services. The Xerces Society takes its name from the Xerces Blue butterfly (*Glaucopsyche xerces*), a San Francisco peninsula native which was the first butterfly in North America known to have become extinct as a result of human interference. The Society's two integrated programs—conservation science and public education—focus on endangered North American ecosystems and global biodiversity "hotspots"—species rich areas threatened with destruction, including the old-growth forests of the Pacific Northwest and the rainforests of Madagascar.

The Xerces Society publishes a color membership magazine, *Wings: Essays on Invertebrate Conservation*, three times a year. For an annual fee of $25, Xerces members receive a subscription to *Wings*, and a discount on Xerces Society gift items and publications, including the Xerces Society/Smithsonian book *Butterfly Gardening*, a full-color volume with more than 100 photographs of butterflies and flowers, published by Sierra Club.

insects. River restoration alone could remove almost half the invertebrates from the list.

The change of national administration has meant at least the appearance of an ideological shift away from the ill-concealed Final-Solutionism of the last 12 years. A development we should all watch carefully is the creation of the National Biodiversity Survey in the Department of Interior. Interior Secretary Bruce Babbitt hopes that information in a national biodiversity inventory will "...help us avoid environmental and economic conflicts..." In reality, if the inventory is done thoroughly and honestly, it would probably have exactly the opposite effect.* The Clinton Administration evidently hopes the inventory will show that many Category 2 species are more common and widespread than is now apparent. Without doubt, this will indeed be found for some species. However, a meticulous inventory will also undoubtedly turn up many new species, most of them very rare or limited in their ranges. An inventory might also yield disturbing data on how our "civilization" is decimating supposedly common insect species. Even "proving" that a Category 2 species is in fact widespread would not warrant complacency.

A case in point is the first mayfly on the candidate list, *Acanthopetropus pecatonica*. The species was first discovered in northern Illinois and when the scientist who found it went back for more specimens, he found that pollution had exterminated the population (Burks 1953). For over a decade the species was presumed extinct; then it was rediscovered in widely separated localities from Georgia, Indiana, and Wisconsin. Although rare, it is widespread. But out of danger? All the new collection localities are deep, clean free-flowing rivers with sandy bottoms—which are scarce now. A few strategically placed paper mills could extinguish this mayfly and many other aquatic invertebrates.

One useful outcome of a national inventory might be a new way to define ecosystems and monitor their health by using invertebrates. Aquatic insects are already being widely used as "bioindicators" to monitor the quality of freshwater ecosystems, butterflies are used to monitor restoration efforts of some prairie ecosystems (Stolzenburg 1992), and now soil and leaf litter arthropods are being used to monitor ecosystem changes and disturbances in the Northwest temperate rainforests (Moldenke 1990). An interesting side effect of the new interest in old growth is the diverse arthropod fauna being discovered there, especially flightless species which indicate that the old growth is an ecosystem of long-term stability (Lattin 1990). If ever the ESA is actively enforced, invertebrates or communities of invertebrates may provide strict protection for endangered ecosystems. At the moment, Northwest old growth is being partly sheltered under the umbrella of the Northern Spotted Owl. However, if someday the owl is shown not to be dependent on old growth (and efforts are under way to prove this) the ancient forest will lose the best protection it now has — unless we take up our cudgels on behalf of *Agonum piceolum*, *Acalypta saunders* (Hemiptera, Tingidae) (Lattin 1990) and other invertebrates that unequivocally can't adapt to human multiple mis-use.

Leaving aside speculations about what new data a biological inventory might uncover, how could the present roster of jeopardized invertebrates best be protected? More specifically, can present efforts to preserve wilderness and charismatic megafauna also serve an endangered insect constituency? The answer will depend on knowledge of the ranges of endangered invertebrates and the willingness of wilderness advocates to

* *Science Ed. note:* Not necessarily. Protecting habitat before development encroaches closely, property values rise, and financial investments are made, may very well be less costly and contentious. —RN

redraw some boundaries of wilderness proposals to include important centers of invertebrate diversity. An example taken from *Wild Earth's* recent Wildlands Project Special Issue will illustrate. The SouthPAW wilderness proposals (Newman et al. 1992) should go far toward protecting the numerous listed invertebrates from the Appalachian states. The maps (Newman et al., Fig. 2 & 3) also show that some major centers of invertebrate diversity lie largely outside SouthPAW's system. They are the Holston River in Virginia, and the Coosa River in Alabama. The former is the last refuge of several threatened freshwater mussel species of the Cumberland center of diversity, while the Coosa was and perhaps could again be a center of snail diversity. The SouthPAW proposal could be strengthened dramatically for invertebrates by adding more segments along these two rivers. (Incidentally, if restoring biodiversity is the object, pulling the plug on Lake Weiss and the rest of the misbegotten Coosa River water projects should be for us a higher priority than "cracking the Glen Canyon Dam.")

Shortly after the passage of the Endangered Species Act, some environmentalists spoke of the possibility of using the Act to defend the existence of an insect with about the same embarrassed reluctance as a public defender assigned to defend a known ax murderer. Today, the long and growing list of invertebrates in jeopardy is a serious challenge to Clinton's new "conflict-avoidance environmentalism," the vertebrate-biased environmentalism of some organizations, and the popular misconception that the extinction crisis is something that happens in tropical rainforests. However, those developmentalists who hope to capitalize on "arachnophobia" as a way to gut the Endangered Species Act may be in for a disappointment. Public awareness of—and even sympathy for—endangered invertebrates is rapidly growing as environmentalists are at last becoming truly biocentric in their defense of nature.

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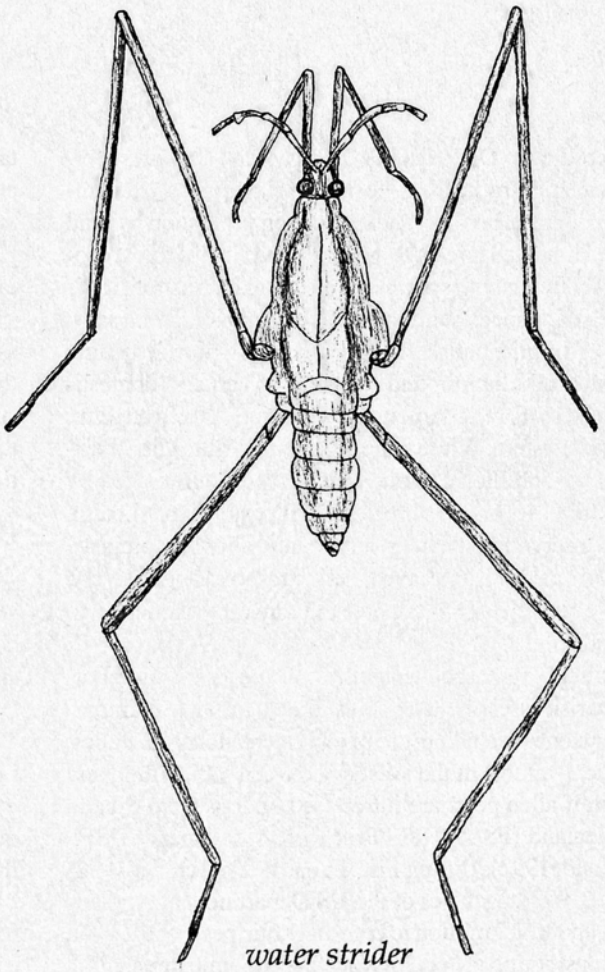


whirligig beetle, Malachite Butterfly, dragonfly, mayfly, and water strider illustrations by Jennifer Wiest

Exotic Pests of American Forests

This article is based on Fading Forests, a report prepared by the author and Scott E. Schlarbaum, Professor in the Department of Forestry, Wildlife and Fisheries at the University of Tennessee, with the assistance of Matthew A. Fogelson.

by Faith Thompson Campbell, Ph.D.

According to Dr. F. Thomas Ledig, of the US Forest Service, "Introduction of exotic diseases, insects, mammalian herbivores, and competing vegetation has had the best-documented effects on genetic diversity [of forest ecosystems], reducing both species diversity and intraspecific diversity." Exotics species' impact has been greater, Ledig says, than that of fragmentation, changed demographic structure, altered habitat, pollution, and favoring of certain "domesticated" species of trees. American Chestnut, American Elm, Sugar Pine, Eastern White Pine, Western White Pine, Port-Orford-cedar, and Florida Torreya have been "eliminated by introduced diseases or [are] threatened with extinction" (Ledig).

Yet conservation agencies and organizations, ecologists, and professional foresters have failed to respond aggressively. One rarely sees efforts to counter the threat of exotics or to educate the public.

Potential costs associated with exotic pests are high. Forest Service risk assessment teams estimated losses to commercial timber alone (excluding loss of jobs, recreational amenities, or ecological values) in the West of between $25 million and $58 billion if alien pests are introduced on logs from Siberia or New Zealand (FS/APHIS "Pest Risk Assessment" USFS New Zealand, 1992). During Fiscal Year 1993 (October 1992-September 1993), agencies of the US Department of Agriculture spent about $19 million to combat exotic pests of trees—a pittance considering the ecological and economic threat.

We need a comprehensive program aimed at excluding additional introductions; eradicating incipient infestations; and using integrated pest management, silviculture, tree breeding, and other techniques to restore tree species already under attack. Ecologists should help document the true costs associated with declines in native tree species and develop appropriate responses.

Such a program could itself entail ecological risks. For example, *Bacillus thuringiensis* ("Bt"), widely used against gypsy moths, attacks other lepidoptera (moths and butterflies) as well, with vulnerability depending on stage of life cycle at time of spraying (Wallner). Doing nothing, however, can result in the virtual disappearance of affected tree species. Neither active prevention and restoration nor benign neglect is risk-free.

OVERVIEW

Insects, fungi, and diseases brought to the US have already severely altered the hardwood forests of the eastern part of the continent. Millions of acres of some widespread coniferous species in the West have also been seriously affected.

Three forest types, which together constitute more than 60% of the total forested area of the Northeast, have been seriously damaged by introduced insects or pathogens (Burkman *et al.*). Oak-hickory forests have been severely altered by chestnut blight, gypsy moths, butternut canker, and dogwood anthracnose. The bottomland elm-ash-cottonwood forests have been ravaged by Dutch elm disease. The northern hardwood forest is now being damaged by beech bark disease, butternut canker, and possibly pear thrips.

Two other forest types, making up an additional 17% of the forested area of the Northeast, are also under siege. The White-Red-Jack Pine forest has been harmed by White Pine blister rust, scleroderris canker, Red Pine scale, Red Pine

adelgid, and pine sawflies. The spruce-fir forest is under attack by the hemlock woolly adelgid, elongate hemlock scale (Burkman *et al.*) and the circular hemlock scale (George Stevens).

In Idaho, Montana, Oregon, Washington, and California, a total of 9 million acres of Western White and Sugar Pine have been affected by White Pine blister rust (FS/APHIS Pest Risk Assessment). Western firs, poplars, and other species are also under attack.

Worse may come: devastating new introductions might be associated with proposed imports of logs from Siberia, New Zealand, and Chile. Of the hundreds of pests found in these regions, several could result in changes in forest composition even worse than those already experienced in the East. The extensive "pure" coniferous forests of the West are particularly vulnerable to the rapid spread of exotic pests (Boyce; Lattin).

ECOLOGICAL IMPACTS OF ALREADY INTRODUCED PESTS

Given the widespread concern about forests, one finds surprisingly few studies of exotic-induced declines of tree species. Nor have those concerned with threats to our National Parks and Wilderness Areas taken note of this peril, which respects no boundaries.

The American Chestnut *(Castanea dentata)* once accounted for one-quarter of all the standing timber in Eastern forests (USFS Briefing Paper #FIDR-6, March 8, 1991). Now "only a few large chestnuts remain scattered throughout the region, and they are extensively infected and show various degrees of dieback." (Burkman *et al.*) The chestnut was a reliable source of large crops of hard mast for wildlife—unlike the oaks, hickories, and other trees that have replaced it. While no wildlife surveys were conducted before or during the demise of the chestnut, local residents' recollections suggest that wildlife was much more abundant before the blight killed the trees (Schlarbaum). Furthermore, in some areas, centuries may be required to restore the eroded soil and

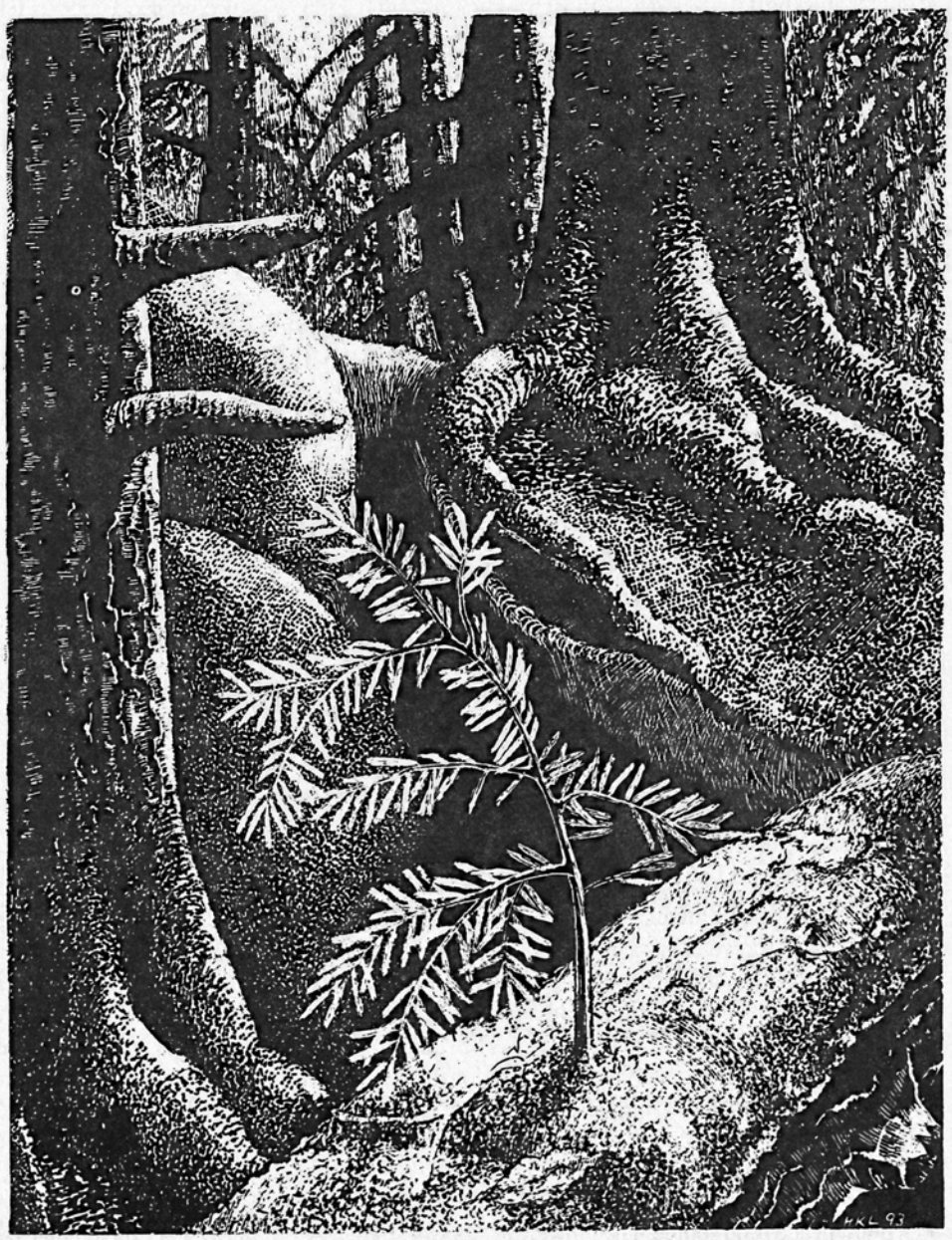


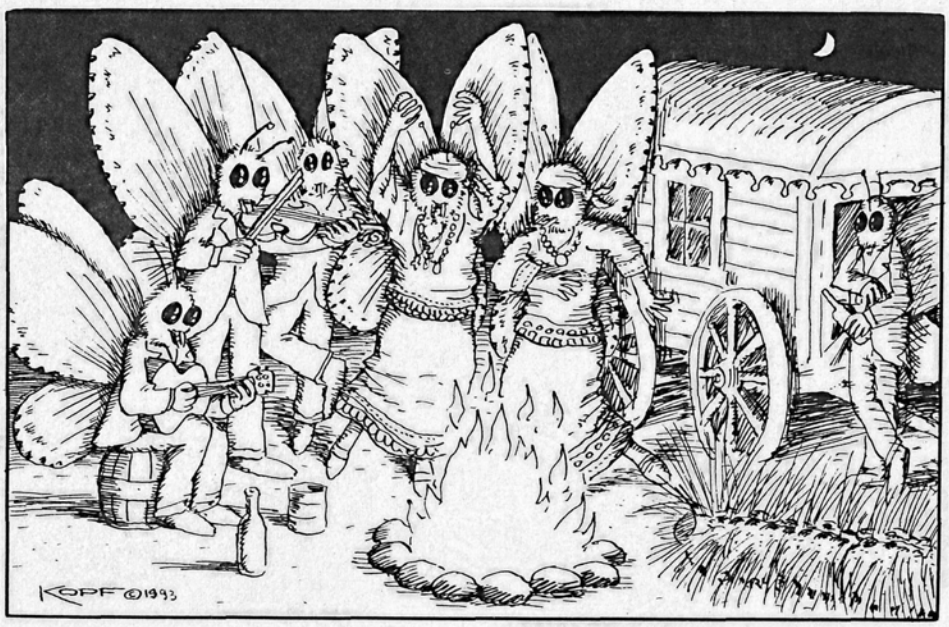
illustration by Heather K. Lenz

humus layers lost as American Chestnuts were killed (Boyce).

The larva of the European gypsy moth *(Lymantria dispar)* defoliates a wide variety of trees, though it prefers hardwoods, especially oaks. Gottschalk has listed the following ecological effects of the gypsy moth infestation in the eastern United States:

- higher stream water temperatures and lower water quality
- less acorn production; possibly complete failure in some years
- more woody debris in streams
- more snags, dens, and cavity trees
- more understory vegetation and vertical stratification
- altered microclimate
- more patchiness within forests resulting from site-related tree mortality
- greater food availability to consumers of lepidoperans
- loss of nesting sites (FS/APHIS, Pest Risk Assessment).

Gypsy moths have already altered species composition in heavily impacted areas, though they have not been recorded as threatening any tree species with extinction.



Gypsy Moths

Dogwood anthracnose, caused by the fungus *Discula destructiva* (Redlia), attacks both the Flowering Dogwood *(Cornus florida)* prevalent in the East and the Pacific Dogwood (*Cornus nuttallii)* found in Washington, Oregon, and Idaho. It has killed over 80% of the dogwoods in some areas (USFS Briefing Paper #FIDR-7, March 8, 1991). The fungus is most virulent in cool, continuously moist conditions, such as the Northeast and mountainous regions of the Southeast. By 1990, an estimated 5.7 million acres of forest in the Southeast were affected (Chellemi *et al.*).

Dogwood loss may have dire effects, for it is an important nutrient and food source. The Flowering Dogwood's leaves contain a large amount of calcium and thus act as a major soil builder. The fruit is high in protein and is a valuable food source for many migratory birds. Dogwood leaves and twigs provide browse for deer and many other herbivores.

White Pine blister rust *(Cronartium ribicola* ; Fisch), from Europe, has killed or damaged 80-95% of Eastern and Western White Pine and Sugar Pine in affected stands (FS/APHIS Pest Risk Assessment). Published writing on the ecological impact of this disease has focused on the related Whitebark Pine *(Pinus albicaulis)*. Occupying high elevations in Washington, Montana, Idaho, and Wyoming, Whitebark Pine produces large seeds which are a particularly nutritious food for a variety of mammals and birds, including the Grizzly Bear *(Ursus arctos horribilis)*, Black Bear *(U. americanus)*, Red Squirrel *(Tamiasciurus hudsonicus)*, and Clark's Nutcracker *(Nucifraga columbiana)*. Indirect evidence—such as bear droppings—indicates that numbers of Whitebark Pine have fallen throughout its range since 1900 as a result of fire suppression, associated increases in native pests, and White Pine blister rust. Blister rust infestations have caused heavy Whitebark losses in the Northern Cascade Range, the Cabinet Mountains, Selkirk Range, and Bitterroot Mountains. More than 90% of Whitebarks have been killed on the east side of Glacier National Park. Tree deaths are just beginning in the Bob Marshall Wilderness (Kendall & Arno).

The Butternut, or "white walnut" *(Juglans cinera)*, is another source of nuts for wildlife that is under threat by an exotic disease. The Butternut is not abundant but it is found throughout the Eastern hardwood forest as far south as northern Georgia across to Arkansas. Over half of total growing stock volume is in Wisconsin (Burkman *et al.*). The Butternut canker *(Sirococcus clavigignenti-juglandacearum)* is now killing Butternut throughout its range. The Butternut has been designated a C2 candidate for listing under the Endangered Species Act.

In many parts of the Northeast, beechbark disease has killed more than half the American Beech *(Fagus grandifolia*; USDA Miscellaneous Publication #1426, 1985). Beechbark disease is caused by one or more species of *Nectria* fungus which gain entry into the tree through tiny holes in the bark caused by the beech scale *(Cryptococcus fagisuga)*. The scale was brought from Europe around 1890 (Hawbolt, L.S. 1944). The origin of the fungi is not certain (Houston). The younger, stunted beech that survive provide fewer nuts which once fed mast eaters, including Black Bear (USFS internal paper, "Biodi-

versity Research in Forest and Insect Disease Research").

Eastern Hemlocks *(Tsuga canadensis)* from Virginia to southern New England are under attack by the hemlock woolly adelgid *(Adelges tsugae;* Annand). "Decline and mortality of hemlock is widespread and common throughout the [Shenandoah National] Park and is expected to intensify in the next few years," (Watson).

Hemlock can account for 95 to 100% of the stands in shallow soils near rivers and streams (McClure). The ecological effects of its decline would depend largely on the site. Where hemlock is mixed with Black Birch, maples, and oaks, those trees would probably replace it (McClure; Stevens). If a pure stand of hemlock is killed, sprouting of seeds from nearby trees would probably be hindered by the thick litter layer (unless disturbed by salvage logging). Eastern White Pine might replace the hemlock in parts of New England if canopy opening coincided with a good seed year for the pines (Stevens). Water temperatures in creeks would rise until shade was restored (Stevens).

Port-Orford-cedar *(Chamaecyparis lawsoniana)* is found along the Pacific Coast from near Coos Bay, Oregon to the Mad River drainage in Humbolt County, California. The range extends east into the Siskiyou Mountains (Kliejunas & Adams, 1981). Port-Orford-cedars form ecologically and floristically unique forest communities. Port-Orford-cedar's leaf litter is less acidic and higher in calcium than that of associated conifers, thus contributing to desirable soil properties, particularly on ultramafic (serpentine) sites (Zobel, Roth, and Hawk, 1985.).

Port-Orford-cedar tree is attacked by a root disease caused by the fungus *(Phytophthora lateralis)*. The disease is widespread in Oregon (Kliejunas & Adams, 1980.); in California it has been found primarily in the Smith River watershed (Kliejunas). The disease is easily spread by transport of soil—especially on road maintenance and logging equipment (Kliejunas & Adams, 1981.), but also in the hooves of livestock and ungulates such as Elk (Roth). The fungus can also spread along interconnecting root systems and by spores swimming in surface waters (Roth). To prevent its spread, plant pathologists recommend stringent controls on human, livestock, and even wild animal access to Port-Orford-cedar stands, as well as removal of the infected trees near water courses and in moist sites (Kliejunas & Adams, 1980; and Zobel, Roth, and Hawk, 1985.)—their preferred habitat.

True firs of the genus *Abies* are attacked by the balsam woolly adelgid (*Adelges piceae*) (Mitchell, Amman, & Waters, 1970.). The Fraser Fir *(A. fraseri)* of the Southern Appalachians has been the most severely affected. Due to the infestation, formerly large tracts of mature firs on mountaintops in Virginia, North Carolina, and Tennessee have been reduced to isolated stands, most of which are infected (Nicholas). Younger Fraser Firs persist, but it is unclear whether the young firs can reproduce in sufficient numbers to perpetuate fir stands. Great Smoky Mountains National Park is studying associated species, including several globally rare bryophytes and the very rare Spruce Fir Moss Spider (Langdon).

POTENTIAL FUTURE INTRODUCTIONS

With increased controversy over cutting the remaining old-growth forests on the United States and Canadian Pacific coast, US lumber companies have expressed interest in importing logs from Siberia, New Zealand, and Chile for processing at West Coast mills. Several forest health experts fear associated exotic pests could have extremely high economic and ecological costs if they became established in the conifer forests of the West.

Consequently, over 40 scientists were asked to examine the risks associated with imports from Siberia. Smaller risk assessment teams have studied pests in New Zealand and Chile. In all three cases, only small samples of the possible introductions were given detailed ecological and economic analyses.

Despite the study's limited scope, the Siberian team concluded that "many taxa from Siberia... will find suitable hosts in various parts of the forests of Western North America. Some species are likely to become serious pests." (FS/APHIS Pest Risk Assessment).

Of the potential introductions from Siberia, the Asian gypsy moth causes the greatest concern because it has a greater willingness than its European cousin to feed on conifers, including the Giant Sequoia, Coast Redwood, Douglas-fir, and nine species of pine. Furthermore, in the conifer-dominated West, riparian hardwoods such as alder and maple shade streams, stabilize channels, and provide organic matter to aquatic foodwebs. Alders and other species are also critical to soil fertility since they fix nitrogen. Flowering plants, including the hardwoods, are vital links in food chains. The team concluded that the Asian gypsy moth has a "moderate" potential to kill these hardwood tree species in healthy forests, a "high" potential in stressed forests (FS/APHIS, Pest Risk Assessment).

A second potential introduction on log imports from Siberia, the nun moth *(Lymantria monacha;* Linneaus), is likely to attack all Western conifers except pines. Tree mortality "is likely to be high" (FS/APHIS Pest Risk Assessment). The team believed west-slope Cascade forests and Rocky Mountain forests might be converted to shrubs, forbs, and grasses. In the Cascades, alders and maples would replace the moist Sitka Spruce/Western Hemlock forests if the nun moth invades but Asian gypsy moth does not (FS/APHIS Pest Risk Assessment).

Several Asian species of pine wood nematode, including *Bursaphelenchus mucronatus* and *B. kolymensis*, pose the greatest threat to the Jeffrey, Ponderosa, and other hard pines (FS/APHIS Pest Risk Assessment). At low elevations, rangeland shrubs and such exotic plants as cheatgrass would probably impede restoration of a new forest (FS/APHIS Pest Risk Assessment; Lattin). Ponderosa Pine stands are heavily used by animals; one study lists 135 species that use Ponderosa stands for feeding and 95 species that use them for breeding. Impacts on wildlife would depend on whether Ponderosa stands were replaced by other forest types or by shrubs and grasslands (FS/APHIS Pest Risk Assessment).

The larch canker *(Lachnellula willkommii)*, which is already present in eastern Canada, "could have a major impact on the 2 million acres of Western US forest with 50 percent or more larch cover." Larch keeps middle and upper elevations in the Intermountain West and Northern Rockies in forest cover, protecting habitat, soils, and watersheds (FS/APHIS Pest Risk Assessment).

During epidemics, the spruce bark beetle *(Ips typographus)*, of Asia, burrows into standing spruce and sometimes pines and larches (FS/APHIS Pest Risk Assessment). The beetles carry various fungi, some of which are extremely pathogenic. If introduced in North America, the beetles could disperse widely, probably from Alaska along the boreal spruce forests to the Atlantic. If the beetle were accompanied by the more virulent fungi, and native beetles also spread the fungus, "it could . . . be as disastrous to North American spruce as the Dutch elm disease was to elms." If killed by the beetle/fungus combination, Engelmann Spruce in harsher high-elevation ecosystems would not be replaced unless by deliberate replanting (FS/APHIS Pest Risk Assessment).

The authors summarized the threats posed by the potential introduction of Siberian tree pest organisms:

Ecological effects of extensive tree death would be profound in the short run. Long-term impacts would depend on how quickly and completely the system recovered. Trees provide the energy that fuels ecosystems, and much of the habitat structure required by animals and microbes. Roots and associated microorganisms stabilize soils, thereby protecting watersheds, and canopies affect regional climates by cycling water and absorbing heat. Hence, the more total tree cover is reduced, and the longer it stays reduced, the greater will be the impact on local ecosystems, associated streams and rivers, and entire regions.

Loss of a significant proportion of living trees within stands would trigger complex changes in food supply and habitat. One of the first effects would be a shift in the pathways of energy flow through ecosystems, accompanied by changes in community composition. Detrital food chains — fueled by dead organic matter — would be favored, while food chains that depend on living trees would collapse unless the system recovered very quickly...." (FS/APHIS Pest Risk Assessment).

The authors predict that mycorrhizal fungi, several species of voles, flying squirrels, and Spotted Owls could not make the transition to a detrital food chain. Deer and Elk would be limited by the scarcity of closed-canopy forests, which are relatively snow-free and thus provide winter forage and shelter. Pacific Yew, accipiter hawks, and salmonid fish would also decline (FS/APHIS Pest Risk Assessment).

Long-term effects would vary depending on whether the outbreak was virulent and spread rapidly, or was less aggressive and thus allowed more rapid reestablishment of a new forest (perhaps with different species composition). In some places, including high elevations, deforestation triggers such physical and biological changes that soils can no longer support trees (FS/APHIS Pest Risk Assessment).

The authors of the New Zealand assessment made little attempt to describe possible ecological impacts of pest introductions associated with log imports from that nation. However, since the logs to be imported would come from plantations of North American tree species—Monterey Pine and Douglas-fir—the likelihood of the pests finding suitable hosts would appear to be even higher than in the case of Siberian pests.

The most troubling pest association "featured" in the New Zealand assessment is that of the woodwasp *Sirex noctilo* and fungus *Amylostereum areolatum*. The wasp is native to Eurasia and North Africa but has become established in New Zealand, Australia, and southern South America. In Australia and South America, it causes significant tree mortality. New Zealand considers its infestation to be under control and thus to pose little threat of transport in log shipments (USFS New Zealand, 1992). The *Sirex/Amylostereum* complex is also present in Siberia, but the team for Siberia did not discuss it in detail (FS/APHIS Pest Risk Assessment; Wickman).

The wasp attacks primarily pines, but it has been recorded in fir and spruce. The females fly—up to 100 miles—to find physiologically stressed trees. When ovipositing, they inject the fungus and a toxic mucus. Together, the fungus and mucus kill the tree and create a suitable environment for development of the wasp larvae (USFS New Zealand, 1992).

The wasp larvae are deep within the infested logs, so they would be likely to survive a trip from New Zealand or Siberia. Once here, *S. noctilo* would very likely become established in pines near US ports. The wasp's potential to spread throughout the western United States is ranked as high (USFS New Zealand, 1992).

THE NEED FOR A COMPREHENSIVE PEST PREVENTION AND MANAGEMENT PROGRAM

Whereas the European gypsy moth was deliberately brought to the United States in 1869 in an attempt to establish a domestic silk industry (FS/APHIS, Pest Risk Assessment), most exotic pests have reached North America accidentally—on nursery stock, in wood packing material ("dunnage"), on logs, even on ship superstructures (the Asian gypsy moth). Most of the introduced pests described here arrived before the Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) began carrying out phytosanitary (plant health) checks on imports. However, introductions continue to occur.

The most efficient method to eliminate exotic pest infestations is to prevent the organisms from entering the country (cf. Boyce). Under the Federal Plant Pest Act and the Organic Act, APHIS has the primary responsibility to ensure that imported plants and animals do not contain pests "which can directly or indirectly injure or cause disease or damage in *any* plants or parts thereof..." (emphasis added) and to detect, eradicate, control, or retard the spread of plant pests.

However, APHIS has concentrated on the prevention of

new crop-related pests. After decades of relying on visual inspection of logs at US ports to detect insects and pathogens, APHIS is only now beginning to develop general phytosanitary regulations that specifically govern raw wood imports. Given the recent introductions in dunnage, APHIS should apply quarantine procedures to all categories of raw wood imports (including logs and wood chips). Furthermore, as part of this program, APHIS should identify and study

[v]irulent diseases known to exist abroad and to be able to attack trees related to our forest species, but which have not yet gained entry into North America . . . to get information that will enable us to prevent or delay as long as possible their introduction here and to combat them effectively when they do arrive (Boyce).

However, APHIS is under strong pressure to minimize the inconvenience and cost associated with such regulations. Twenty-eight wood importers and trade associations responded to the agency's initial request for comments. Most argued that wood chips from Canada or Mexico should be subject to less restrictive regulation or exempted completely.

To protect our forests, APHIS must also strengthen its controls on imports of nursery stock. At least six virulent pests have been introduced this way.

APHIS has largely ceded to the Forest Service authority over foreign tree pests already introduced to the United States. Almost three-fourths of the $19 million expended on fighting exotic pests by agencies of the US Department of Agriculture in Fiscal Year 1993 goes to fighting the European gypsy moth. An additional $1.8 million is being spent—in this case, largely by APHIS—to monitor Asian gypsy moth populations in Siberia and ships entering our ports to prevent a reintroduction of this insect.

Aside from the gypsy moths, the largest amount of this exotic pest fighting money—over $2 million—goes to safeguard the Eastern and Western White, and Sugar pines. Over $500,000 each goes to fight the European pine shoot beetle (which was discovered in the Great Lake states in 1992), dogwood anthracnose, and Dutch elm disease. The only other pest combatted by more than $100,000 is the hemlock woolly adelgid. Other trees threatened by exotic pests, fungi, or disease pathogens—Port-Orford-cedar, butternut, beech, and chestnut—are funded at levels of $52,000 down to $14,000.

New institutions are probably not needed to implement a truly comprehensive pest prevention and management program for America's forests, but funds must be considerably increased over current levels. Among the possible sources are tax revenues (appropriations); receipts from timber sales; fees charged timber and nursery stock importers for APHIS inspections, quarantine and eradication efforts, and research; changed priorities in academic institutions; and contributions from affected interest groups. Because the identification, testing, and application of mitigation and control measures for introduced pests requires years of dedicated effort, it is essential that funds also be stable, to prevent interruptions of long-term projects.

One hopeful development is the Forest Service's recent initiative to create an emergency fund of up to $3 million to enable rapid start-up of research on newly introduced pests that threaten native forests. Just since 1991, the Asian gypsy moth, European pine beetle, *Melampsora* fungus, and European spruce beetle have been discovered at our ports or in our forests. A prompt response is necessary to minimize damage from pests. Since the occurrence and size of such introductions cannot be anticipated in advance, the amount of funding needed cannot be determined during the normal, lengthy, budget-development process.

A comprehensive pest prevention and management program for America's forests will be expensive and will impose new restrictions on a variety of interests. Nonetheless, the investment is well worth making. At stake are North America's native forests.

WHAT YOU CAN DO

• Write members of Congress, particularly those serving on the Agriculture or Appropriations committees. Inform them of your concern about the impact of exotic or alien pests on North American tree species and forest ecosystems, and ask that the APHIS exclusion program and the Forest Service research and pest control programs receive additional funding.

• Write to Michael Epsy, Secretary of Agriculture, Washington, DC 20250. Inform him of your concern about the impact of exotic or alien pests on North American tree species and forest ecosystems. Ask that 1) APHIS continue to exclude raw wood imports from Siberia and Chile at least until an overall policy is adopted (see below); 2) APHIS proceed expeditiously to prepare the environmental impact statement on possible regulations governing imports of raw wood; and 3) additional funding be allocated for the APHIS exclusion program and the FS research and pest control programs.

• Write Jack Edmundson, Environmental Analysis and Documentation, Biotechnology, Biologics, and Environmental Protection, APHIS, Room 543 Federal Building, 6505 Belcrest Road, Hyattsvile, MD 20782. Ask to receive a copy of APHIS's environmental impact statement on possible regulations governing imports of raw wood; comment on that EIS.

• Ask environmental organizations of which you are a member what efforts they are making to improve protection of North America's forests from exotic or alien pests.

• Inform yourself about the current and frequently changing status of exotic tree pests in your part of the country. Sources of information include sources listed in this paper and my forthcoming report, *Fading Forests*; and researchers at US Forest Service research stations, in state forestry divisions, and in university departments of forestry, entomology, etc.

• If you are engaged in ecological or related research, consider developing projects that seek to answer questions related to exotic pest impacts. If not, encourage those who are so trained to undertake such research.

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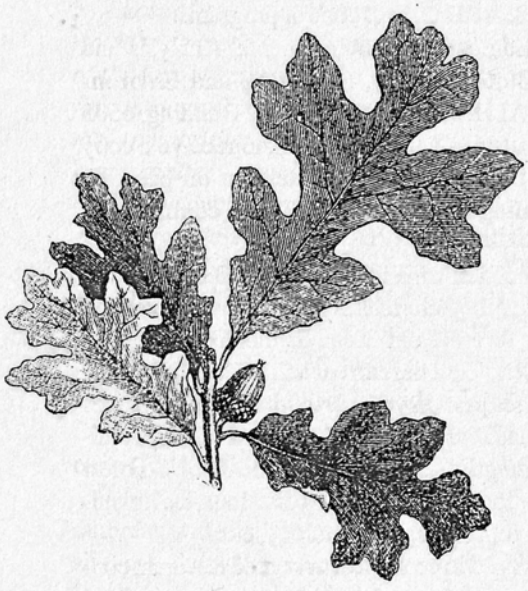

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Human Fear Diminishes Biological Diversity In Rocky Mountain Forests

by Tom Ribe

By now anyone who notices the mountains and deserts has seen the spread of stumps, denuded ground, fences, roads and garbage left behind by cattle ranching and industrial forestry on our public lands. Yet a deeper erosion of wildness has been taking place on our public lands for longer than the chainsaw has existed, such that biological diversity of even the most remote high country wilderness areas has been deeply compromised.

Since the beginning of human history, people have been working hard to make wild lands comfortable and safe for themselves. Modern humans have struggled to suppress nature's most violent and unpredictable elements in favor of pastoral calm consistent with our industrial ambitions, our sense of public safety, our dominant culture's ancestry, and our collective desire to control our destinies. Western culture's disdain for wildness comes partly from our Judeo-Christian background which teaches that wilderness is a raw and godless condition to be dominated. Yet the deepest source of our discomfort with whole wilderness, with its predators, fire, and violent events, probably comes from tens of thousands of years of human evolution in nature where violent natural events threatened and sometimes killed people, instilling daily existence with unpredictability and us with fear.

Now we have tamed many elements of the wild and have pushed nature beyond the urban horizon where public agencies try to tend nature in service of humanity.

Environmentalists struggle to slow down logging, mining and grazing on public lands. These activities truly devastate habitat for vast numbers of plants and animals. Yet a far more widespread and insidious attack on wilderness continues almost unopposed throughout the world. Our war against the most violent and unpredictable elements of nature, a war that even many environmentalists take for granted, threatens many ecosystems with irreversible decay and many species with quiet extinction. The evidence is everywhere around us, but many of us don't recognize the damage because we've rarely if ever seen lands that enjoy the full range of natural processes.

Humans fear and dislike natural violence (though we are unspeakably violent ourselves). Yet even if predators and natural disturbances offend our survival instincts, they are basic means by which nature regulates itself and maintains a rich diversity of life forms.

NATURE IS SOMETIMES VIOLENT

Nature regulates itself partly with violent means. Lightning-set forest fires char forests; predators devour innocent seeming animals; avalanches and storms and earthquakes toss forest gardens asunder, leaving broken wreckage that takes decades for self repair.

Humans fear and dislike natural violence (though we are unspeakably violent ourselves). Yet even if predators and natural disturbances offend our survival instincts, they are basic means by which nature regulates itself and maintains a rich diversity of life forms.

Throughout the western United States, ecosystems are being pushed to the brink of collapse by logging, road building, off road vehicles, cattle grazing and mining. While public interest activists rightly devote the bulk of their time to battle these activities, equally if not more insidious human activities are unraveling the biodiversity of virtually every forest ecosystem in the West. In the name of maintaining a hospitable environment for loggers and ranchers, public land agencies such as the US Forest Service (FS) and Bureau of Land Management (BLM) pump tens of millions of tax dollars into predator control and fire suppression. Both of these activities are damaging plant and animal communities in ways that could have far longer lasting effects on the biodiversity of our public lands than any single industrial activity.

Predator control and fire suppression damage all categories of Western wild land, from heavily visited National Parks to the deepest, steepest, most remote pockets of land where no human has set foot. The "eastside" forests of Oregon, Washington, Montana, and Idaho are reeling under the effects of fire suppression, yet few people recognize it as such. The Giant Sequoia forests in the Sierra Nevada are threatened in part by fire suppression. Grasslands have declined or vanished in many places where fire once maintained them. In the Southwest, where forests exist in islands among lowland deserts, suppression of nature's self regulating processes has brought wildland ecosystems close to the point of collapse. Yet Americans assume these control efforts are in the best interest of humanity and nature. In the case of fire suppression, many agency workers are beginning to work to reverse policy but are encountering resistance from an indoctrinated public and even many well meaning environmentalists.

BANDELIER: A MONUMENT TO OUR FOLLY

Bandelier National Monument in New Mexico presents a fine example of the damages caused by predator and fire control because it is largely maintained as a wilderness area, and its ecology is typical of many forests in the Southwest. Bandelier National Monument lies on the volcanic plateau of the Jemez Mountains west of Santa Fe. Surrounded mostly by National Forest lands, the 30,000 acre Monument ranges from lowland pinon and juniper forest to mixed conifer forest at 11,000 feet. The Monument was established in 1932 to protect Anasazi artifacts and ruins scattered across its mesas, deep canyons, and mountains. Almost 18,000 acres of it are designated Wilderness. Almost by accident, the Monument has become one of the premier ecological research stations in the Southwest.

In 1977 a motorcyclist traveling on a logging road just outside the (politically derived) boundaries of Bandelier National Monument started a forest fire with sparks from his exhaust pipe. It was August in the midst of a multi-year drought and the Ponderosa Pine/White Fir forest was crackling dry. By the time fire fighters from the Forest Service and National Park Service reached the blaze, it had grown to uncontrollable intensity. For the next week, the fire raged out of control over most of the Monument and into other, adjacent federal lands. People were helpless to stop it.

The bulk of Bandelier had last experienced wildfire in 1893. Decades of fire suppression had caused Bandelier's Ponderosa Pine and mixed conifer forests to grow into dense tangles of small trees beneath old growth left from times when frequent low intensity fires had maintained open pine parklands. Great drifts of pine needles and fallen trees covered the ground half a foot deep in places. Saplings bowed and hung. When the fire reached fire-suppressed pine thickets, flames shot to fifty feet, searing the large trees to their tops and leaving centuries old Ponderosa forests tangles of black trunks over beds of ghostly ash. Ultimately the fire, dubbed La Mesa, burned itself out in the sparse pinon/juniper woodlands at lower elevations, after millions of dollars were spent on mostly futile fire fighting efforts.

The fire crowned over a majority of Bandelier's climax forests. (According to researchers, crowning fire is all but unknown in Ponderosa Pine forests where fire occurs at natural intervals.) Today, large portions of the Bandelier backcountry suffer severe soil erosion, and pine forests have been replaced by struggling grasslands dotted with scrub oak thickets. In essence this drastic ecological change followed from the efforts to exclude fire from the Jemez Mountain ecosystem.

The Jemez Mountains enjoy more lightning strikes per year than virtually any other place in the US. Fire burns regularly in these mountains as it does in almost all Rocky Mountain forests, particularly those in arid regions. According to NPS research, most forests in the Jemez burned every 8 to 15 years until humans began fire suppression efforts in the late nineteenth century. The same is true for most Ponderosa Pine forests in the Rockies. According to tree ring studies, some years almost the entire Jemez Mountain range was visited by low ground fires. Like most Rocky Mountain lowland forests, the Jemez was a park land of old-growth pine, fir, and spruce, punctuated by clearings from fire and wind, before modern fire suppression efforts began.

Today, the ecological damage caused by fire suppression is evident throughout the West. Thickets of young trees in the forest understory, which would be thinned by natural fire cycles, lead what fires do occur to climb into the crowns of old-growth

trees. Older trees struggle to survive among thickets which deplete nutrients and moisture that naturally would be available to older trees and a wide variety of other plants. The threatened Yellow Lady Slipper Orchid has all but vanished from the Jemez Mountains. Some researchers believe that the tiny seeded plant needs fire cleared understory soils to reproduce. These conditions are now rare.

Invertebrate, bird and mammal populations suffer in turn from a reduction in plant diversity. Insects, birds and mammals dependent on particular plant species or on early succession forests decline or vanish altogether. Birds such as the Northern Goshawk and the Mexican Spotted Owl which in this area depend on open old-growth parklands to hunt small mammals—which in turn depend on diverse forest floor plant communities—are endangered, largely because of logging, but in part because of ecological disruptions in uncut forests. Large animals find less forage and greater problems moving around in tangled thickets and they concentrate their feeding into smaller and smaller areas.

Many forest ecologists suspect that fire suppression promotes tree pathogens such as Pine Bark Beetle, Dwarf Mistletoe, Spruce Budworm, and harmful root fungi. These afflictions thrive where trees are crowded together, just as mammal species suffer rampant epidemics where overpopulated. Smoke and heat may help reduce insect and parasite populations. Whole forests are now dying from insect outbreaks in eastern Oregon and Washington, northern Utah, and Colorado.

Fire may be the most important natural population control for a wide range of tree diseases. Instead of recognizing this, the Forest Service suppresses fire with one hand and pours pesticides on the forest with the other in a vicious downward spiral. The FS uses insect outbreaks as a justification for salvage logging operations which often are exempted from public review and appeal.

Unlike logging or livestock grazing, fire suppression has changed forests far from roads, deep in Wilderness Areas, in places inaccessible to humans and livestock. As in Bandelier, forests throughout the West are at risk of unnaturally hot catastrophic fires, having been denied regular ground fire. In short, increased insect outbreaks and a general decline in plant and animal diversity follow from our institutionalized fear of wild fire.

HUMAN MEDDLING WITH ANIMAL POPULATIONS COMPOUNDS DAMAGES TO BANDELIER

After La Mesa fire cooled in 1978, the National Park Service (NPS) faced tough choices for restoring park ecosystems. NPS managers recognized that the fire was entirely a human creation, from its logging road origin to its unnatural intensity born of decades of fire suppression. NPS stewardship ethics prevented replanting of trees in wilderness areas, but grasses were seeded from the air to slow soil erosion which began with a vengeance during fall rains.

Eventually the NPS decided to leave Bandelier's forests to reestablish themselves despite the absence of nearby seed sources in large areas where crown fires had killed all the trees. Early succession trees that depend on wind or birds for seed dispersal, such as oak and aspen, in theory would do well after the fire. Fifteen years later, large areas of Bandelier remain a struggling grassland with severe soil erosion, largely due to an unnaturally high Elk population.

The results of Elk and deer overpopulation have been disastrous for Bandelier and have compounded injuries the land has suffered from La Mesa conflagration. The aspens that we all expected to thrive and cloak much of La Mesa burn are nibbled to the ground each winter by desperate Elk herds which now wander into the desert, well beyond their previous ranges. Elk even devour the bark from the mature aspen groves in winter and many of these trees die from girdling. Young aspen are scarce throughout the Jemez and the grasses and forbs in La Mesa burn area are mowed to nubs early in each spring by voracious Elk.

The last Grizzly Bear was killed in the Jemez Mountains in 1942 and Gray Wolves disappeared from the range in the 1930s. With only rare Mountain Lions left to prey on Elk, rabbits, deer, and exotic burros, populations of all of these species have exploded. Elk were reintroduced to the Jemez Mountains from the Jackson, WY herd in the 1960s after the native herd had declined.

In the absence of predators, human hunting and disease are the sole controls on wild animal populations. Hunting is allowed on only a few units of the National Park system, and Bandelier is not one of them. Hunting on the land surrounding Bandelier is minimal: The Monument is adjoined on one side to US Department of Energy land (Los Alamos National Laboratory nuclear weapons research facility) where no hunting occurs and Elk breed and winter. North of the Monument is private land where few Elk are killed. Elk populations on National Forest west of Bandelier seem to know when hunting season begins, and they stream into NPS and DOE lands with the changing aspens. The state government, which regulates hunting on Forest Service lands, has not increased Elk killing permits in response to the obvious overpopulation, and even decreased hunting permits in the region in 1992.

NPS finds its hands tied with regard to Elk overpopulation. Bandelier's primary mission—to protect an exceptional array of Anasazi and early Pueblo Indian ruins—suffers as soil erosion washes away artifacts and contextual evidence researchers need to understand them. Again fire suppression and predator control are the main culprits.

GLIMMERS OF HOPE

In April 1993, Santa Fe National Forest managers conducted the largest controlled (prescribed) burn ever set in the Southwest region. While the National Park Service has long had a prescribed burning program to correct fire suppression damages in Bandelier and elsewhere, the Forest Service's fire was a surprising departure for an agency that has spent many millions of dollars fighting fires behind the banner of Smokey the Bear. The Jemez Ranger District ignited almost 16,000 acres of land which had been logged earlier this century and were in a choked and stagnant condition.

The Forest Service immediately drew heat from the public which accused the agency of committing arson and wasting wood products and tax dollars. Even many environmentalists joined the fray, exercising their usual healthy skepticism toward the agency's actions and explanations.

In this case, however, criticism is largely misplaced. Rocky Mountain forests where old growth has been logged are in disastrous condition and fire suppression compounds damages caused by logging and road building. Without an overstory of old growth, thickets of saplings choke each other and logging debris only slowly decays. Such forests remain in a highly disrupted condition until fire moves through to thin sapling stands, open soils for grass and forb growth, and free nutrients for remaining trees. Fire asserts a selective pressure on young trees. Most forests throughout the West are in this highly unnatural condition where few trees thrive and old growth has little if

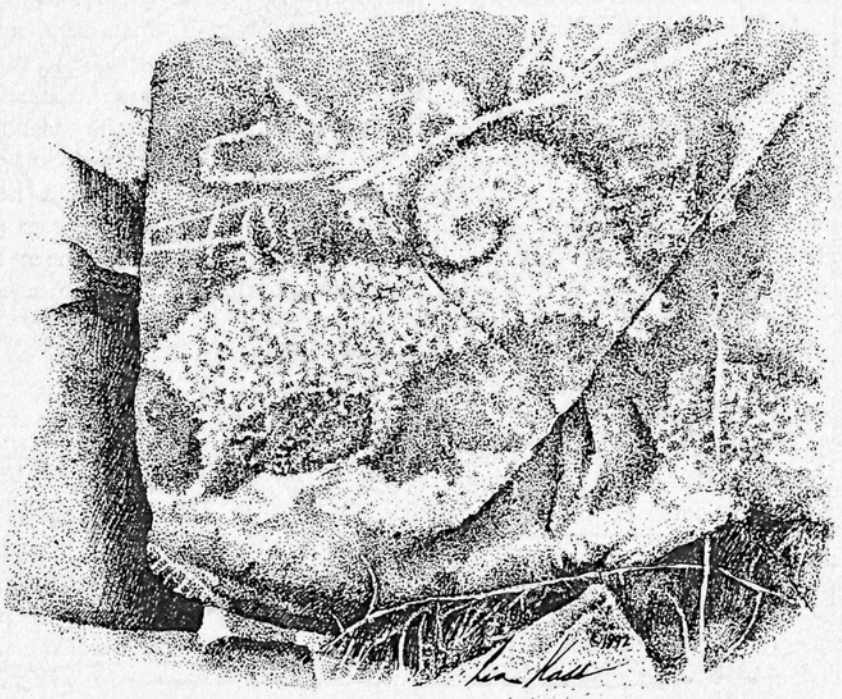


illustration by Lia Kass

any chance of reestablishing itself.

Given the highly flammable condition of fire suppressed forests, particularly those that have been logged, controlled burning is probably the only economical and ecologically sound solution to biological stagnation. Choking thickets under big trees may need to be cut in order to restore the old-growth park lands that prevailed before fire suppression. Surprisingly, the FS is moving to do just this in order to maintain old-growth habitat for Mexican Spotted Owl and Northern Goshawk in many places on the Santa Fe NF. Without cutting understory thickets in valuable old growth stands, crown fire is likely.

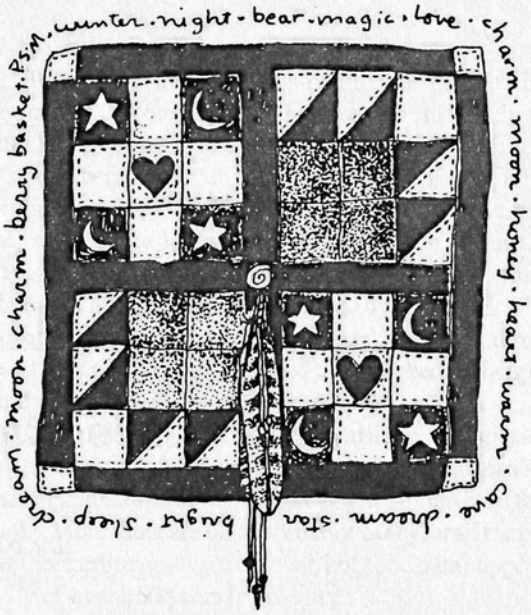
Cutting thickets and prescribing burns may seem like heavy handed meddling to many environmentalists, but given the extreme distortions fire suppression has caused in these fire dependent forests, it is difficult to imagine a realistic alternative. Most lightning caused fires should be allowed to burn freely except where they threaten buildings, but with overgrown understories in old-growth forests, some such fires threaten the very existence of old-growth stands.

An overdue movement to stop predator control activities on public lands is afoot in the US. [See article on ADC in Vol. 3, #2, *Wild Earth*, p.17] Likewise, efforts to reintroduce large predators to many areas will help correct major imbalances caused by their absence. Unfortunately, in places like the Jemez, predator reintroduction may have to await major human population declines.

Fire suppression coupled with livestock grazing and logging have left most of our public lands in such damaged condition that they may never fully recover. No one alive today has seen Western lands in their pre-Colombian condition, when natural fire crept over forest floors for months on end; when wolves, bears and large cats held animal populations in check; and before exotic livestock devoured an unimaginable flourishing of flowering plants.

In the interest of restoring true wilderness to our public lands, we must accept the violent elements of nature. Gray Wolves and Grizzly Bears should be reintroduced to their native ranges wherever habitat is suitable, to regulate populations of herbivores such as rodents and Elk. Lightning fire should be allowed to burn whenever it will not result in catastrophic damage to buildings or old growth forests. Where these measures are not yet feasible, agencies should reintroduce controlled fire to fire-dependent ecosystems, to restore those ecosystems as near as possible to their native conditions. WERF

Tom Ribe (POB 789, Los Alamos, NM 87544) has worked as an interpreter at Kings Canyon National Park in California and in the prescribed burning programs at Yosemite National Park and Bandelier National Monument. He is a freelance environmental writer and activist on public land preservation issues in New Mexico and Oregon.



bear charm love poem

Startled!

owl woman dropped her basket
black berries rolling
bouncing
helter skelter
down the rocky path...

love charm
bear magic

then the moon was honey
turning again...
the moon was a swan's wing

beneath glistening blankets
of star bright snow
an ancient cave of dreams
holds two hearts beating

smooth skin
nestled deep
in thick warm fur

—Peggy Sue McRae

Tuliptree

Liriodendron tulipifera

by Robert Leverett

Many of us hold fond memories of favorite trees we climbed, swung from, or sat beneath in our youth. These memories become magnified through the lens of childhood imagination. But there is one tree that needs no boost from youthful reveries. I speak of *Liriodendron tulipifera*, Lord of the Appalachian Coves.

PHYSICAL PROPERTIES

Liriodendron tulipifera is no ordinary tree. As reported by Harriet Keeler in her artful 1900 publication, *Our Native Trees*, the Tuliptree is a genus of a single species. Keeler explained that "In the cretaceous age the genus was represented by several species, and was widely distributed over North America and Europe. Its remains are found in tertiary rock. One species alone survived the glacial ice, and this is found only in eastern North America and western China." *Liriodendron tulipifera*'s only close living relative was discovered in China in 1875.

Liriodendron tulipifera is known by a variety of common names spelled in different ways: Tuliptree, Tulip-tree, Tulip Poplar, and Yellow Poplar (as it is inappropriately called by the lumber industry) are the most common. *Liriodendron* is a member of the Magnolia family, which prefers deep, rich soil, though it can be found growing in relatively infertile locations. The Tuliptree flowers in May and June. Yellow-green blossoms have orange markings within and are 1.5 to 2.5 inches across with 6 petals and 3 sepals. The blossoms resemble tulips and it has been reported that a mature tree can produce 7 to 8 pounds of nectar per year from which bees produce up to 4 pounds of honey. The outline of the leaf also suggests a tulip. The Tuliptree fruits in September. Few seeds are fertile; less than 10 percent can reproduce. The leaves are 4 to 6 inches long and equally wide with 3 or 4 lobes. The leaves turn a brilliant, uniform yellow each fall. The vivid hue rivals the Plains Cottonwood and Quaking Aspen of the Rockies. The bark of young Tuliptrees is smooth and gray to gray-brown. Older trees develop rounded ridges and deep, perpendicular furrows. The outer bark of truly old trees drops off leaving a flat, smooth surface.

Liriodendron tulipifera *leaf by Celeste Poulin*

The Tuliptree can seed as early as 13 years of age, though more commonly it begins bearing seeds between age 15 and 20. Its wood is soft, straight-grained, and relatively light (25 lb/cubic foot). The wood has a higher strength to weight ratio than most other hardwoods—rivaling some of the important softwoods. The heartwood is light yellow to brown. Medullary rays are small and inconspicuous. The sapwood is creamy. In some stands the heartwood is also creamy, hence the common names White Poplar or Whitewood. The wood in these latter stands is inexplicably softer than that found in stands with darker heartwood; a mystery perhaps associated with soil or climate.

USES

The Tuliptree is well known in the lumber industry. The wood has been described as: straight-grained; knot free; resistant to

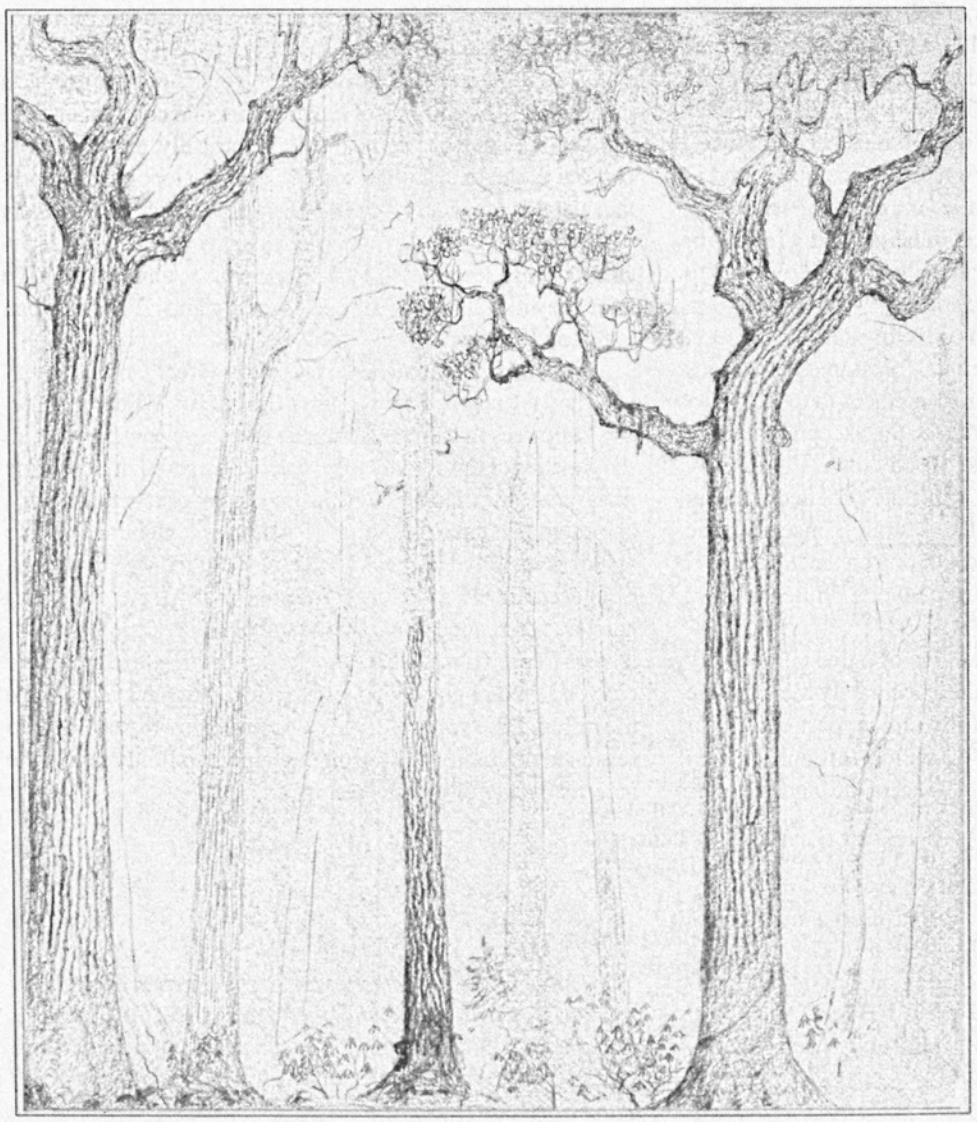
splitting, warping, and shrinking; holding of nails well; taking of a good finish; and accepting glue, paint, and stain well. In the East, some say, Tuliptree wood is surpassed in these qualities only by White Pine. The wood is easily worked. As a result, it has found its way into everything from cabinets to postcards. Native Americans preferred it for making dugout canoes and cradles, and used the bark for a variety of medicinal purposes. According to Deborah A. Boerner-ein's *American Forests* article, "Rediscovering the Yellow Poplar" (commercially, I might add), use of the Tuliptree reached an all-time peak in 1899 and experienced another peak in 1950. The Tuliptree has accounted for only 9% of hardwood production since 1960, but is now being heavily promoted by the US Forest Service and some state agencies.

GROWTH CHARACTERISTICS

The Tuliptree is light-loving and can repopulate old fields in the southern part of its range like White Pine in the Northeast. It achieves and maintains dominance in the canopy by outgrowing its competitors. The first year it is likely to grow about half a foot. Thereafter it can grow up to 3 feet per year for a number of years. One 58 year old specimen in North Carolina was measured at 114 feet. Under competition with other species, the Tuliptree tends to maintain a central leader and simply outgrows its competitors. As a youth, I observed a White Pine and Tuliptree growing side by side in a nearby field. These equally proud species were neck and neck throughout the 10 year period that I watched them locked in their race for dominance.

Although the Tuliptree likes sunshine, the species lives long and persists in the shaded coves of the Southern Appalachians. Estimates of the ages of the oldest Tuliptrees in the Great Smoky Mountains are on the order of 500 years. It is not clear how these estimates were derived, but solid data support a longevity of over 350 years for old trees.

Most books describe the Tuliptree as a large forest tree up to 6 feet in diameter and 150 feet in height. A few sources place its limits at 200 feet in height and 10 feet in diameter. Records confirm that Tuliptrees approached these dimensions in the pre-settlement forests of at least two areas: flood plains of Illinois and Indiana rivers (e.g. Wabash) and Southern Appalachian coves.



Ancient Liriodendron *by Rob Leverett Jr.*

We are indebted to naturalist Robert Ridgeway for the work he did in the 1870s and 80s. He took meticulous measurements of the largest Tuliptrees he could find. A sample of 25 trees yielded an average diameter of 6.2 feet with a maximum of 11 feet. A sample of 18 Tuliptrees measured on the ground yielded an average height of 143.5 feet with a range of from 110 to 168 feet. Ridgeway triangulated the crown of one giant, standing alone in a field, at 182 feet. He estimated some downed giants with broken crowns to have been near 200 feet when standing.

Similar data exist for cove trees of the Southern Appalachians. Great Smoky Mountain National Park has records of a giant Tuliptree that yielded 18,000 boardfeet in 4 logs. Its diameter approached 7 feet and its length was a solid 190 feet. A stupendous Tuliptree cut in North

Carolina's Slickrock district in the early 1900s produced 20,165 boardfeet of lumber in 4 huge logs. This figure can be better appreciated when compared to the average of 33,000 boardfeet of lumber per acre calculated for the virgin Pisgah tract of southern New Hampshire. Today, a good White Pine forest in the Northeast can yield 25,000 boardfeet per acre. Oak forests often yield as little as 5000 boardfeet per acre. In 1859, a professor Buckley reported two Tuliptrees near the Pigeon River in Haywood County, NC: The first made 33 feet in circumference and the second 29. Other statistics could be cited to confirm that with the demise of the American Chestnut, the Tuliptree was left with few competitors for the title of monarch of the Eastern hardwoods. If the Tuliptree can be equaled in height, it would likely be by the American Sycamores that once grew in the Ohio and Tennessee River valleys.

Prior to 1967, the national champion Tuliptree grew in Annapolis, Maryland. It measured 26 feet 6 inches in circumference, but was a mere 83 feet in height: a field spreader. In 1967 Paul Thompson, famous big tree hunter from Michigan, crowned a new national champion Tuliptree: girth 19 feet 3 inches, height 176 feet, spread 112 feet. The current national champion, the third largest tree in the East, grows near Bedford, VA. Its girth is 23 feet; height, 146 feet; crown spread, 125 feet.

Those looking for impressive Tuliptrees need not travel far. Within its range, respectable specimens can be found in yards and city parks. Even in the extremes of its range, *Liriodendron* may exceed 100 feet in height and 3 feet in diameter, but the real giants are found in the areas of old growth possessing terrain favorable to the species.

For several years, I have been collecting data on sizes and ages reached in the past by Eastern in-forest trees of various species, with the intention of comparing them to those growing in today's environment. I search for the exceptional trees. Knowing the limits to which these woody towers grow may help us understand if our incessantly meddlesome activities are reducing the vitality of the forest and turning once majestic species into runts. I have been concentrating on the White Pine, Eastern Hemlock, Red Spruce, Sugar Maple, White Ash, and Tuliptree.

Measuring the girth and basal area of a tree is relatively simple, but it is extremely difficult to accurately measure the height and crown spread of in-forest trees, particularly in mountainous terrain. Tall trees are the most difficult to measure. They require longer baselines to discern the highest points of their crowns.

After the old-growth conference last August in North Carolina, naturalist Ted Watt, my daughter Celeste Poulin (contributing artist to *Wild Earth*), and I measured a number of impressive Tuliptrees in the Cosby section of Great Smoky Mountains National Park. A stand of trees on the Gabes Mountain Trail produced measurements up to 163 feet. At 94 feet, the baseline for this tallest tree was too short. The measurement thus carries a high probability of error. However, a younger tree on the Henwallow Falls trail, near the Cosby campground, yielded a height of 146 feet on a respectable baseline of 160 feet. The Porter Creek trail produced measurements in the 150 foot range on equally long baselines. Unfortunately, I could not get measurements of the most promising trees, including a hemlock that may rewrite the records. Much work remains to be done in Porter Creek drainage to adequately document the exceptional qualities of its forest. Obtaining unobstructed views of the tree crowns in this cathedral forest will require they be measured when bare of leaves. We hope to put to rest the question of whether 200 foot tall Tuliptrees can still be found in the Southern Appalachians.

TULIPTREE AS A SYMBOL

No account of trees would be complete without discussing their psychological impact on humans. The Tuliptree ranks high in its capacity to inspire properly attuned mortals. In his book *The Best Loved Trees Of America*, Robert Lemmon writes "The United States is fortunate in the number and variety of its large trees, but within the area where it naturally grows you would look far to find one more impressive than the Tulip-tree at its best."

Harriet Keeler's poetic description of the Tuliptree reflects its impact: "The trunk rises like a Corinthian column, tall and slender, the branches come out symmetrically, and the whole contour of the tree, though somewhat formal, possesses a certain stately elegance." Keeler's sentiment is echoed by others who point to the tree's symmetry. Yet many who adore the species have not seen it at its best. Their praise would be effusive were they to walk among the real forest giants. But where can one see such trees?

The lush, rain drenched coves of the Great Smoky Mountains and the nearby Joyce Kilmer-Slick Rock Wilderness harbor Tuliptrees that demonstrate the awesome power locked in the genetics of this remarkable species. Gargantuan trunks rise like Atlantean pillars through the mist to connect earth and sky, continuing an unbroken reign of centuries of dominance. The visitor is humbled in the presence of these Ice Age survivors. They seem timeless, linking present and past. No measurements need be taken nor statistics cited to bolster respect. The massive in-forest Tuliptrees stand in sharp contrast to the slender crowded second-growth Tuliptrees a few thousand yards down the ridges. Like young athletes who must slowly develop into seasoned professionals, "young field poplars" only hint at the *inherent power* of the species.

The above is the latest in an ongoing series of arboreal articles by old-growth sleuth Robert Leverett (52 Fairfield Ave., Holyoke, MA 01040). Bob has begun planning a second major old-growth conference tentatively scheduled for next fall in the Northeast.

Let Not The Night Be Silent

a natural history of bats

by Stephen C. Trombulak

3 August 1993. I'm perched high on a hillside overlooking the White River near Stockbridge, Vermont. About 20 other people are here with me, and together we are installing a steel grate at the mouth of an old abandoned talc mine. We come from many different groups: the Green Mountain National Forest, the Vermont Nature Conservancy, the Vermont Department of Fish and Wildlife, an autobody shop in Manchester, newspaper reporters, TV camera crews, and Middlebury College. It has taken our helicopter three trips to airlift the 600-pound grate, generator, rock drill, and welding equipment up to the mine. It will take almost five hours to build the grate, pour cement to form an even foundation, drill holes into the rock wall at the mouth of the mine, and weld the steel to rebar rods inserted deep into the rock.

The grate itself is small, only about four feet high by three feet wide, and is made of steel bars spaced about 12 inches apart. Part of the grate is a small gated section that can be locked into place, yet removed if necessary to allow a human to squeeze through and enter the mine.

Why are we doing this? This mine, the Greeley Talc Mine, is not itself particularly special. After producing talc for several years at the beginning of the century, it was abandoned and nearly forgotten. It runs only about 60 meters into the hillside, and boasts neither vertical shafts nor crumbling walls which would require it to be closed off to humans. It isn't a natural geological formation or a site of historical importance. Why all of this attention?

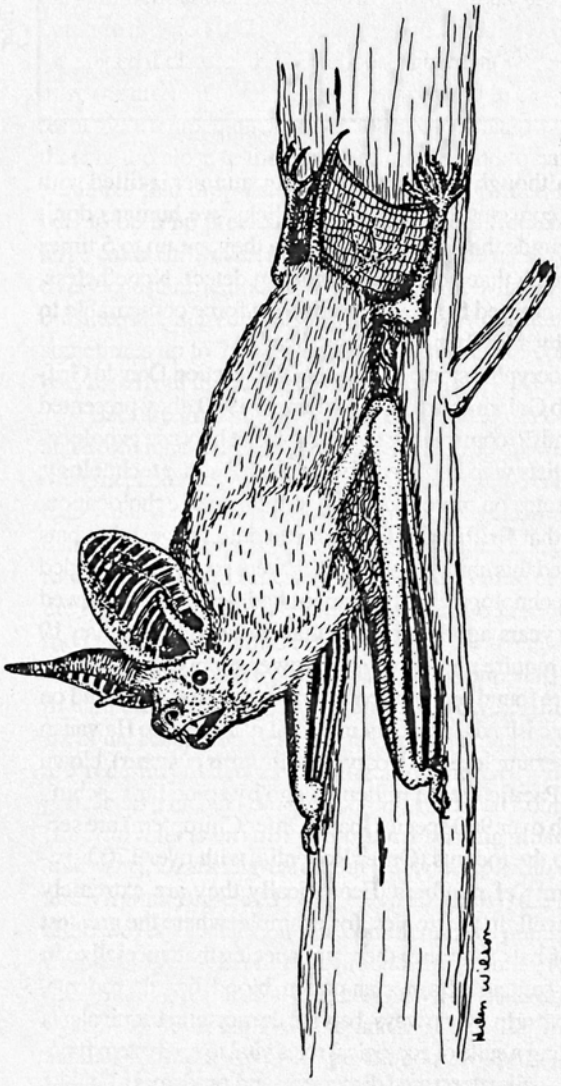


illustration by Helen Wilson

© 1990 Diana Dee Tyler

The answer is that this mine, like many others throughout North America, is the winter home of a large colony of bats. It hosts five different species of bats for up to eight months each year. Almost 1000 individuals have been counted here in midwinter. Although that isn't large by standards of the past, it makes the mine one of the largest hibernacula in Vermont today. The grate we are installing is of a unique design that allows bats to fly freely through its bars, yet prevents humans from entering when the gate is locked.

Why should anyone do this for bats? What's the point of building and installing a grate that allows bats to live undisturbed, safe in a hole in the ground? Let's face it—bats rank right up there with snakes and spiders as the animals people most love to hate. Fortunately, a growing number of people are working to save bats. Herein lies a story of wildness, otherness, and the need for restoration.

Bats are mammals, like us, and one of only three vertebrate groups ever to have evolved the capacity for powered flight (the others being birds and the now extinct pterodactyls). Unlike birds, however, bats have wings made of skin stretched between the hind legs and up to elongated arm and finger bones. In all bats but the flying foxes, the primary way of getting information about the world is by means of echolocation, whereby bats detect objects as small as a tenth of a millimeter in diameter by hearing the echo caused when the sounds a bat makes in its larynx bounce off the object back to the bat's ears. By producing as many as 200 clicks per second, bats can build up a very complex image of the world, and this ability allows them to fly with great precision at night and in the blackness of caves. Although the night sky during summer is filled with bats and a constant din of powerful clicks, we humans don't hear the sounds the bats make because they are up to 5 times higher in pitch than sounds our ears can detect. Nonetheless, the sounds emitted from each bat have a force comparable to that made by a jet flying close overhead.

An apocryphal story is told about the reaction Donald Griffin and Bob Galambos received when, in 1940, they presented to the scientific community their proof that bats use echolocation. Scientists who had recently developed sonar technology, which operates on principles similar to those of echolocation, were irate that Griffin and Galambos would suggest that bats had mastered this ability as well. They were somehow offended that their technological achievement had been foreshadowed 50 million years ago by animals that can weigh less than 10 grams and require no hardware or power supply.

Bats are found on every continent except Antarctica and on most oceanic islands. The only mammal native to the Hawaiian Islands, for example, is the Hoary Bat (*Lasiurus cinereus*), blown across the Pacific Ocean millennia ago by some far-reaching storm. With over 900 species, bats (Order Chiroptera) are second only to the rodents (Order Rodentia, with over 1700 species) in terms of numbers. Ecologically they are extremely diverse as well. In the tropics, for example, where the greatest diversity of bats is found, there are species that specialize in eating fish, fruit, insects, nectar, pollen, blood, lizards, rodents, and other bats. In many ways, bats are the nocturnal equivalents of birds, filling a suite of ecological roles vital to ecosystem function, such as pollinators, seed dispersers, and predators.

Little Brown Bat (Myotis lucifugus) *by D.D. Tyler (available from Tyler Publishing, POB 243, Augusta, ME 04332.)*

In central and northern North America, the ecological diversity of bats is less than that in the tropics, and all 40 or so species feed almost exclusively on insects, sometimes in phenomenal amounts. A single Little Brown Bat (*Myotis lucifugus*) can eat up to 500 insects per hour. A colony of 1000 bats can eat eight tons of insects per year. During the warm summer and early fall months, bats congregate in areas where insects are plentiful—fields, streams, and forests—sleeping by day in trees, caves, and (nowadays) buildings and coming out as the light fades to capture insects and other invertebrates on the wing or ground.

In temperate North America, however, insects aren't available all year round, so most bats hibernate in winter, normally in caves and hollow trees, but also these days in abandoned mines and buildings. While in hibernation, their bodies enter a physiological state called torpor, where their metabolic rate drops 95% and their heart rate drops from 210 down to 20 beats per minute. Torpor does not mean turning the body off. They still burn energy, in the form of body fat that they deposited the summer before. Each bat carefully regulates its body temperature at 5° to 10°C (depending on the species), and is easily awakened if disturbed. They choose hibernation sites that minimize the amount of energy they must spend to keep their bodies at these temperatures. Caves that are too shallow or locations that are too close to the mouth of a cave tend to have air temperatures that drop below 0°C during the winter, forcing the bats to burn up precious fuel to keep from freezing. Deep in large caves, however, away from drafts, the air stays at a relatively constant temperature regardless of what is happening outside. The humidity also stays relatively constant and high, sometimes up to 75%, which minimizes the amount of water bats lose from their lungs as they breathe.

Bats are thus highly complex animals, both ecologically and evolutionarily. They sense the world in a way we can barely imagine, and provide a constant reminder that reality is more than what we can sense by ourselves. They show adaptations that exceed our own technological developments, play critical roles in ecosystem function, and also, by virtue of their appetite for insects, make it easier for humans to produce our own food through agriculture.

Yet humans have pushed bats, as a group, into big trouble in temperate North America (and elsewhere). Although only six of the bat species or subspecies in temperate North America are federally listed as Endangered (the Gray Bat [*Myotis grisescens*], Indiana Bat [*M. sodalis*], Mexican Long-nosed Bat [*Leptonycteris nivalis*], Sanborn's Long-nosed Bat [*L. sanborni*], Ozark Big-eared Bat [*Plecotus townsendii ingens*], and Virginia Big-eared Bat [*P. t. virginianus*]) the numbers of almost every species on this continent have plummeted over the past 30 years. In one cave in southern Vermont, for example, the wintering population of Little Brown Bats has dropped from over 300,000 in the 1960s to under 300 in 1992. In another, smaller Vermont cave, the population dropped from several hundred to 33 over the same period. In Missouri, the winter population of Indiana bats in one of the most important hibernation sites declined from almost 72,000 in 1960 to 33,000 in 1980. Several populations of Ozark Big-eared Bats in Arkansas have declined. The population in one cave dropped from 420 in 1980 to 240 just two years later. In another, the population dropped from 60 in 1975 to just 3 in 1982. And so it goes.

The natural history of bats makes them particularly susceptible to being killed by human activity. Their first problem stems from their diet of insects. In our efforts to increase agricultural output on each hectare of farmland, we use pesticides to kill the insects that compete with us for this plant food. With each new type of insecticide or larger dose of a poison already in use, most of the insects are killed. Yet some small fraction of them have a genetically-determined resistance to the toxin, a resistance that is then passed on to the next generation. Soon the entire population possesses the resistance, and new insecticides or larger doses must be employed. Since insects can breed many times in a year, several generations of insects can pass in a short period of time, leading to rapid reestablishment of insect populations.

The story is familiar. Rachel Carson raised the alarm in 1962 about the destruction of healthy ecosystems by insecticides, but the problem continues today. Insecticides pose particular dangers for bats. Even though insects are resistant to many of the toxins we spray on our food plants, they still have those chemicals in their bodies from having eaten the plants. When a bat eats these insects, the toxins are incorporated into the bat's body. Here the toxins build up, insect by insect, to levels that can weaken, sicken, and eventually kill the bat. Because of generation times longer in bats than in insects, resistance never has a chance to spread through a population of bats before they experience new toxins and higher dosages.

The problem is especially acute in the winter. Many of the pesticides are soluble in the fat that bats deposit for hibernation. Then, as they metabolize the fat during the winter, the toxins are released into the blood in such high doses that the bats can eventually die.

We've begun a vicious cycle. To kill insects, we use pesticides, which kill the bats, which lead to more insects and the use of more pesticides. Rachel Carson's silent spring is rapidly becoming a silent night as well.

The second major problem for bats comes from their habit of congregating in caves and mines during hibernation. Here, clustered together by the hundreds and thousands, they are vulnerable to disturbance that can lead, either quickly or slowly, to death. Much of the disturbance is unintended. Caves and mines have often been walled closed for reasons of human safety or liability. Disturbance in the surrounding landscape, such as logging or construction, can alter the flow of air and water through the underground passageways, changing climate conditions in ways that destroy their suitability for hibernation. Bats are sometimes handled by curious spelunkers, which causes the bats to wake up and, in the process, burn up almost a week's worth of hibernation energy. If this happens often

enough, the bats run out of body fat before spring arrives, and fall helplessly to the floor of the cave.

Some of the killing is deliberate. Prompted by a misplaced fear of rabies or just plain meanness, people kill bats en masse as they cluster together. Most caves and mines today bear the scars of shotgun blasts and blowtorches where bats once roosted.

Which brings me back to the grate on the mine in Stockbridge, Vermont. There's still much we don't know about bats: how long they normally live in the wild (the current record is 32 years!), the movement of individuals between summering and wintering grounds, how populations find new hibernation sites, and how the structure of a forest influences their survival. Yet we do know a few things we can act on, in particular that during winter they simply need to be left alone. Hence the grate and its locks.

None of us here believe for a minute that this alone will be enough. Bats aren't in trouble only because of vandalism and habitat disturbance. They are victims as well of non-point source poisoning. Any recovery plan for them must involve a general transformation in how modern humans feed themselves, and that's more than those of us up here today can solve on our own.

But still we drill and weld and pour cement. At least now this place will be safe for them, and that is a part of what must be done.

Everyone can contribute to the recovery of bats in several ways. First, speak out about their ecological importance and the need to protect them and their hibernation sites. Increasing people's understanding and appreciation of bats will reduce bat deaths due to fear and ignorance. Second, contact Bat Conservation International (POB 162603, Austin, Texas 78716-2603). This organization offers a wide range of written material designed to help educate the public about bats and promote bat recovery, plus designs for building bat houses. Finally, it is essential that we transform our current agricultural policy, which depends heavily on pesticides, into one integrated into natural ecosystems. Currently in North America, the greatest progress in this transformation comes from the field of sustainable agriculture. To learn more about the importance of sustainable agriculture in reducing our use of pesticides and how you can promote sound agricultural policies, contact the Institute for Agriculture and Trade Policy (1313 Fifth Street SE, Suite 303, Minneapolis, Minnesota 55414-1546).

Conservation Biologist Stephen Trombulak (Department of Biology, Middlebury College, Middlebury, VT 05753) studies salamanders and bats in Vermont, and serves as Greater Laurentian Region Science Director for The Wildlands Project.

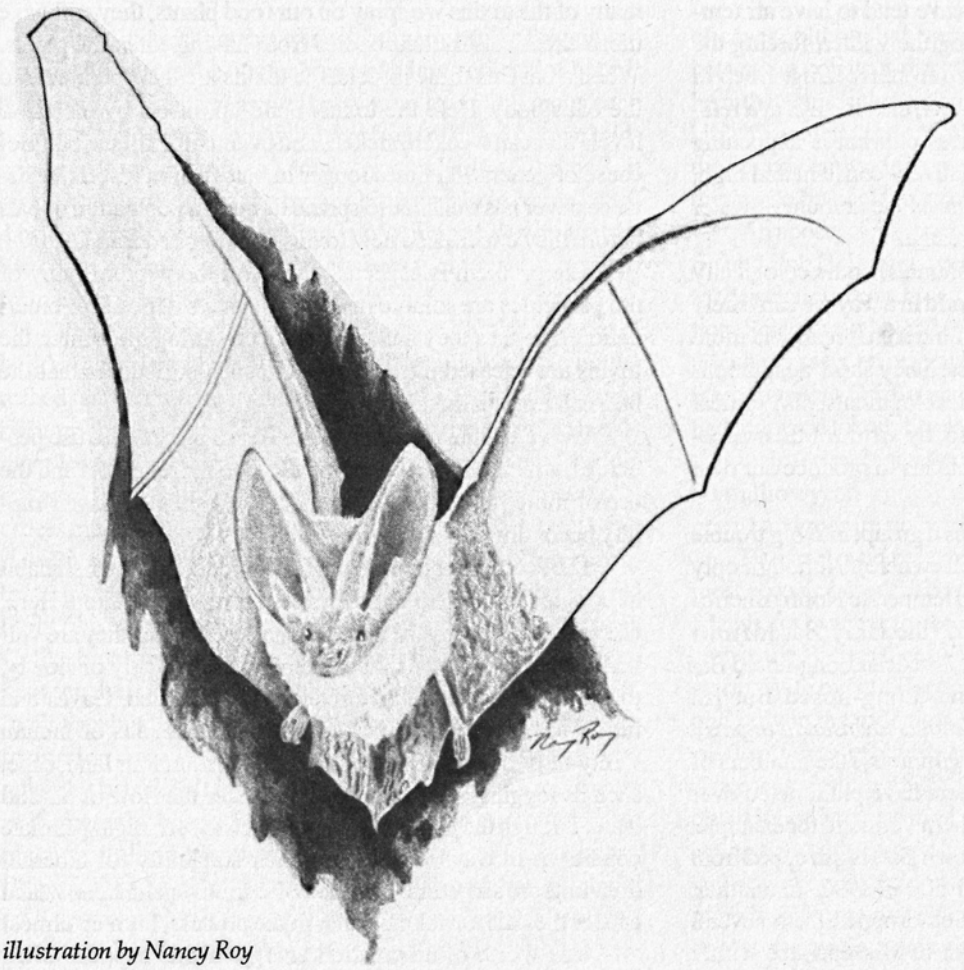


illustration by Nancy Roy

The Sutter Buttes

A Pioneer Project for Private Land

by Patrick Mitchell

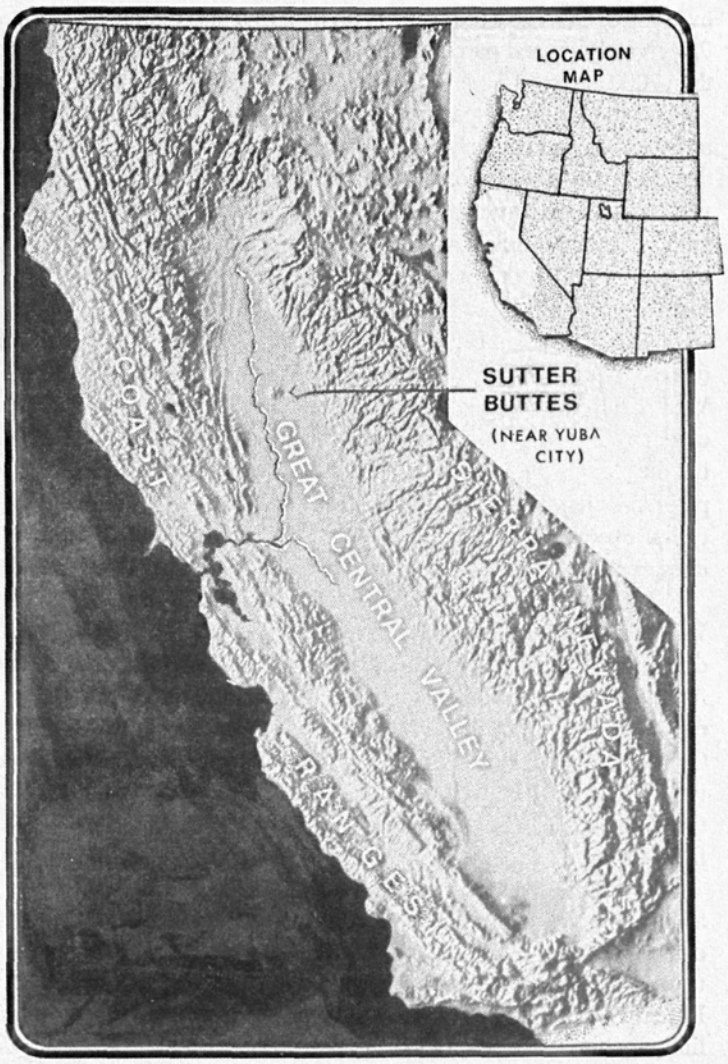
As ecosystem destruction increases, common ground between private landowners and conservationists decreases. Preserving wildlife habitat is of foremost importance to conservationists, while private property rights and a secure livelihood seem more important to landowners. In a few cases, however, traditional battle lines have been erased, with the two sides teaming up for positive results. One example involves the combined efforts of Prescott College biology students, a local foundation, and cooperating landowners.

Spreading out between California's Coast Ranges and the Sierra Nevada is a vast landscape dominated by agriculture, called the Great Central Valley. The jagged, volcanic Sutter Buttes offer the only topographic relief in the 400 mile long valley.

The "Buttes," as they are called, were created by a series of violent eruptions between one and two million years ago. Since this prolonged volcanic birth, thousands of plants and animals have colonized the 90,000-acre range.

Mountain Lions hunt Black-tailed Deer (a subspecies of Mule Deer) along its riparian corridors and patches of chaparral. Golden Eagles and Red-tailed Hawks soar above the peaks and valleys in search of mice, voles, and kangaroo rats. Countless songbirds are permanent or seasonal residents; and Gray Foxes, Coyotes and Bobcats roam the woodlands and chaparral. Reptiles are a major part of the Buttes' fauna also.

The flora of Sutter Buttes is rich; several plants are at extremities in their known ranges. Beneath the majestic oaks that grace the park-like hillsides are an abundance of native bunchgrasses including Purple Needle-grass and California Melic. The presence of native grasses as well as significant Blue Oak regeneration makes the Sutter Buttes unique. Most taxa recorded at the Buttes have affinities to the Coast Ranges



or Sierra Nevada Foothills. Many others, unfortunately, are exotics from Europe.

Interesting questions arise when considering why species like the Blue Oak have been successful here, yet no Digger Pines are present; or why Chamise is not present in the chaparral communities of the Buttes but is often a dominant feature in similar habitats elsewhere. A single Ponderosa Pine in a nearly inaccessible spot provides another puzzling question. Because of the isolated nature of the Buttes, local extinctions there are more likely and more irreversible than in similar habitats that may be closer to repopulation sources in the Sierra Nevada and Coast Ranges. Such questions are of more than academic interest.

The uniqueness of this terrestrial island ecosystem, and the importance of saving its parts, inspired the proposal to establish a data base and to monitor the natural communities of the Buttes. The idea did not arise overnight, however.

The human relationship with Sutter Buttes goes back thousands of years—indigenous people believed the range to be the sacred center of their existence. American settlers moved into the Buttes in the 19th century and people have lived there ever since. Currently the range is divided into approximately 72 privately owned parcels ranging in size from 40 to more than 7000 acres.

By the 1960s, trespassing had become a serious problem and the area had been chosen as a priority for addition to the state park system. A hostile atmosphere developed between private property owners, who felt that they had preserved the land, and State officials, who wanted to open the area to public use. By 1975, the two sides were so far from agreement that the state abandoned plans to purchase the area.

In 1976 the West Butte Sanctuary Company (WBSC) was formed to guide public tours on a single parcel of private land. Walt and Rebecca Anderson were chosen as directors of the company. Several years later, WBSC was closed by its owner, but the Andersons resumed tours on other properties and the program continued to grow. Today, the Middle Mountain Foundation, overcoming the complexity of multiple ownership, leads interpretive tours on thousands of acres of private property.

In 1983, Anderson's book, *The Sutter Buttes: A Naturalist's View*, became the definitive natural history of this area. A decade later, Arizona's innovative Prescott College (For Liberal Arts and the Environment), where Anderson now teaches, embraced the project. In May 1993, Anderson and five Prescott College students began mapping and defining various ecosystems within the Buttes using a hierarchical approach, and establishing a data base to monitor these ecosystems over time for the effects various land uses may be having.

General vegetation associations were mapped last May and aspect mapping was completed in June. Data were collected on species composition within various vegetation associations to further define the ecosystems, but this work is not complete. Research on the fire history and soil types has begun and preliminary bird surveys have been conducted.

A comparison of the Sagebrush Lizard population in the Sutter Buttes to populations in the Coast Ranges and the Sierra Nevada was conducted in June. These populations have been separated for at least 10,000 years, according to research conducted in the 1950s, and new research may show the Sutter Buttes population to be a unique subspecies.

The project is made urgent by both internal and external threats. Internally, exotic species of plants and animals are causing problems. Damage from feral pigs is increasing throughout the range but especially in riparian areas. In drier years, their presence is most noticeable in woodlands and open grasslands. In some heavily grazed areas the Yellow Star Thistle and the Italian Thistle are found in dense pure stands where native grasses once thrived. Cattle have had a heavy impact on many slopes, especially in this extremely wet year.

Externally, the Buttes, like so many parts of California, are threatened by development. In the last two years a golf course has been built on what was a vernal pool and large housing projects have been proposed. So far, county voters have rejected all major planned housing developments on the Buttes. Agriculture, though its effects are harsh, is better than urbanization. Increased development would block movement corridors for Cougars, Coyotes, deer and other animals that utilize the nearby Butte Sink wetlands and the Sacramento River. A recent proposal to place a toxic ash dump in one canyon is still undecided. It would have drastic effects on wildlife of the area.

Several lessons can be learned from the Sutter Buttes project. Protecting land in its natural state may require giving it economic value. This can be accomplished through an interpretive program like that of the Middle Mountain Foundation. Once that is accomplished, landowners with an interest in preserving their land have a feasible route to do so. In addition to providing income for landowners, an interpretive program builds a constituency of informed supporters in the community. The Middle Mountain Foundation currently has a mailing list of more than 12,000. The value of this is evident in the recent defeat of several development proposals.

Although building trust between groups who are traditionally at odds takes time and effort, once accomplished it can lead to an exciting relationship in which all involved benefit. An established relationship of this sort has allowed students and scientists to study the Buttes, and in turn those researchers have reinforced public appreciation for the Sutter Buttes.

For more information about the Sutter Buttes or this project, contact Walt Anderson, Environmental Studies Program, Prescott College, 220 Grove Ave., Prescott, AZ 86301. Descriptions of other Prescott College programs can be requested from the Development Office at the above address.

Patrick Mitchell (13181 Lewis St., Garden Grove, CA 92643) is a naturalist and writer in the process of completing a degree in Natural History at Prescott College and writing a natural history field guide to Southern California's Santa Ana Mountains.

The Freedom Of Information Act

*How to Get Information Out of the Government**

Editor's Note: the following article is Part Two of a work in progress. The authors intend to publish the collection as The Gonzo Guide to Environmental Law, or How You Can Use the Law to Save the Wild! *Additional portions of this forthcoming book will be published in abridged serial versions in* Wild Earth.

by Ned Mudd II and Ray Vaughan

The Freedom of Information Act (FOIA;1. 5 U.S.C. § 552.), is your ticket to lots of fun public material that the government would not normally make available to the public. For instance, with the ingenious use of FOIA, Greenpeace activists Paul Merrell and Carol Van Strum discovered that paper mills using chlorine to bleach their pulp were discharging dioxin into our water and that the Environmental Protection Agency (EPA) knew all about it and wasn't letting the public know.

The first thing to do when you want to know about some government project, about some industry's permit request, or about whatever information the federal government has on a certain wild thing is simply to write the agency and ask for the information. Sometimes you will be amazed and get what you want just by asking for it. As with any endeavor to save the wild that may end up in court, keep a copy of everything you write and of every response.

Government personnel fret about giving out information to the public, because industry types get very ticked off when public documents about industry actually get into the hands of the public. Further, federal agencies often don't want the public to know the truth about what they are doing. Thus, many government people will simply refuse to give any information of value for fear of losing their jobs or out of real sympathy for the industry they regulate. Therefore, when your informal requests to a federal agency for documents are rejected, make an official request under the Freedom of Information

* The Gonzo Guide to Environmental Law, Part Two; © 1993 by Ned Mudd II and Ray Vaughan.

Earth Watch by Mark Wagner

Act. Federal officials cannot ignore such a request, and when they turn over documents after a FOIA request, they cannot legally be penalized by their "superiors."

Under FOIA, the agency must give you the documents you request within ten working days. Most agencies have regulations providing a means of extending this deadline, but the agency must inform you of any extension, the reasons for it, and the date when they will send the documents. Under FOIA, you can request anything, but you have to be specific. Asking the EPA for "all documents you have on incinerators" will not do, but asking for "all documents submitted by Big Burn, Inc. on the proposed incinerator for My Town, Alabama" is specific enough. If the government has difficulty understanding what you want, they normally will contact you for clarification.

Also, exceptions under the Act can prevent access to certain papers. For instance, papers important to national security or protected by executive privilege (remember Richard Nixon) are exempt from disclosure under FOIA. If the agency denies you access to certain documents, they must tell you what those documents are and claim their exemption for each document. Any denial of a document request can be administratively appealed within the agency. The appeals procedures are slightly different for each agency; but they must inform you of their particular procedure. If an administrative appeal fails, you can take the agency to federal district court to try to get the documents. If the agency completely fails to respond to your request either with the information, a denial or an extension, you can sue them for the documents.

December 26, 1991
Freedom of Information Act Officer
United States Fish and Wildlife Service
Department of the Interior
18th & C Streets, NW
Washington, DC 20240

Re: Freedom of Information Act Request

To Whom It May Concern:

On behalf of Edward W. Mudd Jr., a taxpayer and resident of Shelby County, Alabama, I am submitting this request under the Freedom of Information Act, 5 U.S.C. § 552. Please provide, within the ten working days required by law, the following records:

(1) Any and all papers, documents, information, data or other materials that the Fish and Wildlife Service has on or regarding the Council on Competitiveness;

(2) Any and all papers, documents, letters, information, data or other materials sent to or submitted to the Fish and Wildlife Service by the Council on Competitiveness, by Vice-President Quayle, or by any of the Council's members, staff or employees;

(3) Any and all papers, documents, letters, information, data or other materials sent or submitted by the Fish and Wildlife Service or by any official, employee or agent of the Fish and Wildlife Service, to the Council on Competiveness, to Vice-President Quayle, or to any of the Council's members, staff or employees;

(4) Any and all papers, documents, letters, information, data or other materials in the possession of the Fish and Wildlife Service sent to or submitted to the Council on Competitiveness, to Vice-President Quayle, or to any of the Council's members, staff or employees by any industry, by any industry trade group or by anyone else regarding wetlands, wetlands regulations, the Endangered Species Act, reauthorization of that Act, the listing of any proposed threatened or endangered species, or enforcement of the Endangered Species Act;

(5) Any and all papers, documents, letters, information, data or other materials sent to or submitted to the Council on Competitiveness, to Vice-President Quayle, or to any of the Council's members, staff or employees by the Fish and Wildlife Service or by any official, employee or agent of the Fish and Wildlife Service, regarding wetlands, wetlands regulations, the Endangered Species Act, reauthorization of that Act, the listing of any proposed threatened or endangered species, or enforcement of the Endangered Species Act;

We further request that any fees associated with this request be waived because disclosure of the records is "likely to contribute significantly to public understanding of the operations or activities of government and is not primarily in the commercial interest of the requester." 5 U.S.C. § 552(a)(4)(A)(iii). This request satisfies all of the requirements for a fee waiver.

Mr. Mudd has no commercial interest in the records sought.

His interest lies in using the requested information to advance his own understanding, as well as that of other members of the public, into the activities of the Council regarding its operations and purposes and its interaction with the Fish and Wildlife Service.

In sum, application of the statute to this request compels the conclusion that a fee waiver is appropriate.

If you anticipate any delay in processing this request or if you foresee any problem relating to our request for a fee waiver, please notify me as soon as possible.

Sincerely,

Ray Vaughan
Attorney for Edward W. Mudd, Jr.
(address and phone number)

Copying government documents can cost you many dollars, but FOIA provides for a waiver of any fees for collecting and copying the requested records "if disclosure of the information is in the public interest because it is likely to contribute significantly to public understanding of the operation or activities of the government and is not primarily in the commercial interest of the requester." As grassroots environmental folks, you will have no problem meeting the second prong of the fee waiver test. As for the first prong, you should provide as much information as possible about why you want the information, what you will do with it and how you will spread it around. If you want to inform the public about hidden government activity, you should get a fee waiver.

FOIA requests can be very simple. Find the right address for the agency and send the request to the "FOIA Officer" for that agency. For matters national in scope, you will usually make your request to the national office in Washington DC; but for local issues, such as a wetlands fill proposal being handled by the local Corps of Engineers' office, the letter should go to the local office. If you send your request to the wrong place in the agency, it will eventually be sent to the right office, but that will delay your getting the information.

As for the requested documents themselves, just state in a clear and concise fashion what you want. Then give your reasons for needing the information and why you should be granted a fee waiver.

A lawyer could handle a FOIA request for you, and a FOIA request on an attorney's letterhead may look more intimidating, but you can make the request yourself. However, if you have to appeal a denial of a request or have to take the agency to court, you will need a lawyer. Such a case will be handled in the federal district where you live, but it is still litigation with the many perils that lawsuits entail. FOIA has a provision for getting your attorney fees and costs if you win.

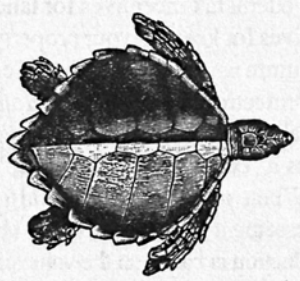
Important note: mark conspicuously at the top of your FOIA request and on the envelope that your letter is a "Freedom of Information Act Request." For an example of a FOIA request, see the letter Vaughan filed on behalf of Mudd below.

For access to state government documents, check your state statutes. Each state has a different law. In Alabama, all state records are available to the public, with minor exceptions such as trade secrets, and people are allowed to get copies of any public record. Alabama has no fee waiver provision, however, and some state agencies charge out the wazoo per page—up to a dollar. Also, you may have to wait a long time, months even, before the agency bothers copying what you requested and mailing it to you. Serving the public is a low priority for most public agencies. Then you may discover that they did not copy everything you requested or that they copied the wrong things. You have already forked over the money for the copies, and it is nearly impossible to prove that they erred. Agencies often use this and other tricks to discourage public participation in government.

Bad state agency people have many ways of preventing your access to public documents. They may simply remove things from the file before you arrive. An agency can claim that a certain file is "out" or being used by someone else in the agency who cannot be located. Also, many state agencies will not give you anything that you do not specifically request; unless you already know the contents of a file such that you can ask for it explicitly, you will not get it. Here is a "Catch-22;" you cannot identify the contents of an agency file until you see it, but you cannot see the file until you adequately identify its contents. If you are denied access to state documents, you may have to take the agency to state court. This would necessitate a lawyer.

Don't be afraid to go fishing in your government files; after all, they are *your* files. Dig and dig some more; it can help save the wild.

Bama-based barristers Ned Mudd and Ray Vaughan are currently embroiled in legal efforts to protect the famed Alabama Sturgeon. They plan to report next issue on their latest efforts to gain ESA protection for what bids fair to become the "Spotted Owl" of the Southeast.



The King Is Back

(and he's on the developer's side)

by Stephen J. Small

Editor's note: Preserving family lands often means keeping unspoiled habitat out of the clutches of developers. Stephen Small's advice could help wildland proponents save private lands.

For the first time in the history of the United States, a family that simply wants to leave its land to the children may not be able to do so without taking specific planning steps to protect the family's wishes.

Simply put, here is the problem. Without proper planning, a valuable piece of land in an estate can trigger an estate tax so large that the land itself will have to be sold to pay the tax.

There are three reasons why this problem exists for so many families today. First, many parts of the country have seen an explosive increase in land values over the past decade. Ten years ago, the average family's land did not account for a disproportionate part of the family's net worth and rarely was valuable enough to trigger estate tax problems.

Second, Federal estate tax rates remain high, even though Federal income tax rates have dropped. The highest effective Federal estate tax rate is 55%, and all appreciation in land values is subject to be taxed at a very high estate tax rate.

Third, too many family advisors do not recognize that a valuable piece of land in a family's estate requires special planning. They may not know how valuable the land has become. Or they may simply treat the land as "value" in the estate. The standard estate plan, on white crinkly paper with red lines down the side, signed, initialed, notarized, and stored in the vault, often will not protect the family's land.

What will protect your family's land? There are several possibilities. One approach might be to put in place a program of lifetime transfers of interests in the family's land to younger-generation family members. Such a program, of course, may have potential gift-tax consequences and has been made more difficult by 1987 and 1988 Federal "estate-freeze" legislation. No program of lifetime family wealth transfers should be undertaken without the advice of experienced tax counsel.

Another approach is to take advantage, where possible, of Federal tax incentives for land conservation, including incentives for keeping your property but imposing restrictions on its future use. You may be entitled to an income tax deduction for protecting your property from development. That protection takes the form of a recorded restriction on your property, known as a "conservation easement" or a "conservation restriction." When you donate to a charitable organization a conservation easement you still own your land; the size of the income tax deduction is based on the value of the development rights you give up. In addition, since you are reducing the value of your property, your estate tax drops and your property tax should be lowered.

With a conservation easement, you have restricted your right and the right of any future owner to develop the land. You can continue to live on it or farm it or, subject to the restrictions, sell or give away or leave to your children the property.

Not every easement restricting the future development of property will qualify for an income tax deduction. The tax law requires that the gift be "for conservation purposes." As a general rule, the more significant the land is and the more it adds to the public good, the more likely that you will qualify for the deduction. If you are protecting a large tract of primarily undeveloped property, or ranchland or farmland, or a smaller parcel of land with scenic qualities, or habitat for a threatened animal or plant, or a scenic view on a stretch of roadside threatened with subdivision, or part of a greenbelt around a city, or a watershed by a scenic brook, your donation is likely to qualify for a deduction.

You will probably not qualify for a deduction if your land only seems unusual in that it does not have houses on it. If you are truly contributing to the general environmental well-being of the area, then your gift should be deductible. If you are trying to get away with something ("maybe I can get a deduction for not permitting any more development on my suburban house lot"), you are probably not entitled to an income tax deduction. In the latter case, it would be difficult to convince a donee conservation organization to accept your easement gift.

Let me conclude with an observation.

In the eleventh century, William the Conqueror rewarded his loyal supporters with large tracts of land, but those feudal lords were not free to will that land to whomever they chose. Rather, the Crown's laws of descent controlled the passage of such land at the lord's death. A most significant legal right that developed over the next two hundred years was the right of the landowner, subject to numerous qualifications but a right nevertheless, to leave the land, by will, as the landowner saw fit.

The King is back.

Stephen J. Small is a Boston-based tax attorney. Portions of this article are adapted from Small's book, Preserving Family Lands, *available for $6 (check payable to "Preserving Family Lands") from POB 2242, Boston, MA 02107.*

The Northern Rockies Ecosystem Protection Act and the Evolving Wilderness Area Model

by Dave Foreman

Lobbyists for national conservation groups meet with several members of Congress. They argue against the introduction of legislation affecting millions of acres of National Forest de facto wilderness in the Northern Rockies. The leader of a citizen's group in a small Montana town angrily lashes out at Sierra Club chapters in New York and other states for interfering with land allocation issues outside their states.

Ho hum. In the war over public lands, scenes like these are run of the mill. But in this case, representatives of national conservation groups were lobbying pro-wilderness members of Congress to *not* introduce the Northern Rockies Ecosystem Protection Act (NREPA), the strongest and most visionary wilderness legislation since the Alaska National Interest Lands Conservation Act (ANILCA). (See NREPA article in *WE* Special Issue and update this issue.) And the outraged Montanan blasting the New York chapter of the Sierra Club was the chair of the Montana chapter of the Sierra Club.

What gives? The nastiest cat fight within the conservation community in recent memory. And in this alley, the cats are motivated by ego, personality conflicts, and defense of turf just like real cats in a real alley.

Sorry. This won't be a personality journalism sideshow of the *Outside* magazine flavor.

No, the discussion about wilderness in the Northern Rockies concerns issues far more important than personalities and turf. NREPA is a window on today's sea change in conservation policy, theory, and strategy. I have previously called this transformation the New Conservation Movement (*Wild Earth*, Summer 1991).

I recently wrote the regional vice-presidents and board of directors of the Sierra Club to say that their upcoming decision on whether the Club should support NREPA is as important as the Sierra Club's decision almost one hundred years ago on whether to oppose the construction of a dam in Yosemite National Park. The decisions the Sierra Club, Wilderness Society, National Audubon Society, and other big groups make on whether to support NREPA will affect not only their leadership role in the American conservation movement, but also the relationship between the national staff and officers of these groups and the grassroots activists throughout the United States and Canada. (See sidebar on Sierra Club reform efforts.)

Wilderness advocates should support the Northern Rockies Ecosystem Protection Act because it would protect more acreage in the Northern Rockies than would other legislative proposals. Whether or not NREPA ultimately passes, an unflinching national campaign for it will increase the likelihood of preserving an ecologi-

NREPA represents a new model for Wilderness Areas... based on the new science of conservation biology and has as its goal the protection and restoration of the ecological integrity and richness of one of the great landscapes of North America—the Northern Rocky Mountains.

cally significant network of wildlands in the Northern Rockies of Montana, Idaho, Wyoming, Washington, and Oregon (and, ultimately, Alberta and British Columbia).

Even more important than the quantity (over 20 million) is the quality of the acreage NREPA would preserve. NREPA represents a new model for Wilderness Areas and National Parks. It is based on the new science of conservation biology and has as its goal the protection and restoration of the ecological integrity and richness of one of the great landscapes of North America—the Northern Rocky Mountains. All previous Wilderness and National Park legislation—even the ambitious Alaska National Interest Lands Conservation Act—was based on an old model for Wilderness Areas and National Parks, one geared primarily to protect scenic beauty and non-motorized recreation.

Alfred Runte in his epochal study, *National Parks: The American Experience*, discusses the arguments developed to support the early National Parks. Foremost was what Runte terms *monumentalism*—preservation of inspirational scenic grandeur like the Grand Canyon or Yosemite Valley, and protection of the curiosities of nature, like Yellowstone's hot pots and geysers. For the last hundred years candidate National Parks have had to run a double gantlet. First, Park advocates have had to mollify (through boundary compromises or watered-down standards) commercial interests wanting to exploit the natural resources of proposed Parks, or we have had to go toe to toe with them in the legislative ring and score a knockout. Second, proposed National Parks have had to measure up to the scenic quality of Yosemite and the Grand Canyon. Even the spectacular Olympic Mountains were denied National Park designation for many years because they were not of "National Park quality." Opposition was raised by the National Park Service and even some conservation groups over including the temperate rainforests of the Hoh and Quinalt valleys because they were not believed worthy of National Park designation.

A second argument for new National Parks was based on what Runte terms "worthless lands." The areas proposed for protection, conservationists promised, were worthless for agriculture, mining, grazing, timber production, and other resource uses. Conservationists are aware of the many compromises made in establishing boundaries—excising areas coveted by industry for lumber, forage, minerals, oil & gas, and other "resources."

As Aldo Leopold and others proposed protection of Wilderness Areas on the National Forests in the 1920s and 30s, they adapted the monumentalism and worthless lands arguments. They also developed new arguments, primarily utilitarian and recreational, to support Wilderness Area designation. The Adirondack Preserve in New York was originally set aside to protect the watershed for booming New York City. The first Forest Reserves in the West were established to protect watersheds above towns and agricultural regions. Such utilitarian arguments became standard for Wilderness advocacy in the twentieth century.

More important have been recreational arguments. Leopold and other early wilderness advocates in the Forest Service were concerned that growing automobile access to the National Forests would destroy and replace the pioneer skills and tools used by early foresters—diamond hitches, cross-cut saws, and such. They wanted to preserve scenic roadless areas suitable for pack trips of two weeks' duration. Bob Marshall in the 1930s elaborated on the recreational argument. Wilderness Areas were reservoirs of freedom and inspiration for those willing to hike the trails and climb the peaks.

In the final analysis, most areas in the National Wilderness Preservation System were designated because they had friends. Conservationists know that the way to designate a Wilderness Area is to develop a constituency for it. You create those advocates by getting them into the area. Members of a Sierra Club group or individual hikers discover a wild place on public land. They hike the trails, run the rivers, climb the peaks, camp near its lakes. They photograph the area and show

Northern Rockies Ecosystem Protection Act Update

Support for the Northern Rockies Ecosystem Protection Act, HR 2638, continues to grow among members of Congress, conservation organizations, business owners and the public. When Congress adjourned for the holidays, 43 House members had co-sponsored NREPA, including ranking members of the Committee on Natural Resources, Chairman Sid Yates (Interior Appropriations Subcommittee), and several sponsors on the important Merchant Marine and Fisheries and Agriculture committees. In addition, Sierra Club's board of directors passed a resolution stating, "The Sierra Club seeks to improve and enact HR 2638, NREPA."

Meanwhile, the Alliance for the Wild Rockies is launching a nationwide campaign to push for Northern Rockies ecosystem protection with the help of grassroots activists and national groups alike. Conservationists are urging Congress to hold hearings on NREPA, and abandon the failed statewide approach to wilderness protection. For more information contact Alliance for the Wild Rockies, POB 8731, Missoula, MT 59807, (406) 721-5420. [Also, see past issues of *Wild Earth*, especially the Special Issue on The Wildlands Project, for details on what NREPA would protect.]

—Dan Funsch, Alliance for the Wild Rockies

slides to others to persuade them to write letters in its support. We backcountry recreationists fall in love with wild places that appeal to us—generally for their scenic and recreational opportunities. Most Wilderness Areas, then, have been protected because people like to hike in them and admire their scenery.

The character of the National Wilderness Preservation System reflects these arguments and motivations. Wilderness Areas (and National Parks) are generally scenic, have rough terrain that prevented easy resource exploitation or lack valuable natural resources (timber and minerals especially), and are popular for primitive recreation.

So, in 1993, despite the protection of over 40 million acres of Wilderness and 18 million acres of National Parks in the United States outside of Alaska, we see true wilderness—biological diversity with integrity—in precipitous decline:

- Wide-ranging, large predators like Grizzly Bear, Gray Wolf, Mountain Lion, Lynx, and Wolverine have been exterminated from many parts of their pre-Columbian range and are in decline elsewhere.
- Populations of many songbirds are crashing.
- Waterfowl and shorebird populations are approaching record lows.
- Native forests have been extensively cleared and degraded, leaving only remnants of most forest types. Forest types with significant natural acreages, such as those of the Northern Rockies, face imminent destruction.
- Tallgrass and Shortgrass prairies, once the habitats of the most spectacular large mammal concentrations on the continent, have been almost entirely replaced or domesticated.

Wilderness Areas and National Parks are generally islands of habitat in a matrix of human-altered landscapes. Because they have been chosen largely for their recreational values, and to minimize resource conflicts with extractive industries, Wilderness Areas and National Parks are often "rock and ice"—high elevation, arid, or rough areas that are wonderful for backpacking but are relatively unproductive habitats. The much richer deep forests, rolling grasslands, and fertile river valleys, on which a disproportionate number of rare and endangered species depend, have passed into private ownership or have been "released" for development and resource exploitation on public lands.

The biodiversity crisis about which scientists like E.O. Wilson and Paul Ehrlich so eloquently warn us is not just in the tropics. A biological meltdown is occurring in the United States, too. The ancient forest crisis in the Pacific Northwest, for example, is partly a result of conservationists focusing over past decades on high-elevation scenic areas, and, in effect, surrendering ancient forests at lower elevations to the timber industry.

Of course, ecological health has always been at least a minor theme in conservation history. At the Sierra Club biennial wilderness conferences, scientists and others presented ecological arguments for wilderness preservation and discussed the scientific values of wilderness and parks. In the 1920s and 1930s, the Ecological Society of America and the American Society of Mammalogists developed proposals for ecological reserves on the public lands. Eminent ecologist Victor Shelford was an early proponent of protected wildlands big enough to sustain populations of large carnivores. One of the many hats John Muir wore was that of a scientist. Aldo Leopold was a pioneer in the sciences of wildlife management and ecology, and argued for Wilderness Areas as ecological control areas. Bob Marshall had a Ph.D. in plant physiology. Olaus Murie was an early wildlife ecologist.

Somehow, though, professional biologists and advocates for wilderness preservation drifted apart—never far apart, but far enough so that when conservation biologists began to look at Wilderness Areas and National Parks in the 1980s, they found that even the largest National Parks were not big enough to ensure survival of many mammal species. (William Newmark's study of Western parks was especially revealing: generally, the smaller the park, the more species it had lost.) Drawing on the theory of island biogeography developed by MacArthur and Wilson in the 1960s, other ecologists, in particular Reed Noss and Larry Harris at the University of Florida, sketched out a new model for reserves designed to protect the entire range of native biological diversity.

Going far beyond current National Park, Wildlife Refuge, and Wilderness Area systems, where individual reserves are discrete islands of wildness in a sea of human-modified landscapes, Noss and Harris called for large Wilderness cores, buffer zones, and biological corridors. The core Wilderness Areas would be strictly managed to protect and, where necessary, restore native biological diversity and natural processes. Biological corridors would provide secure travelways between core reserves for the dispersal of wide-ranging species, for genetic exchange between populations, and for migration of organisms in response to climate change. Surrounding the core reserves would be buffer zones where increasing levels of compatible human activity would be allowed away from the cores. Active intervention or protective management, depending on the area, would aid in the restoration of extirpated species and natural conditions.

This landscape approach to biodiversity protection would not translate into immediate establishment of a complete system. The system would come piece by piece over many decades. Conservation biologists propose to begin with existing National Parks and Wilderness Areas and other protected or unprotected natural areas, enlarge them, connect them with corridors, and surround them with buffers. In certain areas, such as the Midwestern United States and the Great Plains, extensive habitat restoration will be necessary to establish the core Wildernesses. In the Western United States, and especially in the Northern Rockies, we can establish such core Wildernesses and even large parts of corridors using mostly existing de facto and designated wilderness.

The key concept in this new Wilderness Area model is *connectivity.* Because even the largest potential core Wilder-

ness complexes, such as Central Idaho (River of No Return/ Selway-Bitterroot), are not large enough to maintain viable populations of Grizzly Bears, Gray Wolves, Wolverines, and the like, conservation biologists invoke the *metapopulation* concept. A metapopulation is a population of subpopulations. By establishing biological corridors between, for example, Banff-Jasper, Glacier-Bob Marshall, Central Idaho, and Yellowstone, viable metapopulations of these wide-ranging, wilderness-dependent big mammals can be maintained.

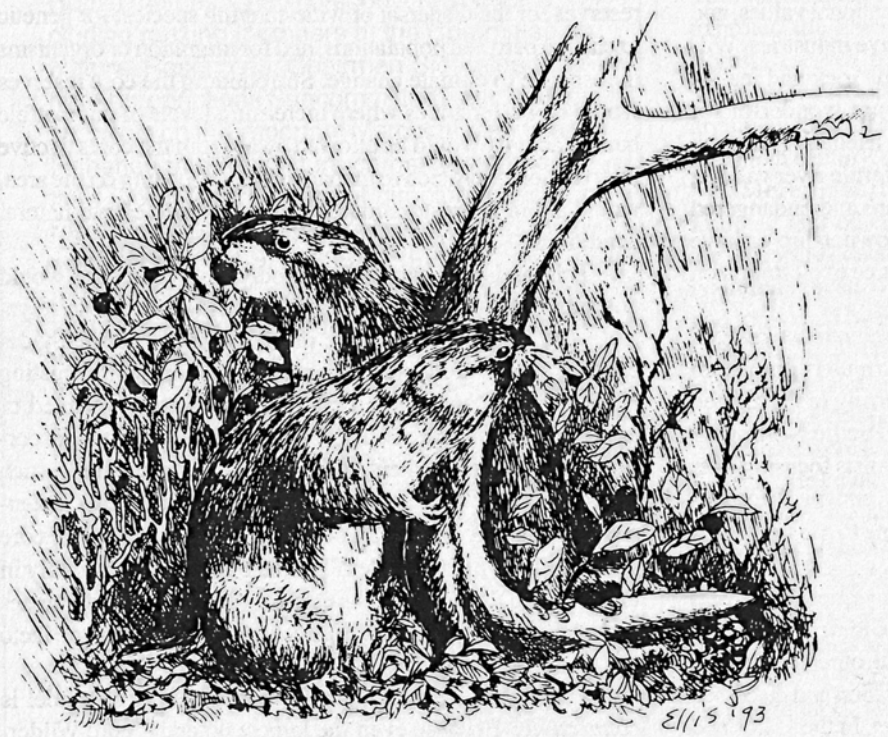
The Northern Rockies Ecosystem Protection Act is the first Wilderness legislation to reflect this new ecological model. Even the best and most ambitious Wilderness bills of the past, like ANILCA and the California Desert Protection Act (CDPA), were based on the old model of separate Wilderness Areas—discrete units functioning as islands of habitat. Certainly both ANILCA and the CDPA anticipated portions of the landscape approach to nature preservation. They are the best examples of the old Wilderness Area model. NREPA is the first Wilderness bill based on the new Wilderness Area model. It is the future of Wilderness preservation.

Not only are competing bills, like those of representatives Pat Williams (D-MT) and Larry LaRocco (D-ID), inadequate in terms of acreage included, but they regress to a robustly non-ecological model: high-elevation, scenic, backpacking areas isolated from one another, with the ecologically more important surrounding and connecting roadless habitat released to logging, roading, off-road vehicles, and other destructive uses.

NREPA is the first wilderness proposal based on island biogeography and conservation biology to be introduced in Congress. If passed, the bill would protect habitat and ecological functions on a landscape scale, as well as preserve the finest scenery and backpacking country in the region.

There are, of course, objections to NREPA. Foremost is that it doesn't seem to have a snowball's chance in hell. We conservationists are often told that we must be politically realistic. Again, we face two competing models. The old, Capitol Hill Model says that we must operate within the political reality of Washington, and should be the technicians who mold final compromise legislation. The new, Grassroots Model says that the task of conservationists is to be advocates for wild nature, that our job is to change political reality. We should not make the final compromises; we pay politicians to do that. They can only make good decisions if we press our position more convincingly and powerfully than extractive industries do their position. The Capitol Hill Model tells us that we can't roll a state's congressional delegation. Except for the unique case of Alaska, both senators from a state must support wilderness legislation dealing with their state or it's that toasted snowball. It also tells us that multistate bills like NREPA won't fly.

Let's prowl through the garbage cans of these competing strategies by looking at two other examples of current wilderness battles: Utah BLM Wilderness and ancient forests. The relatively uncompromising 5.7 million acre Wilderness proposal for Bureau of Land Management lands in Utah (H.R. 1500 introduced by Representative Maurice Hinchey, D-NY) may elicit even more vehement opposition than does NREPA. Given the politics of the Utah congressional delegation, the Utah bill is just as politically unrealistic as is NREPA, particularly since Utahan Wayne Owens, the original sponsor, is no longer in Congress. This has not dampened the zeal of the Sierra Club, Wilderness Society, and National Audubon Society for the Utah BLM Wilderness Act. True, the Utah bill is a product of the old Wilderness Area model, but that does not lessen opposition to it or make it more politically viable. Why do the big national conservation groups think they can roll the congressional delegation of Utah but not those of Montana and Idaho? Surely the Utah delegation is no more friendly to wilderness or less formidable than the Idaho and Montana delegations.



Long after other groups jumped into the fray, the Sierra Club was still reluctant to join the battle to protect ancient forests in the Pacific Northwest, believing the congressional delegations of Oregon and Washington, including Tom Foley, Mark Hatfield and Les AuCoin, were too powerful. The delegations were united in support of the timber industry. But grassroots

Northern Bog Lemmings (Synaptomys borealis) *by Bob Ellis*

conservationists, including Sierra Club members, changed political reality. Despite the Clinton Administration's caving in to Northwest politicians with Option 9, more ancient forests will be protected than I and other activists ever believed possible when we first called for the protection of all remaining old-growth forests ten years ago. The Oregon and Washington congressional delegations—far more powerful than those of Montana and Idaho—are being forced to compromise today, because Sierra Club grassroots leaders and others knew that the way to change political reality was "endless pressure, endlessly applied."

Besides going against political reality, the ancient forest campaign has also taken a multistate approach. Strategic opposition to multistate bills is actually quite recent. Much wilderness legislation in the 1970s was multistate: the Endangered American Wilderness Act and Phil Burton's magnificent "Park Barrel" bill, for example. I would argue that conservationists made a major strategic error after the Forest Service's second Roadless Area Review and Evaluation (RARE II) in acquiescing to statewide wilderness bills. (I plead guilty. I lobbied for the first of the state RARE II bills—a very weak New Mexico Wilderness Act in 1980.) Let us also be honest about the current political lineup in the West. Anti-wilderness Western members of Congress are voting as a bloc regardless of single-state or multistate bills.

If conservation groups are reluctant to support NREPA simply because it is not supported by members of Congress from Montana and Idaho, then they would also be reluctant to support the Utah BLM Wilderness bill and protection of ancient forests in the Pacific Northwest. I'm sad to say, it is difficult to understand the reluctance to support NREPA without considering personalities and turf. We'll walk rapidly through the alley full of hissing cats and hope not to get scratched.

I fear that some conservationists are failing to support NREPA because they have special loyalties to the Montana Democratic Party and to Pat Williams, in particular. I question whether it is wise for conservationists to tie their fortunes to one political party or to place any politician on a pedestal. During the 1960s and 70s, wilderness preserva-

John Muir Society Struggles to Strengthen Club

Sierra Club members continue to rebel against entrenched Club leaders and staff who apparently believe the Sierra Club should support the destruction of forests to provide logging jobs so the Club can be "players." The Association of Sierra Club Members for Environmental Ethics was founded a couple of years ago in response to the Club's continual compromising. The Club's board of directors (BOD) objected to the use of "Sierra Club" and promptly issued a cease and desist order. Earlier this year, ASCMEE reformed into the John Muir Society.

The Sierra Club's by-laws require that if enough signatures are gathered a policy be put to a vote of the membership. Members launched a successful petition drive to allow the Club's membership to adopt a policy that states in part: "The Sierra Club supports eliminating logging for wood and fiber production on all public forests." Thousands of members representing virtually every state signed the petition. The Club's BOD vigorously fought this effort by changing rules and spreading misinformation with Club funds.

In direct response to the petition drive, the BOD adopted a new Forest Policy. For the first time the Sierra Club called for "the immediate halt of all logging in remaining old growth and roadless areas..." We fear this is part of a scheme to confuse members when they vote on the proposed policies. The BOD has also decided to use a double negative on the ballot to confuse members even more.

Elsewhere, members of the Montana Chapter's Headwaters Group began a campaign to convince the Sierra Club to endorse the Northern Rockies Ecosystem Protection Act. Many activists from around the country joined in and chapters representing over 100,000 members passed resolutions in support of NREPA. Club bureaucrats fought the activists' efforts. The Montana Chapter threatened to disband the Headwaters Group.

Things came to a head in November when both the regional vice-presidents (RVPs) and the BOD met. The RVPs took up the issue first. The RVPs (with one abstention) voted to oppose NREPA and support Williams's anti-Wilderness Bill. However, with a threat of all out civil war, a last-second deal was struck. The BOD unanimously passed a resolution that stated: "The Sierra Club seeks to improve and enact HR 2638, NREPA." The resolution disallowed the Club from supporting Williams's Wilderness Bill until all the bad provisions are removed.

Four John Muir Society members, Margaret Hays Young (NY), Laura Hoehn (MT), Chad Hanson (OR), and Connie Hanson (OR) are now circulating petitions to get on the ballot to run for the BOD. They intend to run on a campaign to restore the spirit of John Muir to the Club. To help, contact Jim Bensman, 117 N Shamrock, Apt.1, East Alton, IL 62024; 618-259-3642.

—Jim Bensman, Illinois Chapter of Sierra Club

tion was bipartisan. The champion of the Wilderness Act on the House Interior Committee was a Republican—John Saylor. I was a member of the Republican Party in New Mexico during the 1960s and 70s. We were successful in getting Pete Domenici and Manuel Lujan to support Wilderness designation for areas opposed by the Forest Service (yes, Mannie Lujan!). Things changed in the 1980s because of the frightening transformation of the Republican Party, but remember that even Newt Gingrich is frequently better on wilderness issues than is Tom Foley. Instead of allowing loyalties to Democratic members of Congress prevent us from supporting real wilderness, conservation groups should work to make wilderness bipartisan again.

Before we get out of the alley, though, we must hear some other cats. They criticize NREPA on the basis of the people behind it. They argue that the daddies of NREPA are inexperienced and politically naive. Tyros. Lightweights. Frankly, that's just hissing in the wind.

Among the prominent supporters of NREPA are two men who did more than any others to build the grassroots wilderness movement of the 1960s and 70s—Stewart Brandborg and Clif Merritt. Brandy was executive director of The Wilderness Society from 1964 to 1976. Clif was Western director of The Wilderness Society from the mid-1960s until the late 70s. Both are natives of the Northern Rockies and live today in Montana's Bitterroot Valley. Bill Cunningham, former Wilderness Society Montana representative and lobbying coordinator in Washington, and former executive director of the Montana Wilderness Association, supports NREPA. Dr. Michael Frome, author of *Battle for the Wilderness* and America's most distinguished conservation journalist, is an enthusiastic supporter. Paul Fritz, former superintendent of several National Parks and NPS Wrangell-St. Elias region team captain for ANILCA, is one of many NREPA supporters from a federal agency. Jimmy Carter, the most knowledgeable and committed conservationist to be President of the United States since Teddy Roosevelt, recently endorsed NREPA. Ralph Nader, America's best-known public interest advocate, supports NREPA. And, of course, David Brower is behind NREPA.

Nor is the battle over NREPA a case of Easterners and urbanites trying to force preservation down the throats of Northern Rockies residents. Five hundred businesses and conservation groups from the region support NREPA.

Fifty prominent conservation biologists and ecologists recently supported NREPA in a letter to Congress, saying "it is based on sound biological principles and approaches the scale of habitat protection needed to perpetuate the native species in this bioregion." The signers include Drs. Frank and John Craighead, who pioneered modern techniques of wildlife research; Dr. Michael Soulé, founder of the Society for Conservation Biology; Dr. Reed Noss, editor of the journal *Conservation Biology;* Dr. David Suzuki, world-famous geneticist and popular Canadian television host; Dr. Charles Jonkel, leading bear biologist; Dr. Maurice Hornocker, the world's leading expert on the Mountain Lion; and Dr. Brian Horejsi, Canada's leading bear biologist. These are among the most respected scientists in America. Dr. Tom Power, chairman of the economics department at the University of Montana, supports NREPA and has done research showing that it will be a boon to the economy of the Northern Rockies.

Fifty of the most popular entertainers in America, including Harrison Ford, Goldie Hawn, Whoopi Goldberg, Robert Redford, Bruce Willis, Demi Moore, Magic Johnson, and Carole King, opposed Senator Max Baucus's 1992 Montana Wilderness bill as inadequate. If the Sierra Club and other national conservation groups come out swinging for NREPA, an even larger group of celebrities can be mobilized.

In addition to dozens of conservation organizations like Lighthawk, the Association of Forest Service Employees for Environmental Ethics, and the Idaho Sportsmen's Coalition, chapters and groups of the Sierra Club, National Audubon Society, and National Wildlife Federation have endorsed NREPA. A national campaign of ANILCA proportions already exists in support of NREPA; the support of the big national groups would take the campaign to an even higher level. Political reality would then be changed and conservation history made.

Strong support for NREPA already exists in Congress. Witness the forty cosponsors of NREPA, including eight Republicans, members of the Public Lands Subcommittee and Merchant Marine and Fisheries Committee. Some of the more influential members of Congress are cosponsors: Sid Yates, Nick Rahall, George Brown, and Ed Markey. Representative Carolyn Maloney (D-NY) introduced it in June as HR 2638. If the Sierra Club, Wilderness Society, and National Audubon Society put their broad shoulders behind NREPA, many more members of Congress will be persuaded to cosponsor the bill.

Considering the above supporters of NREPA, what message do national conservation groups send if they are too timid to support it?

The national leaders of the conservation movement should consider that when the California Desert Protection Act was first proposed to Senator Alan Cranston, it was as "radical" and politically unrealistic as is NREPA today. The CDPA was and is audacious in its vision. It would designate four million acres of BLM Wilderness, add 1.5 million acres to Death Valley and Joshua Tree National Monuments and upgrade them to Parks, and establish a new Mohave National Park. The Sierra Club activists who cobbled the CDPA together ten years ago could have played it safe and been reasonable by offering a bill acceptable to then-senator Pete Wilson. Instead, the Sierra Club asked for what it believed necessary in the California Desert and has hung tough for it. We are on the eve of its enactment into law with surprisingly few weakening provisions.

Will conservationists be as bold in the Northern Rockies?

Dave Foreman is Executive Editor of Wild Earth *and Chair of The Wildlands Project. His books include* Confessions of an Eco-Warrior *and* The Big Outside *(co-authored with Howie Wolke).*

The Compromising Nature of Consensus vs. The Freedom of Independent Activism

by Naomi Rachel

Beware the letterhead. The logo. That contested membership list. And, in extreme cases, the business card. Grassroots activists striving for societal acceptance, or eco-bureaucrats at work? The small volunteer group who spends an evening deciding how to nominate itself for an environmental award has become an entity powered by a force that has naught to do with environmental salvation. Getting the name out in the media is, of course, crucial in all battles (for all sides) in this media age; but if the means of identification is simply one more of those green products (tee shirts, bags, bumperstickers) filling dumps and promoting consumerism, then McLuhan is again proved correct. The medium is the message. This group is into marketing an image, not saving the planet.

Jen Hall photo

The reasons for eco-bureaucracy are a worthy topic for a PhD thesis. The first and perhaps worst culprit is often consensus. Working by consensus makes the process more important than the result. I have heard activists proclaim: "We won't take over the USFS until everyone agrees and everyone (in a large crowd) makes a personal comment." Consensus is like a classroom. A teacher ends up, even with the best intentions and methods, teaching at the rate of the slowest learner. Decisions in a group are influenced by the most timid. Censorship results.

Green politics often confuses process with result. That is why the Green party is still formulating policy statements while the trees come down and the wilderness is paved. And who is listening? When a member of a forest group starts suggesting "tree spiking policy statements," it's time to head for the hills. Policy statements (the biblical verses of consensus) limit the actions and vision of a group. Friends of Narrow Park often won't sign on to a national campaign to save Broader Park because it isn't part of their mission statement and their (usually affluent members) might not approve. Perhaps the best policy statement would be simply: Walk softly and carry a large (and versatile) monkey wrench.

Brian Andreja has been a solo activist for several years. He started a small group called "Ban the Burn" to stop the burning of toxic materials in antiquated cement kilns. He became dismayed by activists who wanted to spend valuable time discussing "where we stand." Brian knew where he stood, and what he wanted to achieve. Now, as solo activist for "Toxic Education Project," he has many positive things to say about working alone. Working without meetings and consensus, he can act promptly. He finds it easy to reach the media because they know he will speak frankly. They can depend on him for words blunt enough to quote. Brian has found that minor bureaucrats have doubts about solo activists. They need volume. ("how many people do you represent?") But politicians seem relieved to consistently speak to a well informed activist.

At times when working alone, one may wish for a "rent a mob" hotline: a group of activists who could be gathered for demonstrations and when numbers count. I can envision solo activists with a communication network that would enable them to call out the troops when needed. "If you can get ten activists to protest the toxic dump this week, I'll recruit ten next week to block the FS office." We are all in this together. The goal is to create environmental sanity, not tee shirts. WERF

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A Rocky Mountain National Park Reserve System Proposal

by Roz McClellan

INTRODUCTION

If landscapes are tapestries, and developments are the rips and tears, then busy fingers have been hard at work trying to reweave the tattered fabric of the Greater Rocky Mountain National Park (RMNP) Ecosystem. On 28 April 1993 activists with the Southern Rockies Ecosystem Project (SREP) and the Colorado Environmental Coalition (CEC) presented Arapahoe-Roosevelt National Forest managers with a Reserve System Proposal as a first step in a long-term biodiversity recovery plan for the region. The proposal was submitted as a conservation alternative in the forest plan revision. The Forest Service has promised to consider it in the range of alternatives to guide forest management in the next ten years.

Like many other regions, the Greater RMNP Ecosystem suffers from roads. The biggest roadless areas center on high elevation National Park and Wilderness Areas consisting largely of rock and ice and conifer forests. Lower elevation roadless areas tend to be steep and dry; the lusher habitats of the lower montane, riparian, and grassland ecosystems are heavily roaded and developed.

The landscape fabric is rent not only by roads but by rampant urbanization and fractured land use patterns. Public lands are riddled with mining claims and other blocks of private land. The Reserve System proposed by SREP and CEC attempts to restore the landscape by expanding remaining roadless areas through road removal and by weaving these areas together with broad habitat corridors. The proposal recommends conservation easements and land acquisition to protect important biotic communities on private land. The proposal also recommends that some adjacent BLM and state lands be joined with Forest Service lands through interagency cooperation into larger core reserves. Finally, since almost every stream corridor in the region has been roaded, the proposal recommends that some be restored through removal of roads.

The following is a new and improved version of the proposal presented to the Forest Service.

RESERVE SYSTEM PROPOSAL FOR THE ARAPAHOE-ROOSEVELT NATIONAL FOREST

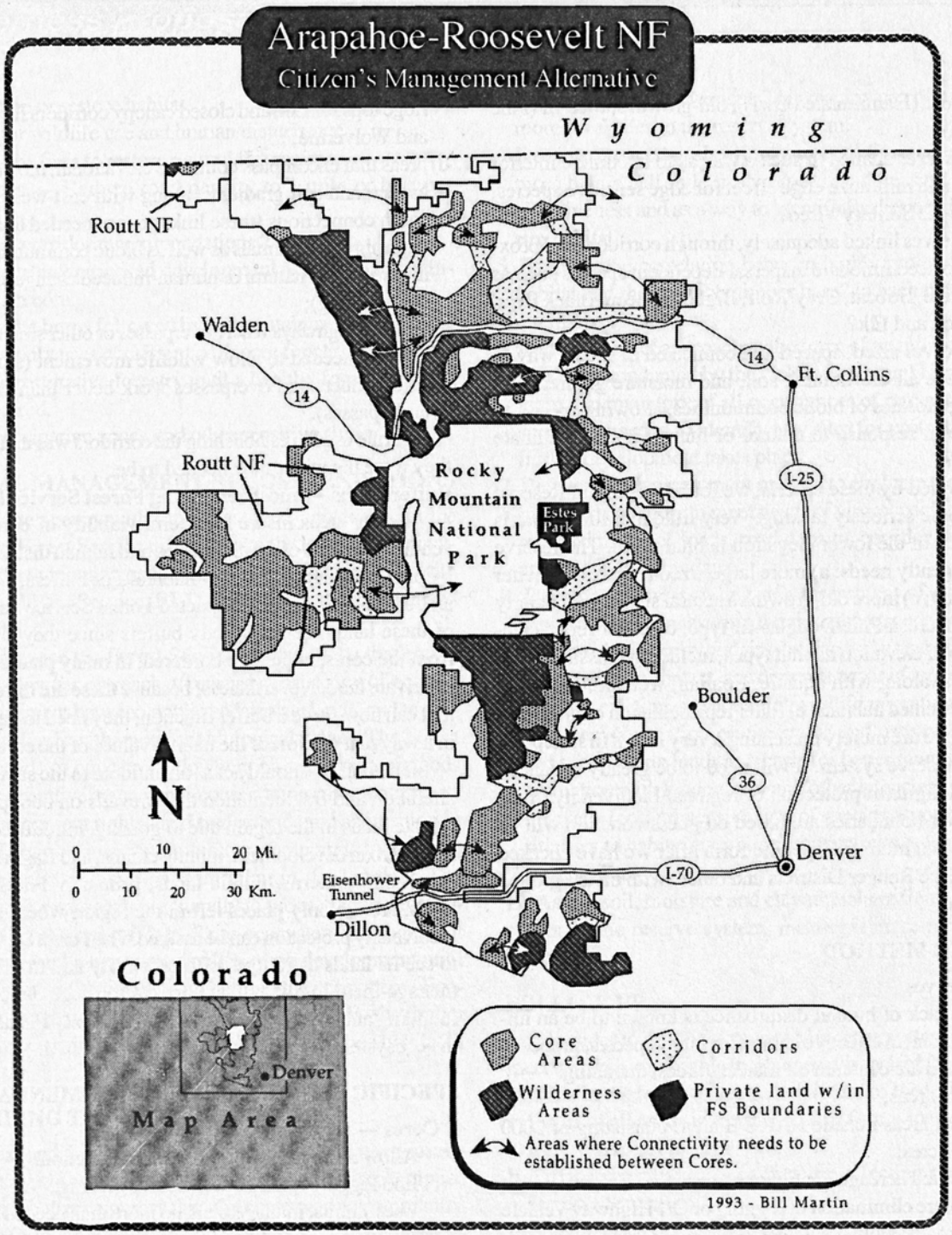
Submitted as a Management Alternative for the Forest Plan Revision by the Southern Rockies Ecosystem Project and the Colorado Environmental Coalition, April 1993.

The proposed reserve system for the Arapahoe-Roosevelt National Forest is a mapped complex of core reserves and corridors. The science of conservation biology shows that in a highly fragmented landscape, such as we have in this region, species viability depends on the size, shape, and connectivity of core habitat reserves, along with maintaining a full representation of vegetation types, gradients, and structural stages. This proposal focuses on species native to the region that are 1) size sensitive, such as Black Bear and Lynx; 2) edge sensitive, such as songbirds and Pine Marten; 3) dispersal dependent, such as Wolverine and Bighorn Sheep; or 4) dependent on specific vegetation types and structural stages, such as Flammulated Owls and Abert Squirrels.

We recommend the Forest Service adopt this Reserve System for many reasons. It is based on scientific principles laying out the landscape requirements for allowing the persistence of native biodiversity over time. It will provide a long-term goal and overarching spatial framework for management decisions, a coarse filter context within which to identify fine filter management needs. It will provide a visual reference by which to measure progress toward goals. It will show how management can be coordinated across jurisdictional and land ownership boundaries. It will show visually the cumulative impacts of proposed actions across the whole landscape. For example, in the process of mapping we have discovered several timber sales impacting cores and corridors in our proposal.

The goals of the Reserve System are as follows (taken from conservation biologist Reed Noss):

1. Represent, in a system of protected areas, all native ecosystem types and seral stages across their natural range of variation.



2. Maintain viable populations of all native species in natural patterns of abundance and distribution.
3. Maintain ecological and evolutionary processes, such as disturbance regimes, hydrological processes, nutrient cycles, and biotic interactions, including predation.
4. Manage the system to be responsive to short-term and long-term environmental change and to maintain the evolutionary potential of lineages.

In designing the Reserve System we drew boundaries based primarily on existing roadless areas. After completing the first map, we evaluated how well it met the stated goals looking at: a) size of reserves, b) shape of reserves, c) connectivity of reserves, d) representativeness of vegetation types, and e) representativeness of structural stages.

We asked these questions:

A. Are reserve sizes large enough to accommodate natural disturbance regimes, such as fire and insect infestation, as well as the territory requirements of species with large home ranges or interior habitat needs such as Lynx and Wolverine?
B. Are all native ecosystems and habitat types represented in the system, including those needed by species dependent on specific habitat, such as Abert Squirrel (Ponderosa Pine), River Otter (riparian), Lynx (spruce-fir and Lodgepole Pine)?
C. Are all structural classes represented, for example old-growth

Ponderosa (Flammulated Owls), old-growth spruce-fir (Pine Marten)?

D. Are reserves shaped in such a way as to maximize interior habitat and minimize edge effect for edge sensitive species, such as the Solitary Vireo?

E. Are reserves linked adequately, through corridors and proximity, to accommodate dispersal dependent species such as Wolverine, Bobcat, Gray Wolf, Bighorn Sheep, Black Bear, Gray Fox and Elk?

F. Are reserves sized, spaced and connected in such a way as to include all elevational, soil, and moisture gradients, in shifting mosaics of biotic communities, allowing species to migrate in response to natural or human induced climate change?

Measured by these criteria, we found this initial Reserve System to be seriously lacking. Very little interior habitat is represented in the lower elevation habitat types. The reserve system urgently needs: a) more large sized reserves; b) better connectivity; c) more old-growth structural stages, particularly in the Ponderosa Pine/Douglas-fir type; d) better representation of lower elevation habitat types, including grasslands and woodlands, along with aquatic, riparian, wetland, and other underrepresented habitats; e) fuller representation of gradients.

Thus we are merely presenting a very rough first step in a proposed reserve system. It will need to be greatly expanded to assure long-term protection of regional biodiversity. Also, many of our boundaries are based on guesswork and will be presented in a more site specific form after we have checked them with the Ranger Districts and others with on the ground knowledge.

MAPPING METHOD

Core Reserves

Since lack of human disturbance is known to be an important element in effective habitat for many species, proposed core reserves are centered on roadless areas, including:

a) RARE II areas;

b) unroaded areas outside RARE II areas consisting of 2000 or more acres;

c) all unroaded acreage contiguous to existing Wilderness;

d) areas where elimination of logging or Off Highway Vehicle (OHV) roads could create new roadless areas;

e) areas that could be combined with adjacent lands managed by other agencies to form effective core reserves;

f) centers of species richness or endemism;

g) natural heritage sites.

Corridors

To counter the severe habitat fragmentation in the Forest, corridors were drawn to connect habitat areas which have become isolated from each other. Corridor locations were based on:

a) known or potential wildlife migration routes;

b) areas between cores with lowest road density, or where roads get the least use or could most easily be closed or restricted;

c) areas with habitat suitable for target species, for example ridge tops for Elk, and closed canopy corridors for bear, Lynx and Wolverine;

d) areas that encompass complete elevational, moisture, slope, aspect, and soil gradients, along with east-west and north-south connections (these linkages are needed to accommodate migrating animals as well as biotic communities shifting in response to natural or human-induced change such as global warming);

e) spots on highways where overpasses or other structural crossings are needed to allow wildlife movement (studies show that viaducts and overpasses work better than tunnels and underpasses).

A rule used in establishing the corridors was that the longer they were the wider they needed to be.

Buffer Areas — most remaining Forest Service lands

Buffer areas insure long-term viability of cores by preventing intrusion of exotic species and human disturbance and by providing supplementary habitat. For buffers, we propose all but the most heavily impacted Forest Service lands. Some of these lands are not strictly buffers since they are isolated from the cores, which are bordered, in many places, by roads or private land. Nevertheless, because these are the only lands that can now serve a buffer function, they need to be managed in a way that reinforces the habitat values of the core reserves.

The buffers should act as an antidote to the severe habitat alteration and fragmentation that prevails on both public and private lands in the region due to grazing, introduced species, roads, urban development, mining claims, and fragmented land ownership patterns. Public lands, primarily Forest Service lands, are the only places left in the region where long-term biodiversity protection can be assured. The Forest Service needs to see its lands as refuges of biodiversity and to deliberately manage them in a way that corrects for degradation on surrounding and interspersed private lands. Only in this way can the ecosystem regain even a modicum of health.

SPECIFIC MANAGEMENT RECOMMENDATIONS

I. Cores — Eliminate all existing roads.
Allow no new roads or road reconstruction.
End logging; phase out livestock grazing.
Use minimal management, no more than needed to restore area to its original condition.
Restore natural fire regime, following manual thinning and prescribed fire where necessary.
Eliminate or control exotic species (fireweed, dogs, etc).
Prohibit motorized vehicles or bikes: foot access only.
Reintroduce extirpated species.
Monitor use.

II. Corridors — Reduce Road density to .5 miles or less per square mile.
Enact seasonal and user road restrictions.
Disallow road upgrades beyond what needed for safety.
Ban off-road use.
End logging and livestock grazing.

Maintain or restore habitat.

Monitor wildlife use and human disturbance.

Prescribe fires to restore natural fire regime.

III. Buffers — Reduce road density to 1 mile or less per square mile.

Follow corridor recommendations 2-6.

Evaluate any proposed development according to its impacts on core.

Prescribe burns followed by fire containment.

Allow only uses consistent with core functioning, for example restorative forestry until a healthy forest structure is restored.

Protect riparian zones and other sensitive sites.

GENERAL MANAGEMENT RECOMMENDATIONS

I. As the agency with the largest land jurisdiction in the region, the Forest Service needs to take the lead in coordinating ecosystem management across the whole landscape with the National Park Service, BLM, and other federal, state, and local agencies.

II. Likewise the Forest Service needs to take the lead in private landowner outreach, to ensure consistency of ecosystem management between public and private lands, and to protect private lands with important biological values. The Forest Service needs to educate landowners on protection methods such as cooperative agreements, conservation easements, transfer of development rights, land trades, and land acquisition.

III. Though conservation biology research is increasing, ecosystem planning suffers from a lag in needed data. The Forest Service approach is generally to proceed with development in the absence of data. True ecosystem management would suggest the opposite, a policy of no development until it can be proved there will be no harm to the ecosystem. Ecosystem management would disallow, for example, the timber sales now occurring in some of the last undisturbed habitat in the forest.

EXPANDING THE RESERVE SYSTEM

To expand the reserve system to a size adequate to sustain biodiversity, we ask for help from the Forest Service, equipped as it is with better resources than the conservation community, to do the following:

1. Create a watershed overlay identifying river corridors and watersheds that remain roadless or could be restored as wildlife corridors and riparian habitat. This overlay would allow evaluation of watershed health and would show private-public land ownership patterns with a view to ensuring consistent ecological management throughout the watershed.
2. Identify habitat types not represented in the reserve proposal and opportunities for protection.
3. Develop a topographic overlay to measure habitat effectiveness of core reserves based on slope and aspect, since the steep terrain of many of the reserves (the reason why they are still unroaded) may be an impediment to wildlife breeding, feeding and movement. This overlay can be used to add more level sites to the reserve system.
4. Develop an overlay showing parcels of Forest Service land more than a half mile from a road, as a measure of habitat effectiveness and as a way to identify further needs for interior habitat.
5. Examine the correlation between highly productive forest habitat and the "suitable timber base" in each plan revision alternative.
6. Add a fine filter approach in the form of an intensive inventory to be conducted by the Colorado Natural Heritage Program. An inventory of all occurrences of rare and sensitive species is needed to identify new sites for protection before further development takes place.
7. Develop a risk assessment method to evaluate the ability of proposed corridors to meet needs of target species, based on size and usage of roads, road density, corridor habitat type and intensity of land use.
8. Develop a corresponding risk assessment of existing and proposed roads measuring the risks these roads pose to core and corridor integrity, judging by size and usage of road, road density, habitat context, and dispersal needs of target species.
9. Identify existing and potential wildlife migration routes.
10. Gather information on the status and uses of inholdings and surrounding lands as a basis for better management coordination with landowners and other agencies.
11. Develop comprehensive lists of species according to sensitivities to habitat size, edge, connectivity, vegetation, and structural stage.
12. Assess soil, moisture and elevational gradients in order to expand the reserve system, making it more responsive to change.

FOLLOW-UP

In order to refine the proposed reserve system, we plan to meet with knowledgeable locals and with each of the five ranger districts in the forest to get better picture of the following:

a. Status of all roads in the district and future road plans, with a view to road closures
b. Proposed timber sales as they are affecting our proposed Reserve System
c. Potential let-burn and fire containment areas
d. How to better connect cores
e. Possible core boundary expansions
f. Protection targets in the wetland, riparian, aquatic and grassland communities WERF

Roz McClellan (483 Marine, Boulder CO 80302) is the founder of The Southern Rockies Ecosystem Project and is a member of The Wildlands Project board.

Yellowstone to Yukon

A Strategy for Preserving the Wild Heart of North America

by Harvey Locke

August 20. Fall is coming to the willows and birch shrubs in the Northern Canadian Rockies near Mile 200 of the Alaska Highway, north of Dawson Creek, British Columbia. On the shoulder of a tundra covered ridge in the Caribou Range we see nine Moose and one Caribou in one focus of our binoculars. A slight rotation to the right and five more Moose come into view. Looking back to the other group, we watch as the Moose suddenly see the lone Caribou. The Moose scatter in all directions. The Caribou makes a bee-line for the ridge top, moving quickly and smoothly. The Moose gather again. Life goes on. In October hundreds of Caribou will come here for the rut.

A few hundred kilometers to the south, close to the southern end of range used by Woodland Caribou in the Canadian Rockies, are Willmore Wilderness Park and Jasper National Park. Here the Caribou are not doing so well. A combination of clear cutting of old-growth forest in their wintering range outside the parks (they depend on old-growth lichens to get them through the winter), habitat fragmentation, highway mortality, hunting and wolf predation has brought their number perilously low.

Farther down the Canadian Rockies, in the Flathead Valley of southeast British Columbia and northwest Montana, a Grizzly Bear digs up the bulb of a Bear Grass plant. This valley, in the heart of an area known as the Crown of the Continent Ecosystem, contains the densest concentration of the great bears in the interior of North America.

The lower 48 states and most of southern Canada are in a biodiversity crisis. Yellowstone is essentially an island of intact habitat. Its carnivore populations may well depend on establishment of a corridor connecting Yellowstone to the Canadian Rockies.

The Flathead is also the point where began the reintroduction of the Gray Wolf into the western part of the lower 48 of the United States. Over the last 15 years the wolf population in the Montana portion of the Flathead has grown from a handful of isolated visitors from Canada to a more stable breeding population. Much of this has occurred under the watchful eye of wolf biologist Diane Boyd, who has been radio collaring wolves in the Flathead to monitor their movements and thus learn more about their ways.

In Banff National Park to the north, Dr. Paul Paquet has been doing work similar to Boyd's. Together Boyd and Paquet recently presented some stunning data on wolf movements to a gathering of large carnivore biologists in Banff. One of the wolves Boyd had collared in the Montana Flathead traveled all the way up the Canadian Rockies to a point near Dawson Creek, BC mile 0 on the Alaska Highway. There it was shot. The implications were clear—the Canadian Rockies are one gigantic linear ecosystem.

The Canadian Rockies have even greater importance than their world-renowned aesthetic qualities. Within their valleys is the full complement of large carnivores and large ungulates indigenous to western North America. No other place in North America with significant numbers of human residents still retains all its large carnivores.

Geologically the Canadian Rockies are not only Canadian. They start just south of the Bob Marshall Wilderness in Montana, where they are called the Northern Rockies by

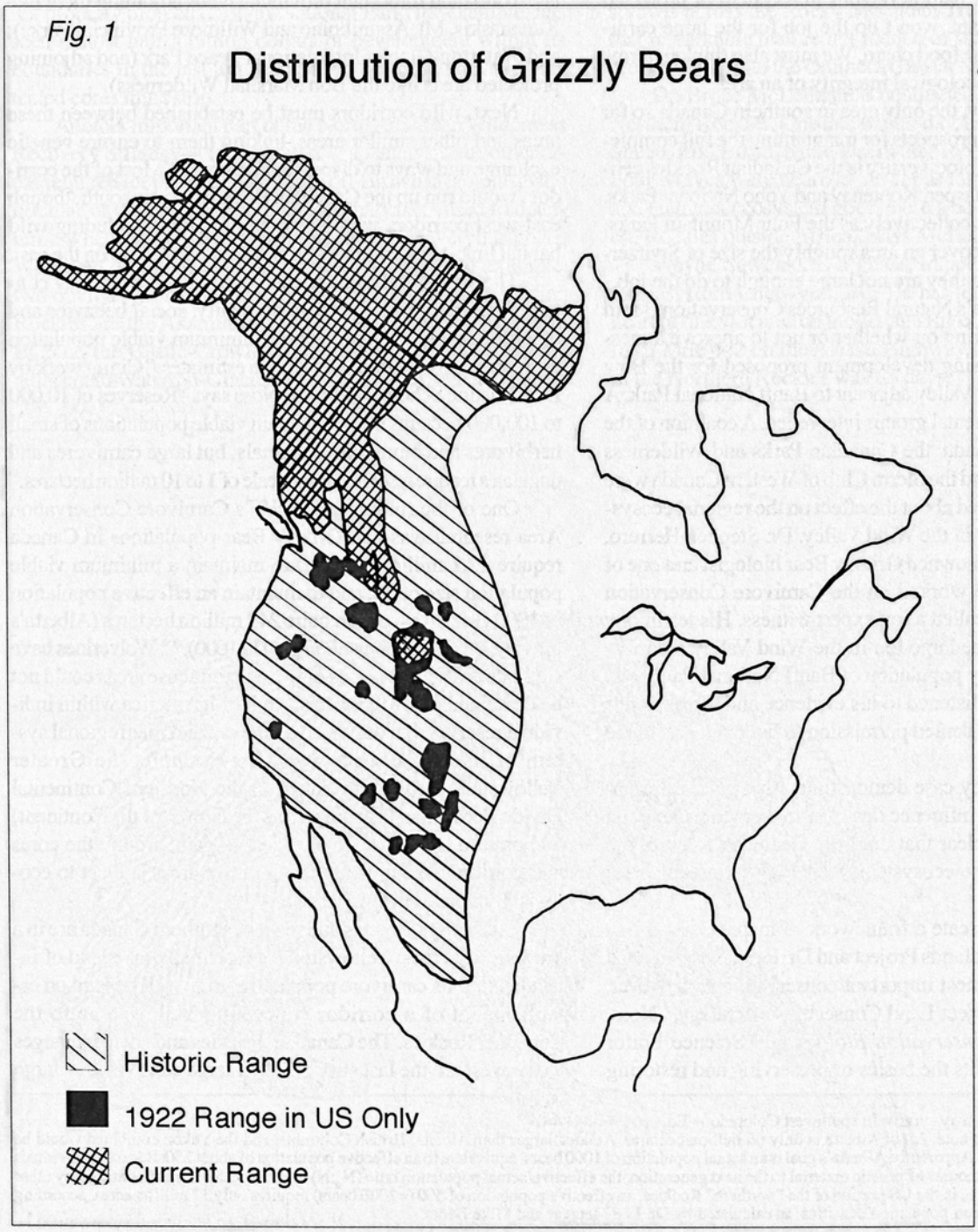
Americans, and run northward up the British Columbia-Alberta boundary, and finally through northeast British Columbia where they terminate on the Liard River just south of Yukon Territory. They are bounded on the east by foothills and prairies and on the west by a remarkable feature known as the Rocky Mountain Trench, a low elevation valley that runs their entire length. The ecology of the Rockies also ignores political boundaries. A Grizzly in the Crown of the Continent can, in a day's travel, visit corners of Montana, British Columbia and Alberta.

Most of western North America's great rivers rise in this ecologically rich area. The Missouri, Columbia, Saskatchewan, Fraser, and Peace-Athabasca-McKenzie systems all begin in these mountains. The arid plains of Montana, Alberta and Saskatchewan depend on snowfall and glacier melt from the Rockies to feed their rivers. The Canadian Rockies are the heart of western North America.

Unfortunately, the Canadian Rockies are not managed in a way that recognizes their importance to life in North America. This must change if they are to remain healthy.

A first step is to ignore where the political boundaries have been drawn. Dr. Bruce McLellan, a biologist who has spent the last 14 summers radio collaring and studying Grizzly Bears in the Flathead Valley, explains: "The most important Grizzly Bear population for the United States is in southern Canada. Without bears in BC's Flathead and Alberta's Castle River drainages the Grizzly Bear population in Glacier National Park, Montana and the surrounding Crown of the Continent ecosystem will become genetically isolated. Genetic isolation usually results in extirpation."

Fig. 1



A glance at McLellan's map of current and historic distribution of Grizzly Bears in North America confirms his point (Figure 1). In 1922 isolated populations of Grizzly Bears were found in California, New Mexico and Colorado. They were

wiped out.* Now the only Grizzly Bears in California are found in zoos and on the California state flag.

The importance of interconnected large carnivore populations prompted World Wildlife Fund Canada to fund research into what size areas must be to ensure survival of a given species. One result was the concept of a Carnivore Conservation Area. Monte Hummel, President of World Wildlife Fund Canada, summarizes "You can't save large carnivores without protecting large wilderness. Concepts of protection of representative samples of natural regions in a system of protected areas, while important, won't do the job for the large carnivores at the top of the food chain. We must also think in terms of maintaining the ecological integrity of an area."

Not surprisingly, the only area in southern Canada so far identified as having prospects for maintaining the full complement of meat eating biodiversity is the Canadian Rockies centered around Banff, Jasper, Kootenay and Yoho National Parks. These parks, known collectively as the Four Mountain Parks, are contiguous and cover an area roughly the size of Switzerland. However, even they are not large enough to do the job.

In 1992, Alberta's Natural Resources Conservation Board (NRCB) held a hearing on whether or not to approve a massive resort and housing development proposed for the Bow Valley and the Wind Valley adjacent to Banff National Park. A number of environmental groups intervened. A coalition of the Alpine Club of Canada, the Canadian Parks and Wilderness Society (CPAWS) and the Sierra Club of Western Canada were particularly concerned about the effect on the regional ecosystem of development in the Wind Valley. Dr. Stephen Herrero, an internationally renowned Grizzly Bear biologist and one of the researchers who worked on the Carnivore Conservation Area concept, was called as an expert witness. His testimony made it clear that the large fen in the Wind Valley area was critical to the Grizzly population of Banff National Park. Fortunately the NRCB listened to his evidence and the evidence of other experts and denied permission to build a resort in the Wind Valley.

The Wind Valley case demonstrated that good information on ecology can influence decision-makers to make good decisions. It made clear that until the Canadian Rockies are managed as an entire ecosystem, their long-term ecological integrity is at risk.

How do you create a framework to manage so vast an area? Enter The Wildlands Project and Dr. Reed Noss. In what may be one of the most important conservation essays ever, "The Wildlands Project Land Conservation Strategy," Noss, who is Editor of *Conservation Biology* and Science Editor of *Wild Earth*, presents the basics of preserving and restoring ecological integrity over big areas. Says Noss, "Systems of inter-linked wilderness areas and other large nature reserves, surrounded by multiple use buffer zones managed in an ecologically intelligent manner, offer the best hope for protecting sensitive species and intact ecosystems." [See *WE* Special Issue on The Wildlands Project, 1993.]

A first step is to identify areas in a natural condition as the cores. In the Canadian Rockies potential cores are easy to identify: the vast Northern Rockies of northeast British Columbia; the Four Mountain Parks—Banff, Jasper, Kootenay and Yoho (and important provincial lands adjoining them like Kananaskis, Mt. Assiniboine and Willmore Provincial Parks); and Waterton-Glacier International Peace Park (and adjoining protected areas like the Bob Marshall Wilderness).

Next, wild corridors must be established between these areas and other similar areas, linking them to ensure genetic exchange and ways to disperse and migrate. Most of the corridors would run up the Canadian Rockies, north-south, though east-west corridors would also be important, including wild habitat links to coast ranges on the west and prairie on the east.

The size of the areas needed depends on what they contain. According to Noss "habitat quality, social behavior and other factors will determine how minimum viable population estimates translate into reserve size estimates." Citing work by Dr. Christine Schonewald-Cox, Noss says "Reserves of 10,000 to 100,000 hectares might maintain viable populations of small herbivores and omnivorous animals, but large carnivores and ungulates require reserves on the scale of 1 to 10 million hectares."

One of the findings of WWF's Carnivore Conservation Area research was that Grizzly Bear populations in Canada require 12.1 million hectares to maintain a minimum viable population size of 50, and to maintain an effective population of 1000 Grizzlies would require 242 million hectares (Alberta's provincial Grizzly population goal is 1000).** Wolverines have similar needs. Noss points out, "such immense areas could not be contained today in the heart of North America within individual reserves, but only with a regional and interregional system of inter-linked reserves, for example, the Greater Yellowstone Ecosystem linked to the Northern Continental Divide Ecosystem [also known as the Crown of the Continent] and on into the Canadian Rockies." Again, around the cores and corridors, we must establish buffer areas subject to ecologically sensitive multiple-use.

The lower 48 states and most of southern Canada are in a biodiversity crisis. Yellowstone is essentially an island of intact habitat. Its carnivore populations may well depend on establishment of a corridor connecting Yellowstone to the Canadian Rockies. The Canadian Rockies and adjacent ranges to the west are the last stronghold of large carnivores in large

*A tiny population may survive in southwest Colorado.—Ed.

** Science Editor's note: All of Alberta is only 66 million hectares. An area larger than Alberta, British Columbia, and the Yukon combined would be required to meet this goal. Apparently, Alberta's goal is an actual population of 1000 bears, equivalent to an effective population of about 250. Because individuals do not contribute equal amounts of genetic material to the next generation, the effective/actual population ratio (N_e:N) is about 0.25 in Grizzlies and many other mammals. For comparison, in the US portion of the "northern" Rockies, an effective population of 500 (=2000 bears) requires only 32 million acres, according to the best available data on population densities, as calculated by Dr. Lee Metzgar and Mike Bader.

quantities below the Yukon, Northwest Territories and Alaska. "Large carnivores have been extirpated from the Prairies, Southern Ontario and Quebec and the Maritimes," says Hummel, whose recent book (co-authored with Sherry Pettigrew), *Wild Hunters—Predators in Peril,* highlighted the sad elimination of large carnivores from most of settled Canada and their vulnerable state elsewhere.

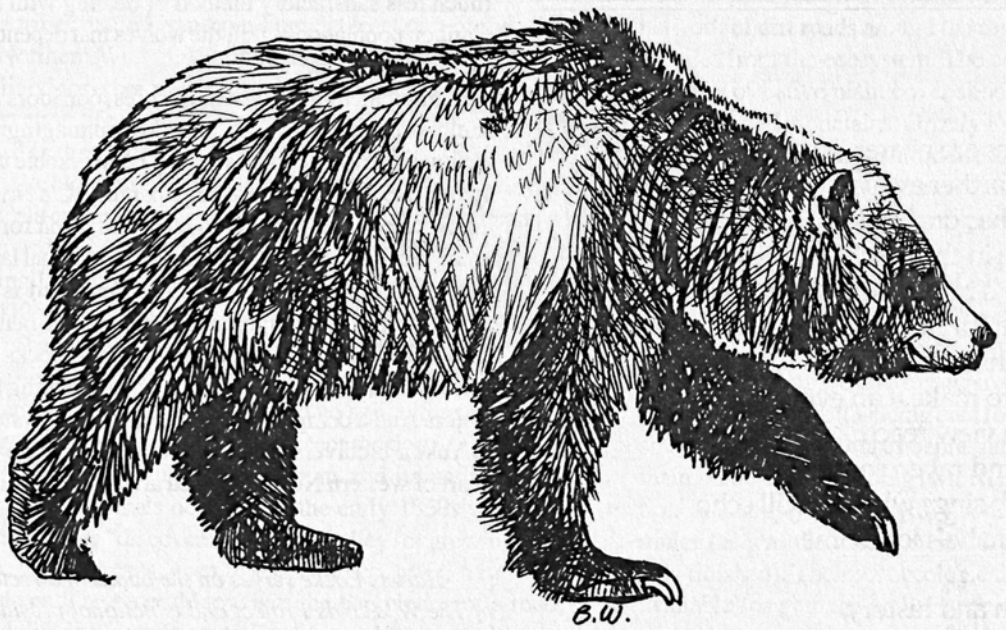
As important as designating more protected areas is ensuring that protected areas are managed explicitly for protection. Unfortunately, many Canadian parks and preserves are not properly protected. Banff National Park, for example, has seen almost half a billion dollars of development within its boundaries in the last ten years. Such destruction of the protected cores must stop.

Another important part of the North American Wilderness Recovery Strategy is to perform a "gap analysis" of other areas required for protection. Miles Scott-Brown, a biologist who is Chair of CPAWS, explains: "Gap analysis is used to determine whether you have all you need to achieve your goals. What you don't have but need is called a gap. For example, two obvious gaps in the core protected areas of the Canadian Rockies are the Akamina-Kishenena and Flathead Valleys in BC and the Castle-Crown Wilderness in Alberta which are adjacent to Waterton-Glacier. With them that protected core is big enough; without them, it is not."

Such an analysis should also be done of the Greater Yellowstone Ecosystem and the Four Mountain Parks. For the Northern Rockies, however, the task is different. Here is perhaps the biggest unprotected wilderness south of 60 degrees in North America. The area is rich in the big mammals symbolic of wild North America—Moose, Caribou, Elk, Bison, Stone Sheep, Black Bears, Gray Wolf and Wolverine. It contains over 50 contiguous drainages larger than 5000 hectares that are roadless, unlogged and unmined. This big pristine area sprawls across the Rocky Mountain Trench (the only part of that remarkable feature not roaded or submerged under a hydro reservoir) into the Omineca Cassiar Mountains on the west.

Dr. Bruce McLellan has conducted aerial surveys in the Northern Rockies. One late winter day, he saw Caribou, Stone Sheep, Elk, Bison, Mule Deer and Moose all on one hillside. Four wolves were nearby. "As far as large mammal diversity and an intact ecosystem goes, there's no place like the Northern Rockies outside Africa," says McLellan.

Wayne Sawchuk is a guide, trapper and wilderness enthusiast from Chetwynd, BC. He has a trapper's cabin in the heart of this vast area on the Gataga River, four days in by horse from Mile 442 on the Alaska Highway. His longest pack trip in the Northern Rockies was 85 days.



Ursus arctos horribilis by Brush Wolf

Sawchuk's dream is to see the entire region from the Peace River to the Liard River managed to maintain its wildlife and wilderness. The big advantage of the Northern Rockies is that a core-buffer-corridor mosaic can be put into place not as part of a wilderness recovery program, but rather as part of a wilderness maintenance program. Sawchuk's point is simple: "It's wilderness now. It should be kept that way in perpetuity. The traditional uses present in the Northern Rockies, properly managed, will ensure long term ecological and economic stability for this spectacular area."

Protection of the Northern Canadian Rockies would provide the wild anchor for the core areas in the Yellowstone to Yukon axis. The corridors required to link the cores must also be identified and protected. According to Noss and Hummel, regional corridors for large carnivores longer than 16 kilometers should be at least 1.6 kilometers wide with no bottlenecks less than half a kilometer wide. To maintain resident populations of large carnivores, corridors must be several kilometers wide. More research needs to be done on all wide-ranging species to ensure appropriate corridors of appropriate size are identified and managed to ensure genetic exchange between populations. Here, high technology comes into play.

GIS (Geographic Information Systems) technology is a powerful tool for identifying corridors. Scott-Brown explains: "GIS enables you to overlay topography, vegetation, human impacts, physical features and multi-species animal movement patterns. If supported by good data it gives biologists the tools to map the landscape to identify the critical corridors for all species."

Not all the necessary data are in hand. Already, though, a significant body of information can be put into GIS. The Canadian Parks and Wilderness Society in Canada and American Wildlands in the United States have begun work on mapping critical corridors in the Canadian Rockies on down to the Greater Yellowstone Ecosystem. Sally Ranney, President of Colorado based American Wildlands, summarizes: "To be effective in preserving biodiversity in Glacier and Yellowstone we have to ensure they are connected to each other by corridors and, just as importantly, ensure they be connected by corridors to the great gene pools further north in the Canadian Rockies. We are going to use GIS technology to establish one giant information base for the Yellowstone to Yukon area that is not restricted by political boundaries."

Such mapping is not just a scientific exercise. Its practical on-the-ground value is enormous. For example, if Caribou movement corridors between the Northern Rockies and the Jasper/Willmore area were identified and protected, the population decline in the Jasper/Willmore area could be reversed by natural exchange of animals and restrictions on incompatible land uses. A few years ago the Alberta Government proposed (but did not implement) a much less satisfactory method of dealing with low Caribou populations—kill the wolves that depend on them for survival.

Implementing a system of cores, corridors and multi-use buffers as the basis for managing the Yellowstone to Yukon axis is a big but workable task. It involves protection of a large part of BC's Northern Rockies as an enormous genetic reservoir for the entire range and protection of critical additional lands near existing protected areas. Also required is research to identify important corridors and benign uses of buffer zones. The basic building blocks are there. We simply must commit to implementing this vision. And a compelling vision it is: a Yellowstone to Yukon biodiversity strategy that will ensure the heart of western North America always beats wild.

Harvey Locke serves on the board of directors of The Wildlands Project and is national president of the Canadian Parks and Wilderness Society. He practises environmental law and lives in Calgary, Alberta.

Proximity

The common ones are nearer,
The grand ones farther away.
That's what this has on Alaska,
Look a chickadee in the tiny blazing eye,
Hear the blue jay's mastiff knock on the feeder box,
Exchange disdain for rain with the mourning dove,
That's what I do here.
Cardinal flies in to make it an even two dozen
Within my porch view reach.
In Alaska eagle and raven soar high,
The varied thrush sings where it will echo,
Otter frolics where he's lonesome
And the bear,
Brother of heaven and history,
Roams.

—Jenny McBride

A Local Wilderness Proposal, for Hyampom California

by Glenn Parton

Low elevation river valleys are excellent places to begin re-wilding Earth because these areas have been almost totally usurped by humans at great cost to wildlife (and ourselves). It is impossible to re-wild adequately any ecosystem in isolation from the remainder of nature to which it is connected, but we must start somewhere. I propose here only a few initial steps toward the ultimate goal of a wild Earth.

Hyampom, California—population 160, 9 permanent jobs—sits in a valley 3 miles by 1 mile in size, in the middle of the South Fork Trinity River de facto wilderness, with only one paved road into town (24 miles long) and the same road out.

Jedediah Smith was the first white man (on record) to enter this valley, in April 1828. He described it as "good grass in a small valley with a few Indian lodges." We now know that three tribes made Hyampom home at least part of the year—the Northern Wintun, Whilkut, and the Chimariko. The Indians lived together peacefully until they were rounded up for reservation life in 1864. The last "fresh Indian track" was reported in the *Hyampom News* on 5 September 1864.

The Northern Wintun were part of the largest tribe in northern California; they were direct kin to Stone Age humans who followed the Caribou, Musk Ox, and Mammoth across the Bering land bridge into North America between 12,000 and 40,000 years ago. One prehistoric site on South Fork Mountain is believed to be 12,000 years old. These primitive people subsisted on acorns and other nuts, roots, seeds, fish, deer, Elk, rabbits, and small game. They had no agriculture, written languages, or domestic animals—except the dog.

The first assault on Hyampom and its native peoples, plants, and animals occurred in the early 1850s when white homesteaders "discovered" a fertile valley for growing alfalfa, oats, wheat, beans, corn, horses, mules, hogs, turkeys, and chickens. The second blow was the completion of a road, in 1924, linking Hyampom to Hayfork and the rest of the modern world. The opening of the road was celebrated on July 4th. On 30 August 1924, the *Hyampom News* reported: "A new era has begun for Hyampom...an era of progress and development..." However, the report was not without mixed sentiments: "But when Hyampom was the Land of Trails, it was unique; now that it has as many motors as its neighbors it has become commonplace." The third and knock-out blow to the valley was delivered in the early 1950s by the logging companies, which logged the virgin timber on South Fork Mountain—mainly Ponderosa Pine, Douglas-fir and Sugar Pine. The logging eventually resulted in the big flood of 1964 which largely destroyed the fisheries.

Pacific Gas and Electric turned on the power in April 1953. The genuine good life in Hyampom had come to an end.

I propose that Hyampom Road be closed from Nine Mile Bridge, which is 15 miles from the valley, and likewise the network of dirt roads around the town; thereby banning automobiles from the ecosystem. The composition, structure, and function of native plant cover should be allowed to return to the valley and mountains; Grizzly Bear, Gray Wolves, Elk, and Wolverines should be re-introduced.

Local people should be offered work closing and revegetating roads, restoring gravel spawning beds, planting trees, monitoring the environment, and serving as game wardens and wilderness guides. Farming and ranching should cease, but not gardening, or highly selective logging for fuel, furniture and crafts, or fishing and hunting when deer, Elk, salmon and Steelhead populations are thriving again. The private airport should be reduced to a small landing area for emergency use (for now) so that elderly people are not pressured by fear to relocate. The main commercial building (which is now a bar) should function as a supply-house, with goods packed in by horses and mules (as was the case a mere 70 years ago, before the road was finished). The most ecologically efficient methods now available for garbage and sewage disposal should be implemented.

Let Hyampom become again a biotic community run by muscle power, where people get lost once in awhile, where a

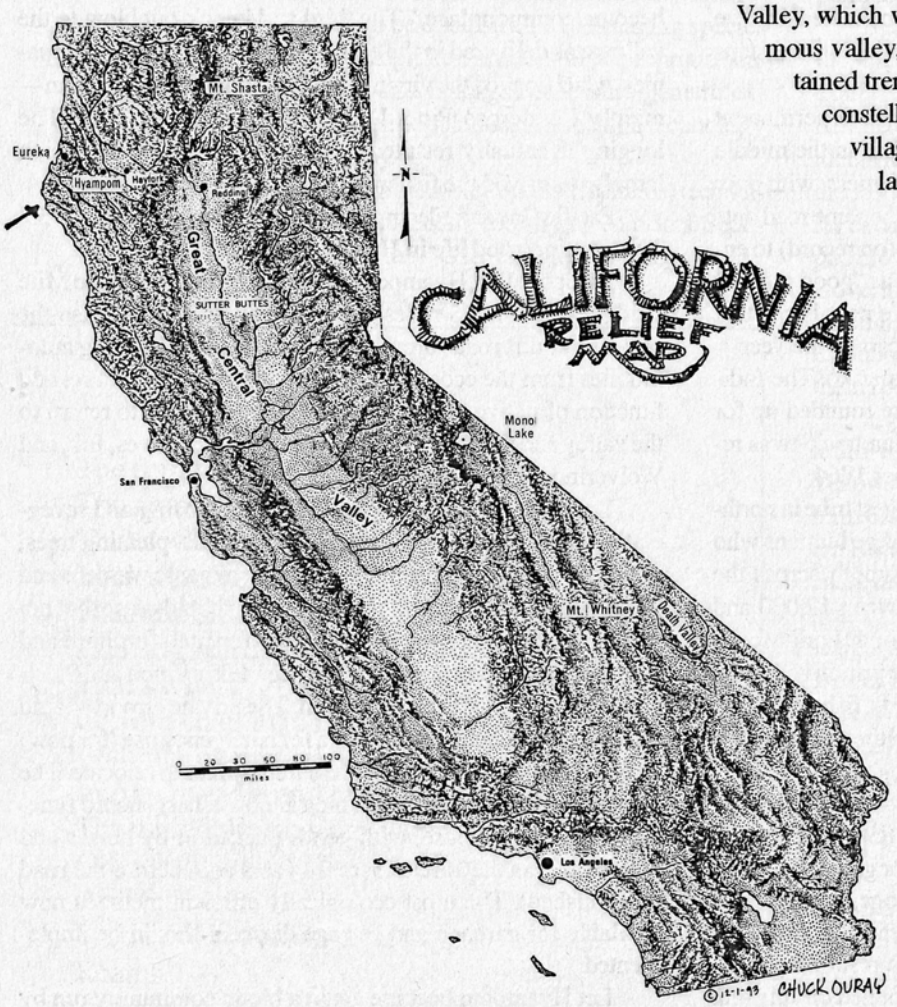
beautiful ice-cold spring serves as a refrigerator, where one can catch large Rainbow Trout for breakfast, where people bake on an outdoor stone oven and sleep outside under the apple trees during summer, where diverse vegetables and fruits are raised, and where there are plenty of wild choke-cherries, plums, hazel nuts, and wild flowers: Redbuds, Fire Weed, Fiddle Neck, Johnny Jump Ups, Fire Crackers, Tiger Lilies, Purple Orchids, ferns, lady slippers, Elephant Ears.

If the timber-dependent valley-town of Hayfork—population 2000 and declining, 24 miles by road from Hyampom—would follow a similar wilding process, then a grand potential for human life immersed in ancient rhythms would unfold. Hayfork Valley—midway between the Pacific Ocean and the Sacramento Valley—is the largest valley in Trinity County. It is roughly 10 miles by 3 miles in size, which is enough land to support big herds of Elk and Mule Deer and resident families of predatory mammals (after the removal of many human structures and linkage to populations reintroduced to the north), as well as a small research and teaching facility for improving human life in a wild home and mountain range.

Unlike Hyampom, whose ruination occurred in stages, Hayfork underwent a fast and furious onslaught. In the 1850s, several hundred miners invaded the side-canyons and streams; farmers and ranchers transformed the lush meadows and rolling oak hills; a dairy, flour mill, saw mill, general merchandise store and grocery store were built, and a wagon road to Weaverville was carved through the mountains for taking products to market. In short, European civilization was transplanted into Hayfork in about 10 years; and now, 134 years later, the result is ecological ill-health, unemployment, poverty, boredom, and frustration.

Real wealth dwells beneath Europeanization of this land, in the resurgence of wilderness, but many local people still support entrenched industrial economic activities which are responsible for their present misery, as well as the suffering and death of wild animals. Among humans, only aboriginal Indians have successfully inhabited Hayfork Valley, with its head-high grasses, crystal clear waters, and abundant game and waterfowl. They went to Happy Valley (half way to Hyampom) for manzanita berries, and to the South Fork River (all the way to Hyampom) to fish.

During winter, many Wintuns returned to the Sacramento Valley, which was also part of their homeland. This enormous valley, about 500 miles by 40 miles in size, contained tremendous wildlife spectacles together with a constellation of Indian villages—50 or so people per village settlement—until it was devastated by malaria in 1833 (thanks to European intrusion). In *Cadillac Desert*, Marc Reisner describes California's Central Valley as the "Serenghetti of North America." Healing ourselves and biodiversity on this scale will take the better part of the 21st century, but the entire next millennium is for the sake of all wild lives.



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Key Words of Conservation and Environmental Discourse

by Mark Meisner

There is a growing recognition within the environmental/conservation movement of the importance of language. Critical environmental thinkers have begun to realize the limitations of existing vocabularies and ways of speaking for articulating the practical and philosophical dimensions of a non-anthropocentric and non-resourcist sensibility of Nature. In other words, the language does not seem to be keeping up with the changes in attitudes, values, beliefs, and ways of conceptualizing Nature that are emerging in such areas as deep ecology and ecofeminism. This means that those of us who advocate for wild Nature are forced to continue using the language of the dominant Western industrial view of Nature. Often, we do this uncritically, without even being aware of the contradictions implied in our word choices. I would liken environmentalist's present situation to that of feminists using sexist language.

As a new view or sense of Nature emerges, so too should a language that faithfully articulates and evokes it. Until then, old concepts and old words will be needed for the transitional discourse and dance of change. I want, then, to explore here some of the potential problems associated with some widely-used words of conservation/environmental discourse. As well, I will advocate a critical and self-reflective awareness of the language being used by Nature advocates.

Language does not seem to be keeping up with the changes in attitudes, values, beliefs, and ways of conceptualizing Nature that are emerging...

In his book *Keywords*, Raymond Williams discusses what he sees as the key words "of the practices and institutions which we group as *culture* and *society*." Each of these words became significant to him "because the problems of its meanings seemed to [be] inextricably bound up with the problems it was being used to discuss." He defines keywords thus: "they are significant binding words in certain activities and their interpretation; they are significant, indicative words in certain forms of thought."[1] A number of the words Williams considers are relevant to environmental discourse, including "ecology," and "nature." However, it is Williams' observations about the characteristics of keywords that are most important here, since they suggest why the words I am about to discuss are so important.

Peggy Rosenthal's book *Words and Values* is a detailed, multi-dimensional look at several clusters of "leading"—that is normative, positive, appealing—words related to the ideology of humanism. The groups of words she looks at are self-feelings-inner, growth-development-evolve-fulfillment-potential, relative-opinion-consensus, and relationship-whole-system-community-environment, all of which are important for those concerned with transforming human relationships with non-human Nature.[2] Rosenthal's essays are excellent biographies of the lives of these and related words.

Dolores LaChapelle's *Sacred Land, Sacred Sex* contains an extensive glossary of both familiar and relatively obscure terms related to deep ecology and neo-pagan spirituality. She seeks to reclaim language and offers brief old and/or new definitions and evocations of many words.[3]

Finally, I have found John Button's *A Dictionary of Green Ideas* to be the most useful of the environment dictionaries. His entries show more awareness of the philosophical dimensions of environmentalism than the others I have seen.[4]

Drawing on these and other diverse sources, I present here a brief critical glossary of what I see as some of the keywords of environmental/conservation discourse.[5] The notes on these words are of course incomplete, but should serve the essential purpose of suggesting why we ought to pay close attention to how these words are used. Paralleling Williams, I feel these are words whose meanings form part of the problem of the anthropocentric-resourcist view of Nature, and yet these words are central to and perhaps even necessary (at least for now) for the discourse of change now going on. I do not attempt closure with these words, since to do so would falsify the reality of their ambiguities and contradictions.

CONSERVATION, CONSERVE, etc. [noun, verb]

"Conservation," along with "preservation," has been used in loose and sometimes contradictory ways by those calling for some sort of action to promote the continuation of some aspect of the natural world. Not only are there no agreed-upon conventions for what these words mean, there is also no neutral word to encompass the concepts of "conservation," "preservation," "protection," "saving," and so on.

While definitely a step up from unrestrained exploitation of Nature, the concept of conservation is often associated with a resourcist view. "Preservation" tends to have fewer resourcist connotations, but still retains elements of this view.

According to John Button, "'conservation' is a difficult idea to pin down because it has been used as the foundation for many conflicting views on resource use; like GREEN it has political and commercial appeal, and its use needs careful monitoring."[6] Indeed, "conservation" sounds well intentioned, but that may conceal exploitive agendas. For example, the *World Conservation Strategy* and *Our Common Future*, which advocate global conservation, have turned out to be simply plans for the technical and economic rationalization and domestication of Nature. They are anthropocentric-resourcist documents which pretend to be about protecting Nature.

"Conservation" implies a concern with wise use and utility. Implicit in the word is an understanding of the world as a collection of resources. Warwick Fox suggests that conservation derives its meaning from its etymological roots, namely "con," meaning together or with, and "serve," meaning a slave. Thus for Fox "conservation" means the wise enslavement of aspects of Nature.[7] John Livingston puts it a little more gently: "Very generally, by convention, 'conservation' has meant the care of 'natural resources' and their protection from depletion, waste, and damage, so that they will be readily at hand through perpetuity."[8] Livingston feels that "conservation" is an easily coopted word. Furthermore, many people use "conservation," "preservation," and "protection" interchangeably, thus blurring the distinctions between them.

"Conservation" also covers the thoroughly sensible idea of using as little of a "resource" as is required to meet a particular need. Even an ecocentrist would agree that it is good to conserve water by using less of it when we shower, for example. The risk again is in perceiving those things to be conserved simply as resources, and the use of "conservation" as an all encompassing goal encourages such a view. As Livingston says, it is the application of the term to all of wild Nature that is so troublesome.

Thus, when speaking about what humans should do for Nature, "conservation" should always be clearly defined, and accompanied by such other related norms as preservation, protection, healing, and letting be, although there seems to be a gap in the vocabulary here.

PRESERVATION, PRESERVE, etc. [noun, verb]

Quite often "preservation" and "conservation" are used synonymously. Like "conservation," "preservation" is a loosely and contradictorily used word. Often thought to mean not using aspects of Nature at all, the term turns out to be somewhat less altruistic.

For many people, especially those whose business it is to exploit "resources," preservation has the negative connotation of locking Nature away from human use. As John Livingston says, for them, "preservation smells of reaction, retrogression, primitivism, and worse."[9] However, in reality many "preserved" areas are actually suffering degradation from ever-increasing amounts of so-called non-consumptive uses such as tourism. They are not usually being materially converted into human artifacts, but they are being degraded nonetheless.

Thus, "preservation" is now recognized as a resourcist term, although less so than "conservation." According to Warwick Fox, the etymology of "preserve" suggests that it "carries the sense of 'before slavery,' which in turn carries the suggestion of preventing something from becoming a slave."[10] For him, preservation means keeping those aspects of Nature intact so that humans may benefit from them in that state.

Like the conservation of those aspects of Nature we must use, the preservation of aspects of Nature (presumably those we use in non-transformative ways) is a laudable goal. However, given the recognition that it too is ultimately resourcist, it also should be recognized as inadequate on its own. Conservation and preservation are not enough to the ecocentrist; there must also be healing and letting be.

So, although "preservation" may have positive connotations for Nature advocates, it is not necessarily the solution, since resourcism is still implied in the word. However, it may be a useful word, since it is recognizable and can be used to specify the protection of Nature from material conversion. It also seems less likely to be coopted than "conservation."

PROTECTION, PROTECT, etc. [noun, verb]

"Protect" and its derivatives are used in the same ways as "preserve" and "conserve" and their derivatives too suggest the idea of acting to see that at least certain facets of Nature do not entirely succumb to rampant exploitation by humans. It is also used to mean defending Nature. The essential problems with this word are its ambiguous meaning, and divergent connotations.

What "protecting" an aspect of Nature means is unclear, perhaps even less clear than what "conserving" and "preserving" mean. One would think that it is supposed to mean preventing any human use of, and impact on those facets of Nature. In that sense the word has a negative "locked up resources" connotation for would-be users. For those who advocate such protection, the word's connotations are more favourable.

Thus there is ambiguity as to whether this word is a metaphorical or literal expression. Is Nature literally under attack from humans, and therefore in need of protection, or is It only metaphorically being attacked in that humans are using too many of Its "resources," and polluting It too much?

ECOLOGY [noun]

The word "ecology" derives from *oecologie*, a word coined by Ernst Haeckel in 1866. It was derived from the Greek roots *oikos* and *logos*, together meaning the study of the household. Haeckel intended the word to mean "the science of the relations of living organisms to the external world, their habitat, customs, energies, parasites, etc."[11] Since then, its meanings have grown to cover three essential areas: 1. ecology as way of knowing; 2. ecology as environment or Nature; and 3. ecology as metaphor, paradigm or worldview. Of concern are both the contradictory meanings associated with the word, and the ambiguous and muddled uses of it.

According to Donald Worster, whose book *Nature's Economy* is all about this, ecology as a way of knowing was first the study of "the economy of nature" and has since become even more of a cybernetic economistic science. However, in parallel, but in contrast to this "imperial" ecology was an "arcadian" tradition which approached the study of Nature from a romantic, sympathetic, non-utilitarian and holistic perspective. As a way of knowing Nature, this might be considered "natural history."

Neil Evernden points out that although these two ecologies are in fundamental tension, this has not stopped the environmental movement from conflating them by revering the holistic ecology while using the scientific ecology to legitimize the movement's claims.[12] Furthermore, Evernden argues that neither of these two ecologies, nor any of the variations on them, can reveal the truth about Nature, since all "ecological knowledge" is a social construction of Nature.[13] However, as he also says, because of the perception that "Nature knows best, and ecology knows nature," ecology has come to be a normative concept.[14]

This brings us to the related view that sees ecology as a metaphor or worldview. Ecology in this sense is a holistic view of all Nature as a web of interdependent relationships. Thus we have "the ecological view," the "age of ecology," and the "ecological paradigm." For example, consider Andrew McLaughlin's description:

The emerging ecological model involves a fundamental change in metaphor, denying the metaphor of nature as composed of discrete atoms in external relations with each other, and imaging nature as an integrated system, in which each part is only what it is in virtue of its relation to the whole(s) of which it is a part.[15]

The fact that "ecology" is becoming a paradigm is problematic because, as Evernden and others have shown, what ecology "tells us" is not revealed truth, and as McLaughlin says, it remains a conceptual abstraction. According to Evernden, what seems to be happening here is that the ecological paradigm is just another case of using Nature to legitimize and justify culture, albeit in this case it is meant to suggest an 'environment-friendly' culture.

Compounding these essential differences in the meanings of "ecology" is the fact that the word itself is often used loosely and ambiguously, making it unclear which idea of ecology is being presented. It remains an open question whether these differences of meaning and usage can be resolved. This is an important word in the discourse, and not one that is likely to be given up by any of the parties.

ENVIRONMENT [noun]

In the past two decades, the word "environment" has become the euphemism of choice for those who have forgotten about "Nature." "Environment" and its derivatives are probably the most widely used of the keywords discussed here, and yet the term is unexpressive, vague and problematic. As John Button says, "environment" is a "much used, much abused word, almost impossible to define."[16] Or, in the words of Stan Rowe:

Of all the words commonly used in discussions of ecological integrity and deterioration, "environment" is surely the vaguest. That it stands for something important is attested by the many agencies and departments of government that busy themselves with managing its parts and by the army of environmentalists eager to defend them.[17]

Rowe also suggests that "environment" is a weak word that simply reflects back to hu-

mans their preoccupation with themselves.

Typically, "environment" means the human environment, however defined. This immediately makes it an anthropocentric concept, since it implies that "environment" is that which surrounds humans. It is also dualistic in that it implies a separation of humans from "the environment"; "environment" is that which is external to humans. And furthermore, it is a reification of Nature; it suggests that Nature is a static thing.

Neil Evernden sums this up in the closing paragraphs of *The Natural Alien*:

If the environmentalist is only concerned about a thing—environment—then that concern is easily resolved, either by safeguarding and repairing that thing, or by showing that it is of no consequence. But environmentalism, in the deepest sense, is not about environment. It is not about things but relationships, not about beings but Being, not about world but the inseparability of self and circumstance. In talking about the mountain the environmentalist seems to be defending a physical entity. But implicitly and emotionally he or she protests the categorization of 'mountain' —protests the isolation of portions of the world as things to defend or consume. The environmentalist resists the circumstance that makes it necessary to talk about 'environment' at all, and the first effective action he or she may take is to refuse all association with the term and its derivatives.[18]

ENVIRONMENTAL [adjective]

As a derivative of "environment," "environmental" is burdened by the same problems, along with its own ambiguities. "Environmental" is used in much the same ways as "ecological" to suggest either 1. having to do with Nature (i.e. the environment), as in "environmental protection"; 2. having to do with human/nonhuman Nature relations, as in "environmental policy"; and 3. being "green," environment-friendly, good for Nature and so on, as in "environmental action."

NATURE [noun]

"**Nature** is perhaps the most complex word in the language," according to Raymound Williams.[19] Too true, and not surprising. The new *Oxford English Dictionary* entry on "nature" is over two and a half pages long, and including its derivatives spans roughly eleven pages. Arthur Lovejoy described "nature" as a "verbal jack of all trades" and noted dozens of meanings for the word.[20] Acknowledging these complexities, I will stick here to several features of "nature" that are most relevant to this discussion.

To begin with, what "nature" means to us is a human construction. As Andrée Collard nicely sums it up, "it is clear that the word 'nature' does not so much define what we see but how we see."[21] Definitions of "nature" are therefore arbitrary.

Second, in this culture, "nature" has become a reified concept. "Nature" is typically seen as the material world, not as a process of events. According to Williams, it began as a description of a quality or process and later became an independent noun.[22] Collard thinks "it is likely that, in its origin, 'nature' was not a word in our sense but a statement expressing an experience of the external world."[23]

Third, "nature" is more often than not used to mean everything else besides humans and their creations. This, of course, is dualistic. To rectify this, it is now said that humans are "part of" or "in" Nature, although that too has its problems since it implies that therefore all human constructs and artifacts are of Nature (= natural), making it difficult for people to argue against certain of those cultural products.

And finally, the word "nature" carries a substantial amount of connotative baggage. For example, Stan Rowe describes some of this as being "nature red in tooth and claw," "nature as capricious and bitchy," and "nature as heathen,"[24] but there are also the more positive connotations associated with the Romantic tradition.

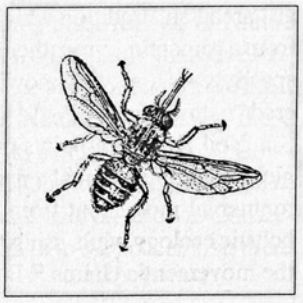
This is an entirely problematic word and yet it is central to environmental discourse and ecophilosophy. We need a word that allows us to talk about the difference between human artifacts and constructs and the living world, and we also need a word to express the fact that humans are an aspect of that living world, despite their seeming desire to either eliminate or domesticate It. Ideally, we would not need such a concept, but practically, we cannot do without it at the present. Certainly, in the short term, the word needs reclaiming, redefining, and reinvigorating.

NATURAL [adjective]

We use "natural" to mean many different things. "Natural" is the ultimate essentially contested concept; its meaning is a matter of ideology. Furthermore, "natural" has generally very positive connotations; it almost always says "this is good" or "this is right." But paradoxically, the natural world seems largely an object of indifference in this society. In environmental discourse, the term usually means of nature, but since that concept is also so problematic, "natural" carries over its difficulties.

LAND, LANDSCAPE [noun]

"Land" evokes widely divergent connotations and beliefs. These range from the view that all land is sacred and that it is absurd to think humans can own It, to the view that land is simply real estate. Somewhere in the middle is the common modern tendency to indifference towards land, which may be the most dangerous attitude of all.



I cannot provide a definition

in words that adequately conveys what the land is. The *Collins English Dictionary* says it is the "solid part of the surface of the earth," but even that is a deception, for land, water, air and living beings are all of each other; these "elements" are always partaking of each of the others.

Connotatively, "land"'s meaning depends on attitudes to Nature. To put it another way, one belongs to The Land, or they own this or that land (resourcism), or for them land is just there, the backdrop to more important things. In the first case, one cares for and respects The Land. In the second, one may care for it, provided that to do so is economically appropriate. Otherwise, the land-as-property view can lead to absolute exploitation. In the third case, ignorance and indifference may lead to neglect, degradation, and poisoning of the land.

In this society, the latter two meanings prevail. As Tom Jay points out, "land's meaning for us is *owned topography.* The idea of property is the word's context."[25] For those who cannot or do not aspire to "own" land, it is just there. For some, it is a dumping place, a place to dispose of the unwanted products of this society. This land is a reified, separated commodity.

For those wishing to advocate an ecocentric sensibility, the idea of The Land is fundamental—literally and metaphorically—and powerfully evocative, although difficult to express. Hiking in the mountains or through a forest, one's life may be put into perspective by the sheer power of The Land's presence. This Land is the tangible and transcending ground of experience; this Land is us.

"Landscape" is scenery, and a word whose original usage was to describe a type of painting. Thus, a landscape is a visual resource. "Transformed to a thing and remote from personal involvement, landscape becomes objectified and consumable."[26] This is not to deny the possibility that we may perceive and experience beauty in all of Nature; the difficulty is that beauty is culturally constructed.

Both "land" and "landscape" have become resourcist terms; the dominant assumptions underlying them are strictly utilitarian. However, they are necessary terms in the discourse of change; they are needed to evoke the respect and caring that must characterize an ecocentric approach. It is through personal and not commercial experience of The Land that those positive meanings will come to predominate. What land means to people depends on their experience of that to which it points.

SYSTEM [noun]

In recent attempts to express a non-reductionistic, non-mechanistic view, the idea that Nature is a "system," or a system of "ecosystems," has been put forth in the hope that it will convey a more holistic and relational view. The idea of a system is meant to express the interrelatedness of various elements which together constitute a whole.[27]

The essential contradiction in this word is that it comes from a domain that is ultimately reductionistic, mechanistic, quantitative and abstracted from living reality: cybernetics and general systems theory, whose inception was motivated by wartime demands, and whose concerns were technological.[28] What makes the word troublesome is its association with these domains, and—along with terms such as "interrelated," "complex," "network," and "information"—its increasing linguistic dominance over other descriptions of Nature. This is most evident in scientific ecology, itself so problematic. As Donald Worster says, "a more sophisticated and enduring form of mechanism is that which explains all nature as a system of matter in motion, entirely subject to the laws of physics and chemistry."[29]

It may seem literal to say that Nature *is* a "system," but that is a result of the word having become so much a part of everyday discourse, and in so doing becoming a vague, albeit sophisticated and positive sounding abstraction. Whereas a system may be practically analyzed and described, Nature cannot. Nature is much more than a system.

Furthermore, contained in the idea of a "system" is the idea of control. So, if we see Nature as a system, we are not far from seeing ourselves (humans) as the controllers, thus legitimating further "management" of Nature.[30]

WILDERNESS [noun]

Being somewhat like "nature" in its multi-faceted character, "wilderness" is both a problematic and necessary word at this time. It is problematic because of its ambiguities, divergent connotations, and dualistic and reifying implications.

To begin with, what exactly the word refers to is uncertain, since definitions of wilderness inevitably involve arbitrary criteria. For example, wilderness is typically considered an area of land where humans only visit, and which they have not greatly altered from its "natural state," whatever that is. This, however, does not set anything more than a vague definition on the concept. How much impact would humans have to make for an area to no longer be considered a wilderness? If any human effect on a place precludes it from being considered a wilderness, then there is no place on Earth worthy of the label, since we now know, for example, that chemicals such as DDT are found in the flesh of beings everywhere. We can get the drift of such a definition of wilderness, but it will always be a relative term. Just as we do not know what Nature is, we do not know what wilderness is, other than our specific experience of it.

In *Wilderness and the American Mind* Roderick Nash suggests that the idea of wild beings and wild places (wilderness) was a consequence of the advent of herding and agriculture about 15,000 years ago. According to him, prior to that there was no dualism between humans and Nature. However, with domestication a distinction between the wild and the tame was made, so as he says: "civilization created wilderness."[31] The

word "wilderness" is thus suggestive of a separation of humans from Nature; it is dualistic in that it posits wilderness as that which is unaltered by humans. Yet, prior to the arrival of Europeans on Turtle Island, millions of humans lived here as part of what we would consider a wilderness, and they did not have a concept of wilderness as such.

In addition to these denotative problems, the values that adhere to the word "wilderness" are also unclear, and range across the spectrum from fear and animosity to love and admiration. Alan Drengson sums this up:

The concept of wilderness for humans has both positive and negative connotations, for sometimes "wilderness" stands for a state of being uncivilized, lost, untamed, wild, unlearned, & uncontrollable, and so it is feared, for this wilderness as raw nature also exists within us as part of our biological and historical heritage. In addition, it stands outside of us as something totally and wholly Other than the human built. Wilderness has stood for the dialectical opposite of everything that civilization and artificiality represent. And yet there is another view of wilderness which sees it as a healing place, as the place of sacred groves, as a land with a will of its own.[32]

For the most part, in this society the word's connotations move people to want to "develop" (i.e., kill) wild places, but that may be changing as attitudes change.

Furthermore, "wilderness" comes across as a thing, rather than a process. As with so many of our words for talking about Nature, it is a reification. We might be better to speak of the quality of "wildness," seeing it as a matter of degree, than trying to delimit the wilderness.[33]

Even though it may be dualistic and have negative connotations for many, we need the word "wilderness" to identify what is of immediate concern: those aspects of Nature that have not been significantly humanized. In the long run, we may be able to do away with the word, preferring to see wildness as a flowing and positive quality in ourselves and in non-human Nature. Perhaps even more than that, we could recognize "wilderness," as Jay Vest has discovered, as meaning will-of-the-land.[34]

WILD [adjective, noun]

"Wild" is a norm for those who advocate for Nature, and an obstacle to civilization for those who fear Nature. It may be an adjective describing a state of being, as in "wild forests," or less often it may be a thing, as in "the wild." The condition of being wild, at least for non-human Nature, is what Nature advocates want to see more of; it is what Nature is. Wildness is antithetical to domestication, wild to tame.

For others, however, "wild" means uncivilized and uncontrollable and is an undesirable quality. Because of this, the world has become pejorated.

One of the other problems with this word is that it suggests an absolute. Thus, in this view, for something to be "wild," it must not have been affected by human activity. Not only is this now impossible given the pervasiveness of chemical pollution, but it is also dualistic, since it implies that mere human presence makes wildness disappear.

Defining what is "wild" is akin to defining what is "natural"; both present great difficulties and potential pitfalls. It might therefore be more useful to think of wild as being a matter of degree: think in terms of relative wildness.

These are but a few of the most important words in the conservation environmental discourse. My interpretations and criticisms of them have been speculative. I have spoken from the position of one who advocates an ecocentric and experiential sense of Nature, and have suggested that existing words may be contradictory to this position. Undoubtedly some readers will disagree with my comments, and I would hope to hear their voices. A careful dialogue about the meanings of our words can only help make our advocacy more effective.

NOTES

1) Raymond Williams, *Keywords: A Vocabulary of Culture and Society* 2d. ed. London: Fontana Paperbacks, 1983, p.15.

2) Peggy Rosenthal, *Words and Values: Some Leading Words and Where They Lead Us*. Oxford: Oxford University Press, 1984.

3) Dolores LaChapelle, *Sacred Land, Sacred Sex, Rapture of the Deep*. Silverton: Finn Hill Arts, 1988.

4) John Button, *A Dictionary of Green Ideas*. London: Routledge, 1988.

5) I have not included terms specific to the sub-discourses. For example, "self" is a keyword for deep ecology, but not really in the overall discourse, although perhaps it should be. On this word see Rosenthal; and Jacqueline Pearce, "Three Visions of an Ecological Self," *Undercurrents* 2, 1990, pp.28-34.

6) Button, p.94.

7) Warwick Fox, *Toward A Transpersonal Ecology: Developing New Foundations for Environmentalism*. Boston: Shambhala, 1990, p.155.

8) John A. Livingston, *The Fallacy of Wildlife Conservation*. Toronto: McCLelland and Stewart Limited, 1981, p.15. This book is the paradigmatic account of the failure of "conservation."

9) Livingston, p.16.

10) Fox, p.155.

11) Donald Worster, *Nature's Economy: A History of Ecological Ideas*. Cambridge: Cambridge University Press, 1985 (1977), p.192. This book is the best reference to ecology's meanings and history.

12) Neil Evernden, *The Natural Alien: Humankind and Environment*. Toronto: University of Toronto Press, 1985, pp.5-6.

13) Neil Evernden, "Constructing the Natural: The Darker Side of the Environmental Movement," *The North American Review* 270:1, March 1985, pp.15-19. See also Elizabeth Ann R. Bird, "The Social Construction of Nature: Theoretical Approaches to the History of Environmental Problems," *Environmental Review* 11, Winter 1987, pp.255-264; and Neil Evernden, *The Social Creation of Nature*. Baltimore: Johns Hopkins, 1992.

14) Evernden, "Constructing," p.16.

15) Andrew McLaughlin, "Images and Ethics of Nature," *Environmental Ethics* 7:4, Winter 1985, p.311.

16) Button, p.155. See also Rosenthal, pp.235-243 on "environment."

17) J. Stan Rowe, "What on Earth is Environment?" *The Trumpeter* 6:4, Fall 1989, p.123.

18) Evernden, *Natural Alien*, p.142.

19) Williams, p.219. The entry on "nature" is quite helpful. See also the illuminating paper by Williams, "Ideas of Nature," in *Ecology: The Shaping Enquiry*, ed. Jonathan Benthall, pp.146-164, London: Longman, 1972.

20) Arthur O. Lovejoy, *Essays in the History of Ideas*. New York: Braziller, 1955, p.69.

21) Andrée Collard with Joyce Contrucci, *Rape of the Wild: Man's Violence Against Women and the Earth*. London: The Women's Press, 1988, p.4. See also Evernden, *The Social Creation of Nature* for extensive analysis of "nature" and its derivatives.

22) Williams, *Keywords*, p.219.

23) Collard, p.6.

24) J. Stan Rowe, "The New Nature," in *Home Place: Essays on Ecology*. Edmonton: NeWest Publishers, 1990, pp.151-155. See also Evernden, Social Creation of Nature for extensive analysis of nature and its derivatives.

25) Tom Jay, "Land, Earth, Soil, Dirt: Some Notes from the Ground," in *Sacred Land, Sacred Sex, Rapture of the Deep* by Dolores LaChapelle, Silverton: Finn Hill Arts, 1988, p.316.

26) Neil Evernden, "The Ambiguous Landscape," *The Geographical*

Review 71:2, April 1981, p.155.

27) Thus, problems with "system" are related to the question of what is holism. See, for example, Morris Berman, "The Cybernetic Dream of the Twenty-First Century," *Journal of Humanistic Psychology* 26:2, Spring 1986, pp.24-51. Berman identifies at least two types of holism: "one, a sensual, situational, living approach to process...the other, an abstract form, a type of "process mechanism," which...really represents the last phase of classical science, not the beginning of a new paradigm at all"(p.41).

28) Rosenthal, p.199. Rosenthal's is an exceptional "must read" account of the nuances and attractions of "system" and its linguistic conspirators "whole," "relation," "community" and "environment," among others.

29) Worster, p.379.

30) On this trend see Berman; John A. Livingston, "Moral Concern and the Ecosphere," *Alternatives* 12:2, Winter 1985, pp.3-9; John A. Livingston, "Some Reflections on Integrated Wildlife and Forest Management," *The Trumpeter* 3:3, Summer 86, pp.24-29; and John A. Livingston, "Review of Norman Myers' *Gaia: An Atlas of Planet Management*," *Cartographica* 22:4, Winter 1985, pp.92-93.

31) Roderick Nash, *Wilderness and the American Mind*, 3rd ed. New Haven: Yale University Press, 1982, p.xiii. For another interesting discussion of wild and tame see Morris Berman, *Coming to Our Senses: Body and Spirit in the Hidden History of the West*. New York: Simon and Schuster, 1989, ch.2. Also see the work of Paul Shepard, for example, *Nature and Madness*. San Francisco: Sierra Club Books, 1982; and Max Oelschlaeger, *The Idea of Wilderness: From Prehistory to the Age of Ecology*. New Haven: Yale University Press, 1991.

32) Alan R. Drengson, "Introduction to the Wilderness Series," *The Trumpeter* 3:1, Winter 1986, p.1.

33) "Wildness" too has the same sorts of negative connotations. However, the fact that it has become pejorated need not prevent attempts to right its image.

34) Jay Hansford C. Vest, "Will-of-the-Land: Wilderness Among Primal Indo-Europeans," *The Trumpeter* 3:1, Winter 1986, pp.4-8. Another excellent piece on "wilderness" is Michael P. Cohen, "The ProblemS of Post Modern Wilderness," *Wild Earth* 1:3, Fall 1991, pp.72-73.

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Let's Eat Stars

Believe me, children!

By the name of God
Sky is made for airplanes.
Coral reef for tourists.
Farm for agrichemicals.
River for dams.
Forest for golf courses.
Mountain for skiing grounds.
Wild animal for zoos.
Car for traffic tragedies.
Nuclear power for ghost dance.
Man for dancing robot.

Don't worry children!
The well is never dried up.

Look: at the evening glow!
Sunflowers in the garden.
Red dragonflies in the air.
Somebody starts singing——

"Let's eat stars"

—Nanao Sakaki
Autumn 1988
Mt. Daisetsu, Japan

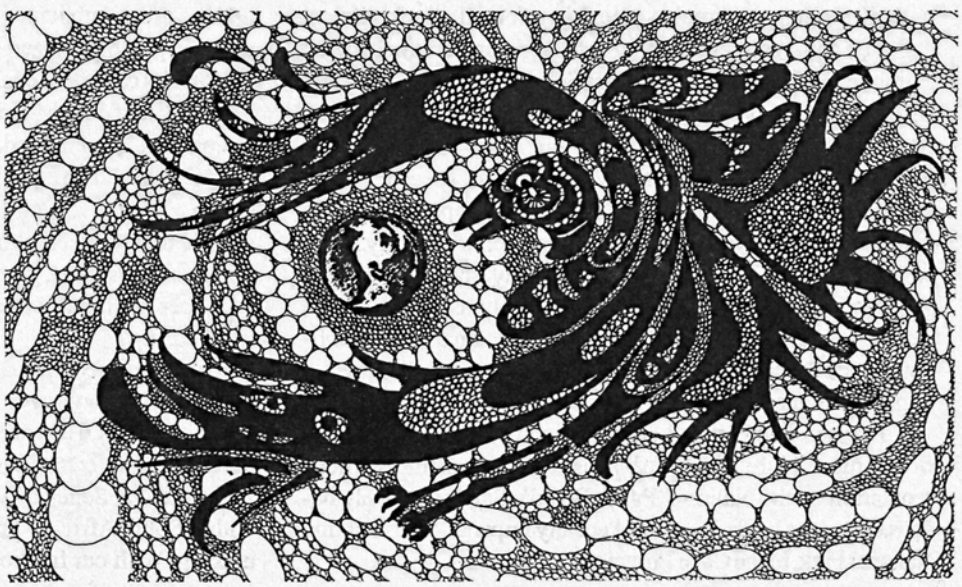
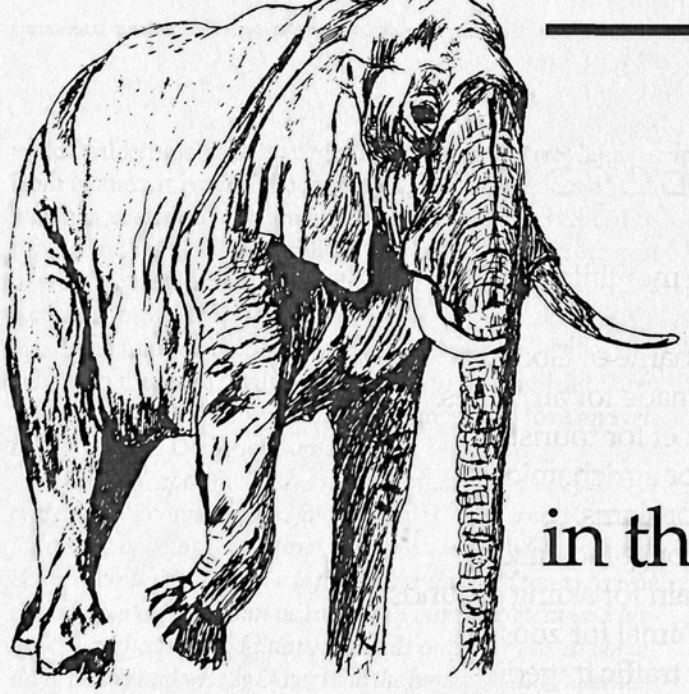


illustration by Jim Nollman



The Future of Biodiversity in the New South Africa

by David Finkelstein

My recent visit to South Africa started inauspiciously. Just before departure, the new editor of an American wildlife magazine, which had agreed to run a story of mine on the subject, belatedly determined that it was not politically correct to publish articles on South Africa. "Our editor-in-chief has decided," wrote an associate now forced to retract the magazine's previous commitment, "that our publication will not cover the country in any way for the foreseeable future."

This sanctimonious ban on South African subjects by a white editor was curious, for the few prominent Afro-Americans in New York with whom I discussed the project readily gave their blessings to it. Among these was Bill Tatum, publisher of *The Amsterdam News,* who urged me to go, and in the interests of the "new South Africa" to report the untold wonders and resources of that great country (a paraphrase of Tatum's words), which he himself had recently visited.

And at an African National Congress solidarity conference held in Johannesburg a few weeks later, Zambia's Kenneth Kaunda, presumably speaking for all black Africa, exhorted anti-apartheid supporters to begin preparations for the lifting of economic sanctions, lest South Africa's new leaders be penalized for the sins of their predecessors.

One observer sympathetic to the ANC explained why Kaunda had found it necessary to make such a speech: "However commendable it's been in the past, anti-apartheid activism has developed into a multi-million dollar industry. With so many vested interests involved, it may not be so easy to stop it, and that could cost South Africa dearly, as it did Namibia several years ago." More recently, of course, in a much-publicized speech, Nelson Mandela himself exhorted the international community to lift its previous sanctions.

I visited two national parks during my stay in South Africa: Kruger, in the Transvaal, a vast wildlife sanctuary whose reputation as the National Parks Board's flagship is richly deserved; and the lesser known but equally important Tsitsikamma National Park, in the Cape Province.

Set amidst some of South Africa's most awesome scenery—vertical cliffs plunging into a tumultuous sea, whose waves pound ceaselessly against the rocky shore—Tsitsikamma has the distinction of being the first marine national park established on the African continent. The adjacent coastal preserve encompasses a botanical region found nowhere else but on the Cape, the fynbos, which boasts a greater diversity of flora than any other coastal vegetation type on Earth. To put the terrestrial portion of this small park into perspective, more plant species grow within its confines than in all of Europe!

Notoriously ignorant about geography in general, we Americans are no better informed about South Africa than about other countries, although we've all become painfully aware in the past decade of the country's abhorrent racial policies. A few of us in the environmental field also thought we knew something more positive about South Africa: that it was heavily committed to wildlife conservation. This belief derived, no doubt, from the world-wide status of Kruger National Park, and the much publicized controversy over its use of culling as a tool in game management.

It thus came as a considerable disappointment to learn that a mere 3% of South Africa's land mass has been set aside as national park (compared, for example, to 7% in Japan, 12% in Costa Rica, and an equally unimpressive 3.5% in America). It came as even more of a surprise to hear from informed observers that "conservation is not a high priority in South Africa these days." Yet, given the country's enormous underclass, how does one argue with those who focus on education, health, and housing?

Seldom recognized is the magnitude of South Africa's population growth over the past 90 years and projected into the 21st century. However well-informed people may be about the crippling effects of overpopulation in nations such as China, India, Kenya, Senegal, Morocco, and Brazil, few realize that within South Africa a similarly apocalyptic scenario is in the making. With our fixation on the evils of apartheid, we seem

illustration by Petra Byrnes

to have lost sight of a larger cataclysm looming in the future—the consequences of uncontrolled population growth.

The figures speak for themselves. In 1910 South Africa claimed a population of slightly under 6 million people, two-thirds of them Bantu—a word synonymous with the black people inhabiting that part of the continent, whose ranks include a number of discrete tribal and language groupings— and 1.25 million Europeans, a cohort described by University of California's David Harrison as "the white tribe of Africa." Also included in the total were some 500,000 Indians. In 1950, there were 9 million Bantu and 3 million whites; in 1990, 25 million Bantu and 4.5 million whites.

Doubling every thirty years, South Africa's population is now projected to reach 80 million people in the first quarter of next century. The Department of National Health and Population Development has responded to the news with the bromidic assurance that "taking socio-economic factors and the availability of natural resources into consideration," the country can provide for these 80 million people, but no more. One suspects that this conclusion is based less on hard scientific assessment than on the need for delicacy in dealing with such a highly political issue.

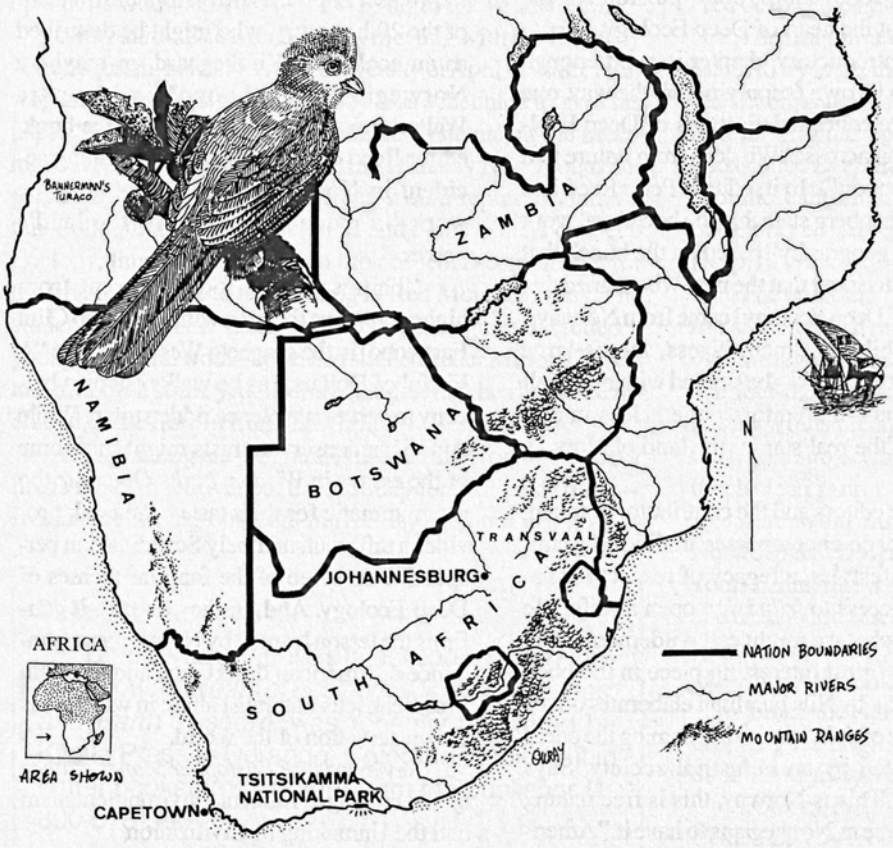
In South Africa, the evils of apartheid and overpopulation are very much related. "In his refusal to regard the black man as brother, the greatest crime committed by white South Africans in the past century was their failure to introduce us to the progressive aspects of western civilization, like birth control," says Caesar Ngonyama, an environmental education officer at Kruger, who 34 years ago left his Shangana-Tsonga village to begin work at the park as a so-called tea-boy.

"The irony is," he continues, "that had they not seen themselves as an exclusive club, had they taken the moral path instead of the unprincipled, greedy road they did, they would have avoided the very thing they feared most—being overwhelmed in numbers by the black population of South Africa, who by this time are understandably so hostile."

As Ngonyama makes clear, this is a no-win situation, for with more mouths to feed and less land on which to grow food (due to the effects of overgrazing and soil erosion), everyone stands to lose, blacks and whites alike. Inevitably, however, the loss will be felt most by the largely black rural population, which explains why Ngonyama is so dedicated to educating nearby villagers about the urgent need for habitat protection and population control. Though worried about grass-roots receptivity to these ideas—which, he preaches "only indirectly"—Ngonyama and his colleagues are hopeful that the ANC leadership at least is aware of the "importance of nature" to the well-being of the new South Africa, and committed to wildlife conservation.

Recently, however, ANC's spokesman on agricultural affairs, Derek Hanekom, publicly announced that all tracts of land, even conservation areas, were being evaluated for possible redistribution. He went so far as to say that, "obviously the most attractive proposition [for livestock farming] is Kruger National Park."

As the National Parks Board made clear in its response, such a proposition, if approved, would deprive the South African people of one of their most treasured assets. From an environmental point of view, Americans can no more ignore threats to the biodiversity of South Africa than they can to that of the Amazon. As we did on the issue of apartheid, we must now take a stand on behalf of Africa's wildlife.



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Book Reviews

WISDOM IN THE OPEN AIR: The Norwegian Roots of Deep Ecology

Edited by Peter Reed and David Rothenberg (Minneapolis: University of Minnesota Press, 1993) 255 p.

Ecology, is above all else, about context. Nothing could be more appropriate, therefore, than a book about the roots of Deep Ecology in Norway, Europe's outermost refuge for controversial intellectuals like Ibsen, Hamsun, and of course, the *primus inter pares* of modern biocentric thinkers, Arne Naess. Indeed, like the Freudian interpretations of *Hamlet*, the subject of the roots of Deep Ecology has a scholarly inevitability about it. Fortunately, however the editors of *Wisdom in the Open Air*, an anthology of Norwegian thinkers with interviews and extensive commentary, bring to the topic not only good scholarship, but a passion for the questions at the heart of Deep Ecology.

The introductory chapter is good enough to stand on its own (supplying, by the way, one of the more concise definitions of Deep Ecology I've run across: "Wisdom from nature that demands action"). In it, editors Peter Reed and David Rothenberg state that the book is a "work of cultural geography" based on the hunch that "it was no accident that the man who named this concept [of Deep Ecology] came from Norway." In fact, while that man, Naess, looms large throughout the book—he studied with nearly all contributors—the editors nonetheless understand who the real star is: the land of Norway itself.

As the editors and the contributors explain, that landscape encompasses traditional seminomadic lifestyles, a legacy of respect for nature, and access to *friluftsliv*: open air life, life in nature, what we might call wilderness experience. The most interesting piece in the book *A Way Home* by Nils Faarlund elaborates on the importance of *friluftsliv* in overcoming the alienation created by an industrial society. Says Faarlund, "This is Norway, this is free nature, we are unique as Norwegians to have it." American conservationists could do worse than trying to hammer home this same sentiment about the North American continent.

The belief that place influences thought, that nature articulates ideas, goes against the grain of modernism. Most nature writers willingly submit themselves to what the ancient Romans called the "genius" or the spirit of the place. While *Wisdom in the Open Air* contains the work of environmental thinkers, not naturalists, it reverberates with the idea that experiencing free nature—not just talking about it—underpins our ability to change modern culture and its obsessive technological growth, to pursue what in more enlightened ages (i.e., pre-Reagan) was known as the good and just society.

Besides Naess and Faarlund, contributors to the book include Sigmund Kvaløy, Norway's foremost modern environmentalist; Wessel Zapffe, a writer from the first half of the 20th century, who might be described as an ecological Kierkegaard, or maybe a Norwegian Aldo Leopold with extra Weltschmerz. One sad note about the book, editor Reed died in a mountain climbing accident in Norway before completing the work—a palpable symbol of the land's power.

"Things always look different from higher up" says the man with no name (Clint Eastwood) in the spaghetti Western classic "A Fistful of Dollars," as he walks out on a balcony to survey a violence ridden town. While American conservationists might find some of the essays in *Wisdom in the Open Air* too programmatic for their tastes, the book provides a different, uniquely Scandinavian perspective on some of the familiar themes of Deep Ecology. And, in the contrast, it confirms the lesson learned by Norwegian mountaineers, American desert rats, and a certain Massachusetts naturalist alike: in wildness is the preservation of the world.

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

DEEP ECOLOGY IN COLORADO AND *FRILUFTSLIV:* A note on books and open air

Now that David Rothenberg's book *Wisdom in the Open Air* is off the press, an explanation of the Norwegian word *friluftsliv* and its connection with Arne Naess is available in English, through a translation in the book of Nils Faarlund's piece on *friluftsliv* (open air life), titled "The Way Home." Finally, it is possible to fully explain the on-going confusion created by the hurried publication of the two books titled *Deep Ecology* in 1984.

When my book, *Earth Wisdom*, was published in 1978, Arne Naess wrote me and ordered several copies. He gave one copy to Nils Faarlund, who was in charge of the "Norwegian School of Nature Life." When it was decided to start an American branch of the school, the foundational meeting was near Silverton because that's the location of my Way of the Mountain Center. A young Norwegian, Tom Cammermeyer visited me in Silverton and explained what they were doing. He rented an old mining cabin from St. Paul Cross Country Ski Lodge up at Red Mountain Pass (11,000 ft. high) above Silverton.

Nils Faarlund coordinated this meeting with the Earthday X Colloquium, held at Denver University in April of 1980. Norwegian professor Sigmund Kvaloy was scheduled to give his paper "Man, Nature and Mechanistic Systems" at the meeting, but since he was climbing in the Himalayas and could not personally deliver it, Nils Faarlund would represent him. At this Colloquium, George Sessions and I gave papers on Deep Ecology, thus opening it up to the academic community for the first time. Back to the meeting at Red Mountain Pass. The students who came along with the Norwegians included a young American woman who had studied under Michael Tobias at Dartmouth some years before and felt that he should be included, so he flew in from California.

In explaining his program, Nils said that, for him outdoor life is not competitive, but a reintroduction to an old friend—free nature. Being outdoors in free nature is not just a vacation; it is "rediscovering the true home of mankind... A joyous encounter with free nature can be a turning point for both the individual and society. No force is stronger than joy. Thus there is hope."

While we were inside the hut with the Norwegians, Michael Tobias was a sincere environmentalist. Outside, as he and I stood talking with all the mountains spread out before us, he said: "Now that I've climbed all the mountains I want, I'm going to become rich and famous." When I asked him how, he told me by writing books. His book turned out to be a collection of essays. Having heard the Norwegians talking enthusiastically about Arne Naess he contacted Naess and got an essay from him.

His original title for the book was *Humanity and Radical Will*, the title of his own essay. At the last minute it was changed to *Deep Ecology* because of Naess's article; yet only four of the 21 essays in the book could in any way be considered deep ecology.

The last minute change of title caused Gibbs Smith to try to get the proposed book by Bill Devall out first and he had Devall rewrite all the essays into an original book in only two weeks. Both books titled *Deep Ecology* came out the same year. (For more information, see p. 13-14 of my recent book *Sacred Land, Sacred Sex: Rapture of the Deep*.)

The on-going problems this change of names has caused is that many people criticize deep ecology through the treatment of it in Tobias's book. Without the accidental change to the title, *Deep Ecology*, thus precipitating a race for publication, the whole subject might have been introduced in a much clearer form.

And what happened to Nils Faarlund's Norweigan School of Nature Life in this country? Tom Cammermeyer went to the University of Utah and tried to interest students there, but got little response. When the new ski area, Deer Valley, began with Stein Erikson as head of the ski school, Tom joined the Norwegians employed there, thus dropping his original ideas about the simple outdoor life of *friluftsliv*.

Dolores LaChapelle, Way of the Mountain Center, Box 542, Silverton, CO 81433

Skiing in the open air

Dolores LaChapelle's latest book, *Deep Powder Snow: 40 Years of Ecstatic Skiing, Avalanches, and Earth Wisdom*, was recently published by Kivakí Press in Durango, Colorado. Look for it in better bookstores or order from the publisher (1-800-578-5904).

Other Recommended Titles

CASCADIA WILD: Protecting an International Ecosystem
Mitch Friedman and Paul Linholdt, editors; 1993; Frontier Publishing and Greater Ecosystem Alliance (POB 2813, Bellingham, WA 98227); $20.

GEA surveys here the Greater North Cascades Ecosystem (legally, within Washington and British Columbia), threats thereto, and efforts to stop those threats. Chapter 1, "Tidewater to Timberline, Forest to Steppe: Natural History of the Greater North Cascades Ecosystem (by Thomas Fleischner and Saul Weisburg), is the kind of lucid but thorough overview that every bioregion deserves. Chapter 2, "History of the Greater North Cascades Ecosystem" (by George Draffan et al.), presents the kind of trans-human history that people of every bioregion need to know. Chapter 3, "Indigenous Culture: Orphans of Mother Earth" (by Jewell Praying Wolf James [of the Lummi tribe of northwest Washington] and Kurt Russo), presents the kind of indigenous people's arguments for wilderness that every bioregion deserves. Chapter 4, "One Ecosystem, Two Countries: Eco-Politics in British Columbia" (by Trudy Frisk), describes the kind of political confusion that no bioregion can long endure.

Chapter 5 describes the main threats to the GNCE: logging, livestock grazing, mining, and hydro projects. Chapter 6 offers case studies of predators imperiled in the GNCE: Grizzly Bear, Gray Wolf, Fisher, Lynx, Northern Spotted Owl. Chapter 7 discusses the GNCE's salmon species: King, Chum, Pink, Coho, Sockeye, and Steelhead. In Chapter 8, "Conserving Biodiversity in the GNCE," Ed Grumbine, Mitch Friedman, and Reed Noss explain clearly what it will take: millions of wild hectares, bans on ancient forest logging ... Chapter 9 discusses Alternative Forestry. In Chapter 10, Mitch Friedman proposes a Cascades International Park.—*John Davis*

NEVADA MOUNTAIN RANGES
by George Wuerthner; American & World Geographic Publishing (POB 5630, Helena, MT 59604); 1992; 96p.

Probably no previous geographic book has so bluntly and honestly criticized the public lands livestock grazing industry. George daringly reveals the devastation on arid Western lands wrought by ranchers as he unveils Nevada's wild secrets. Though most Americans think of Nevada as dull dun desert, it is actually, as George shows well in photos and words, a state of spectacles and superlatives. Nevada has more distinct mountain ranges than any other state, a higher proportion of public lands (over 85%) than any other state, more species listed under the ESA than all but a few states (Hawaii, California, Florida), the planet's oldest trees (Bristlecone Pines which may live almost 5000 years, though the oldest known was cut down—to measure its age—before it reached this milestone), and more arid roadless acreage than almost any other state. George weaves good wildland messages into his Nevada natural history, as he has for the other geographic books he has done (including books on Acadia National Park in Maine, Smoky Mountain NP in North Carolina and Tennessee, and Adirondack State Park in New York). —*JD*

CALIFORNIA's SIERRA NEVADA
text & photographs by George Wuerthner; American & World Geographic Publishing; 104p.; $14.95.

The trouble with this book is that it makes you want to emigrate. George Wuerthner's descriptions and pictures of the 48 states' widest and highest mountain range tempt the reader to move thither. George cautions, however, that the Sierra is under assault—from the timber, livestock, and recreation industries, as well as distant emitters of air pollutants—and cannot painlessly accommodate more people. So, stay in Ohio and peruse this beautiful book!

Implicitly, George gives a restoration idea: He notes that many high Sierra lakes have been artificially stocked with fish. Most high altitude lakes in the Sierra were originally fishless. They should be again. Fisher people in the Sierra—and throughout the continent—could engage in restoration even while practising their avocation if they fished only for exotics until those exotics were eliminated.

If you feel drawn also to Washington's spectacular Olympic Peninsula, read still another lovely book from American & World Geographic Publishing: **OLYMPIC: Ecosystems of the Peninsula**, by Michael Smithson with photographs by Pat O'Hara. These two show that the Olympic National Park and the larger Olympic Ecosystem is a precious place in peril—like most natural areas—from introduced Mountain Goats, Forest Service clearcutting in the National Forest outside the Park, pollutants in the ocean around the peninsula, etc.—*JD*

WILDLIFE AND WILDERNESS: A History of Adirondack Mammals
by Philip Terrie; 1993; 175p. $14.50; Purple Mountain Press (POB E3, Fleischmanns, NY 12430).

Do not judge this book by its cover—which on front sports an overly generic title, and on back sports typos (not the author's fault). Judge it by its contents, which are lucid and informative. Terrie skillfully describes the status, past and present, of large mammals of the Adirondacks and surrounding areas. White-tailed Deer are unnaturally abundant on private lands in the Park, due to decades of management for game species and timber harvesting. Caribou were not native to the Park,

though they were unsuccessfully introduced late last century. Moose were extirpated but are slowly returning. Elk and Bison, absent now, may have ranged through more open country on the periphery of the Adirondacks, but were never common in the region. Weasels, Marten, Red Fox, Gray Fox, Bobcat, Fisher, and Beaver remain—the latter two having been augmented after decimation. Lynx were recently reintroduced but are faring very poorly, due largely to roads. Wolverine, Gray Wolf, and officially the Cougar were long ago extirpated, though Cougar sightings are oft reported.

Terrie calls for restoration of native fauna to their condition prior to logging and overkill. Read this book and add your voice to his.—*JD*

IS IT PAINFUL TO THINK?

by David Rothenberg, University of Minnesota Press (2037 Un. Ave. SE, Minneapolis, MN 55414), 205p.; $16.95.

Before reading *Is It Painful To Think?*, I knew Arne Naess as the philosopher who coined the term Deep Ecology and developed the philosophy. I am now familiar with the true Arne Naess: a man with a love for precision and vastness at the same time, and an intimate relationship with the mountains; a man with an endless thirst for knowledge and, according to Rothenberg, "a man restlessly seeking truth through a turbulent century."

Before reading *Is It Painful To Think?*, I was skeptical about a book set up in an interview style. Having completed the book, I applaud Rothenbergs's structure.

The book is a series of discussions between Rothenberg and Naess revealing the events that have led to Naess's ideas. In addition to the documented conversations, Rothenberg further develops the ideas, and notes experiences with Naess which familiarizes the reader more with the wise philosopher. For example, Rothenberg tells of the first time he hiked up to Arne's home, Tvergastein, in the mountains of Norway: "He muttered something about hoping I was a better thinker than climber, all the while kicking gravel in my face from above as a kind of intimidation." Rothenberg describes Tvergastein eloquently, "This is a hermitage fully outfitted for the study of philosophy in its widest definition, as love of wisdom, in the pure seat of mountain air."

Rothenberg states in the introduction "What I am after here is the spirit of the man." He has succeeded. Anyone interested in Arne Naess should read this book. Anyone who is not intrigued by Naess, should be. Naess is a wise elder whose thoughts are critically needed in our chaotic society.—*Kathleen Fitzgerald*

RADICAL ECOLOGY: The Search for a Livable World

by Carolyn Merchant, Routledge, Chapman & Hall, Inc (29 West 35 St., NY, NY 10001), 276p.; $14.95.

Radical Ecology is a response by Carolyn Merchant to the environmental crisis facing our society and Earth. Merchant explores the philosophical, ethical, scientific and economic roots of environmental problems and offers suggestions on how to create a sustainable society. She sees environmental dilemmas as a result of two contradictions; "the first contradiction arises from tensions between the economic forces of production and local ecological conditions, the second from tensions between reproduction and production." These tensions are examined throughout the book.

Merchant's book is dense, yet organized well so as not to overwhelm readers. Merchant covers in each chapter a broad subject, e.g. ecofeminism, and breaks down the topic into a detailed study, e.g. liberal feminism, Marxist feminism... Other chapters are: Science and Worldviews, Environmental Ethics and Political Conflict, Deep Ecology, Spiritual Ecology, Social Ecology, Green Politics and Sustainable Development.

Radical Ecology is a text students and citizens should read for a comprehensive overview of the tensions that have led to the current state of Earth. Merchant's book inspires readers to reevaluate society and human relationships with the natural world.—*KHF*

Music ORT

When it is time to rock-n-roll, Ned Mudd and the Swamp Dogs' *Welcome to the Hog Farm* can't be beat. However, when the moon is high and it's time for mellow music, *Forest Rain* and *Watchfire* are the ideal choices.

Forest Rain was released last fall by Dean Everson and Soundings of the Planet. The music combines the sounds of falling rain, bird songs, wind, flutes, harps, cellos and keyboards. The music reflects the multi-layered richness of an ancient forest grove and creates a sanctuary of sound.

Soundings of the Planet is an artist-owned, independent music label which promotes preservation of all remaining ancient forests, ecologically responsible forestry practices, a decrease in consumerism and other conservation goals. Soundings of the Planet recently donated products to the Native Forest Council (POB 2171, Eugene, OR 97402). The Council will use the disks as gifts for donors. To order a CD or cassette tape contact Soundings of the Planet, POB 43512, Tucson, AZ 85733, 1-800-92PEACE.

Watchfire: Grateful Dead Records recently re-released the highly acclaimed *Watchfire*, a powerful collection of songs by composer/musician Pete Sears. *Watchfire* came out of Sears's desire to produce an album that will encourage social and environmental change. The music ranges from folk and rock to Caribbean styles. Sears creates a global feel through his use of a variety of instruments and sonic textures, including Andean pan flutes, Scottish pipes, and the songs of whales. The music is energetic and diverse; and an assortment of Sears's friends— including Jerry Garcia, Mickey Hart and Holly Near—perform on the album.

Sears's environmental music is backed up with action. He donates a portion of the royalties to non-profit environmental organizations. More artists should follow his path. *Watchfire* is available in stores everywhere or can be ordered from Grateful Dead Merchandising, POB X, Novato, CA 94948, 1-800-225-3323. —*KHF*

In Praise of Books of the Big Outside

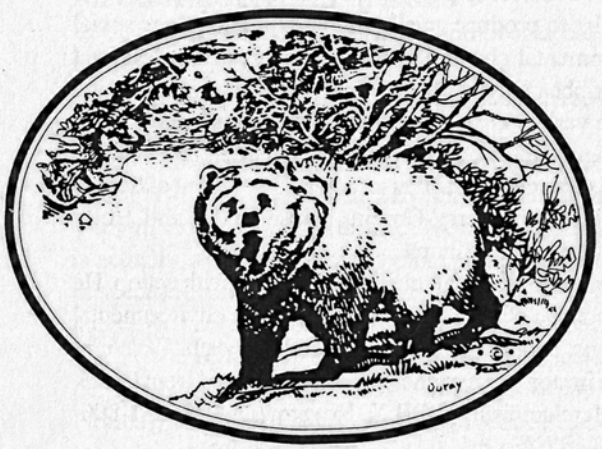
by Arne Naess

Nothing else quite like Dave Foreman's *Books of the Big Outside* has been published anywhere on this planet for the planet. It is a catalog of books for wilderness defenders. Unfortunately the undertaking is walking a financial tightrope: "unless our sales volume increases, we may not be in business in 1994." We cannot permit this to happen, and we are all responsible if it does. I promise that if it does, I shall as a punishment eat caramel pudding every day for a whole week—it is a dish I have hated since childhood. I expect others shall inflict similar pain upon themselves if the enterprise falters.

Why books? Surely, one may be a firm deep ecology supporter without reading any books whatsoever. They help many of us though, and most of us live among people who do not yet actively support the defense of the planet, but might do so if we were to articulate to them what we experience and what we read.

The catalog now has the broadness of scope essential to convey the length of the front along which activists struggle. The books include psychological, social, political and philosophical issues. Dave writes a little about each book, focusing on what he thinks is good and using very little space to suggest what is bad.

One section has the heading *Eco Philosophy*, a term I rarely use. In the west, the term philosophy has largely lost its old meaning: love of wisdom. Wisdom reflects not a theory, but a link between fundamental views and decisions in concrete situations all of us encounter. Ecosophy—household wisdom—is a good word, but my point is to support those suspicious about a philosophical view not clearly related to practice.



Dave speaks of a "personal gut feeling for wild things and sunsets." One may be a supporter of the deep ecology movement and perhaps even partake in direct action without strong gut feelings of the kind Dave seems to refer to; but the special driving force of the movement depends heavily upon these. Of course, spontaneous, wild and enthusiastic feelings should not alone determine decisions. We need reason to help us decide among actions and priorities. In the ecological movement, important work is done by the enthusiastic and by the lukewarm—or people with a style that is taken to indicate lukewarmness.

As a professional philosopher, I insist there is nothing unphilosophical about the gut feelings Dave mentions. On the contrary, the stronger the "positive" emotions, the better the prospect for gains in human freedom, individual

and collective. (See Spinoza.) If strong gut feelings are decisive in philosophy, one should not argue against their frank articulation in an appropriate context. But beware if you look for tenure as a philosophy professor, such contexts are very rare. My book *Ecology, Community and Lifestyle* was intended to be difficult and academic enough to be used as a text in universities. My hope to conquer a place in the sun (or shade) at philosophy departments was crushed. Their main objection: not enough careful argumentation for and against definite, well-defined positions. Subordinate objection: too much hidden propaganda! Now, 20 years later, "applied" philosophy has a place in colleges and universities, but a very modest one compared to, say, chemistry.

Economics and politics with reference to radical environmentalism are now of growing importance. We in Norway are fortunate to have two Nobel Prize winners in economics. The first fought against economists who accepted government and big business projects without criticizing the economic premises of the institutions paying them. A very important point in research ethics! Of course, you risk never again being asked anything by government and businesses. If you are already an established expert, you should take that risk. The other Nobel winner is a firm supporter of deep ecology views and, together with some other leading economists, against joining the European Common Market—a gigantic organization that will intensify economic growth and competition, and try to compete with both Japan and the USA in their ecologically disastrous struggle to maintain their insane levels of consumption.

Dave criticizes an ecophilosophical book for virtually ignoring "all non-academic conservationists." Philosophy and ecosophy overlap, but to help make practical decisions is part of the function of ecosophies. That their fundaments are philosophical or religious does not mean their articulations are academic. Ecological folk wisdom in the west as well as in the east includes tentative solutions to philosophical and religious questions, but articulated artistically or in the language of every day life.

Deep ecology supporters agree that it would be good for humans if there were fewer humans, and very good for non-humans. In the section on overpopulation, this view is of course taken for granted. A future edition of the catalog might refer to books in favor of the substantial part of the human population that suffers most from irresponsible reproduction: small children. Even a 2% yearly decrease in births of unwanted children would result in a satisfactory rate of decrease of the present gigantic population. Policies in favor of population decrease should be connected with policies in favor of children and their safe access to patches of free nature.

The analogy of human population growth and parasitism or cancer may be useful in talking about the past, but scarcely so in talking about the potential of the human species in the future. Views may and should differ at this point. I support the optimistic view that it may not even take a few hundred years before the (sadly reduced) richness and diversity of life on Earth is eagerly cared for and increases through human action—and inaction.

Arne Naess (Audeling for Mijoforskning, Post Box 1116 Blindern, N-0317, Oslo 3, Norway), the inspiration for the name and direction of the deep ecology movement, writes, hikes, and teaches in Norway.

Dave Foreman's

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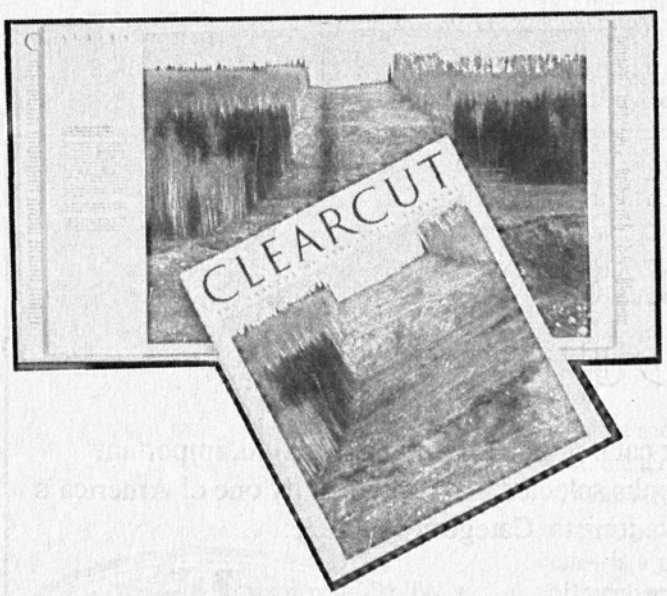
Announcements

CLEARCUT: The Tragedy of Industrial Forestry

Edited by Bill Devall; Photoedited by Edgar Boyles; Jacket Notes by David Brower

To be released this winter by Sierra Club Books and Earth Island Press, *Clearcut: The Tragedy of Industrial Forestry*, is the most comprehensive pictorial ever published on destructive forest practices. The book was designed by activists as a campaign tool to graphically demonstrate to policy makers the destruction of North American forests wrought by industrial forestry.



Clearcut is not your usual coffee table book. David Brower, along with such great photographers and writers as Ansel Adams and Robinson Jeffers, originally conceived of these exhibit-format books as a way to make people fall in love with dwindling wild places. Brower now says "Whatever the books accomplished, it was by no means enough. The beauty of prose and image may have been too tranquilizing, leading readers to think: Look how much there is! Surely it is inexhaustible!"

Clearcut is different. It contains over 100 full-page images of devastating clearcuts across North America and hard hitting essays by some of the nation's leading ecologists and activists, including David Brower, Galen Rowell, and Chris Maser. The essays and photos document the tragedies of today's forest management practices and outline solutions necessary for forest protection and restoration.

Please join Rainforest Action Network, Save America's Forests and Canada's Future Forest Alliance in our continent-wide campaign to distribute *Clearcut*. Copies of the book will be provided at **no charge** to activists who agree to present the book to community leaders and policy makers. We want local coalitions of citizens to present *Clearcut* to members of the press, legislators, public agency officials, timber industry executives, and others who influence forest policy.

Our goal is to distribute over 5000 copies in the first quarter of 1994. A comprehensive media packet answering questions about the campaign, the authors, photographers, and key contacts, will be included with the book. Staff members are available to assist you in planning your local campaign. Please call us and schedule free delivery of *Clearcut* today.

Contact Mike Roselle, Kate Cissna or Erik Johnson, Rainforest Action Network, 450 Sansome Suite 700, San Francisco, CA 94111; 415-398-4404.

Ancient Forest Exploration Guide

A small group of forest advocates in Canada has published a guide to selected old-growth Red and White Pine forests in Ontario. The excerpt below introduces their subject. For a copy of the booklet, send $5 or more to Ancient Forest Exploration & Research, RR#4, Powassan, Ontario POH 1Z0 Canada.

...Unfortunately, few of the world's original old-growth white and red pine forests remain. In fact, throughout most of their natural range these forests are threatened with extinction and in several states and provinces are, in fact, already extirpated. Despite this endangered status, in Ontario (where the vast majority of the remaining stands of this type are located) logging continues to eliminate these forests...

Wild Forest Review

Forest Watch magazine has died and been replaced by two new periodicals. Randall O'Toole is now putting out *Different Drummer* (14417 SE Laurie, Oak Grove, OR 97267, $21.95 year subscription) which will cover economic and environmental aspects of public land issues. The magazine continuing the *Forest Watch* tradition of detailed coverage of forest issues is *Wild Forest Review*, edited by Jeffrey St. Clair and published by the new group Save The West. The first issue (11-93) includes critiques of Option 9 and the infamous timber compromise in the Northwest. To subscribe, send $25 or more to Save the West, 3758 SE Milwaukee, Portland, OR 97202.

Call for Materials

Talking Leaves: A Journal of Spiritual Ecology and Activism is soliciting non-academic, but perceptive and challenging essays, poetry and artwork. *Talking Leaves* has featured Bill Devall, Joanna Macy, Terry Tempest Williams, Thich Nhat Hanh, David Suzuki, Winona

LaDuke and Christopher Manes. Each issue is built around a particular theme, explored through the diverse approaches within "spiritual ecology" and primal worldviews. Upcoming themes include Gaian Woman, The Wild Man/male sexuality, Eco-Fiction, and Ancient Ways (Earth religions of the world). For deadlines and a sample issue contact Carolyn Moran, Editor: Talking Leaves, 1430 Willamette St. #367, Eugene, OR 97401, (503) 342-2974.

Women & Bears

Janine Blaeloch is writing a book on women and bears and is seeking experiences and stories from women who have dreamed about bears or had wild encounters with bears. Contact Janine: POB 95545, Seattle, WA 98145.

Ecosystem Monitoring and Protected Areas Conference

The 2nd International Conference on Science and the Management of Protected Areas will be held at Dalhousie University in Halifax, Nova Scotia, 16-21 May, 1994. The theme of the conference will be Ecosystem Monitoring and Protected Areas. The conference will consider whole-system monitoring in both terrestrial and marine environments. Abstracts should be submitted by 15 January 1994.

The conference is endorsed by the World Conservation Union, Man and the Biosphere Program, WWF, the George Wright Society and Parks Canada. For more information contact: Neil Munro, Parks Canada, Historic Properties, Upper Water St, Halifax, Nova Scotia, Canada, B3J 1S9.

Rock Opera for Wolves

The war over the reintroduction of wolves into Yellowstone Park has been a battle between biologists and ranchers, but now a rock opera is seeking to push its way into the controversy. In April of 1994, the wolf eco-opera *Lone Season* kicks off its opening tour with a premiere at Ohio State University in Columbus, followed by dates at Denison University in Granville, Ohio, and others to be announced.

Composer Steven Guyer has spent the last two years studying wolves for his second performance rock piece, drawing upon the research of wolf biologists such as David Mech and Jim Brandenburg to create a story that portrays wolves without sentiment or fear. For information contact Stacie Boord, ShadoArt Productions, 448 Dublin Avenue, Suite 200, Columbus, OH 43215.

New Wildlife Papers

The Pacific Center for International Studies, a think-tank based in the United States, announces the availability of the following publications from its International Wildlife Law Occasional Paper Series.

1. "The Killing Frenzy: Are Sharks Headed Toward Extinction?" Paper #4, 1-92.
2. "The International Whaling Commission and the Regulation of Consumptive and Non-Consumptive Uses of Small Cetaceans: A Critical Agenda for the 1990's," Paper #6, 9-93.
3. "Life Can Be A Bear: The Devastation of Bear Species and How We Can Save Them," Paper #6, 9-93.

PCIS papers are available for $8 each, which includes shipping and handling. Orders, or a request for a complete list of Center publications, can be sent to William Burns, Director, PCIS, 33 University Square, Suite 184, Department EA, Madison, WI 53715.

The Boycott Quarterly

The Boycott Quarterly, published by the Center for Economic Democracy, is an informational journal revealing the true actions of corporations, people and businesses. The quarterly lists companies to boycott and explains why in brief summaries and articles. It informs consumers of whom and what they are really supporting. The journal is edited by the dynamic boycotting guru Zack Lyons. For a year subscription send $20 to POB 64, Olympia, WA 98507.

Wildlife Habitat Needs Conscientious Buyer

120 acres gently rolling land on an island in Lake Superior, Michigan is for sale. House, barn, and heated (solar, wood) workshop. Small orchard of heirloom varieties; gardens. Excellent water. Mostly hardwoods, 39 acres of meadow. Currently also home to Moose, Black Bear, Great Gray Owl, Hawk Owl, Pileated Woodpecker, Fisher and Bobcat. View of the water and Canadian Laurentian mountains. Many rare and migratory bird species. Serious inquiries only, from people wanting to protect the land: Sue Raker, HC 57, Box 292, Sugar Island, Sault Ste. Marie, MI 49783, (906) 647-3595.

ABOUT SUBMISSIONS

Wild Earth welcomes submissions. **Poems** should be sent directly to our Poetry Editors, Art Goodtimes (Box 1008, Telluride, CO 81435) and Gary Lawless (Gulf of Maine Books, 61 Maine St, Brunswick, ME 04011). Poets should realize that we receive hundreds more poems each quarter than we can publish.

Artwork, **articles** and **letters** should be sent to the Art Director or Editor at our main address (POB 455, Richmond,VT 05477).*Wild Earth* welcomes submissions of original illustrations or high-resolution facsimiles thereof. Botanical/zoological/landscapes are eagerly sought, with depictions of enigmatic micro-flora especially prized. Representational drawings should include common and scientific names.

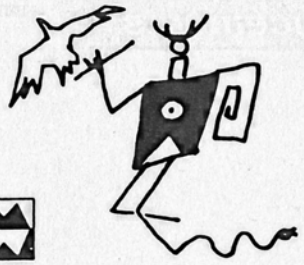
Articles and letters should be typed or neatly hand-written, double-spaced. Those who use a computer **should include a copy on disk**. We use Macintosh (3.5" disk) but can convert from PCs. Writers who want their material returned should enclose a self-addressed stamped envelope. Deadlines are two months before the changes in seasons (e.g., 10-20 for winter issue).

Articles, if accepted, may be edited down for space or clarity, though if substantive changes are made, the author's approval will be sought. Articles with significant scientific content (e.g., most biodiversity reports and wilderness proposals) will be reviewed by our Science Editor for accuracy and clarity. Wilderness proposals will also be reviewed by our Executive Editor, and controversial or complicated pieces may be peer reviewed. Lengthy biologically-based articles generally should include literature citations.

Wild Earth occasionally reprints articles; but due to the surfeit of submissions we receive, reprints will usually be low priority. If an article is being submitted to other publications as well as *Wild Earth*, the writer should indicate so. We usually try to avoid duplication. We generally welcome other periodicals to reprint articles from *Wild Earth*, provided they properly credit the articles.

In matters of style, we follow the *Chicago Manual of Style* loosely and Strunk's & White's *Elements of Style* religiously. Also, we suggest that authors remember several basic rules when writing for *Wild Earth*, since we always have far more material than we can print and we expect our writers to be lucid, perspicacious, and ineffably winsome.

1. Eschew surplusage (Twain).
2. Thou shalt not verbalize nouns (Abbey 1988).
3. Do not affect a breezy manner (Strunk & White 1959).
4. Watch your antecedents (Davis 1988).
5. **Include a goddam floppy** (Butler 1992).
6. Mix drinks, not metaphors (Davis 1993).



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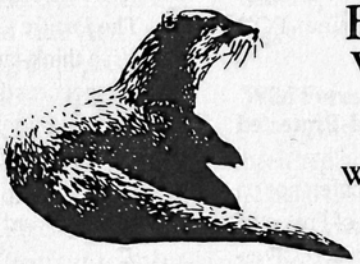

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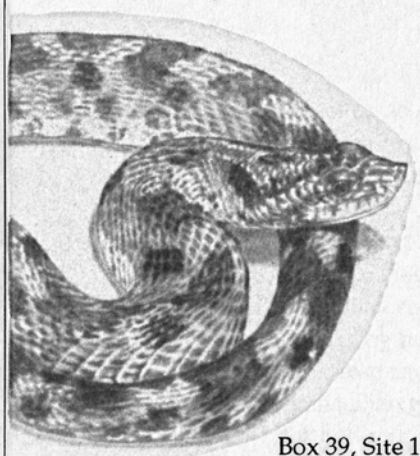

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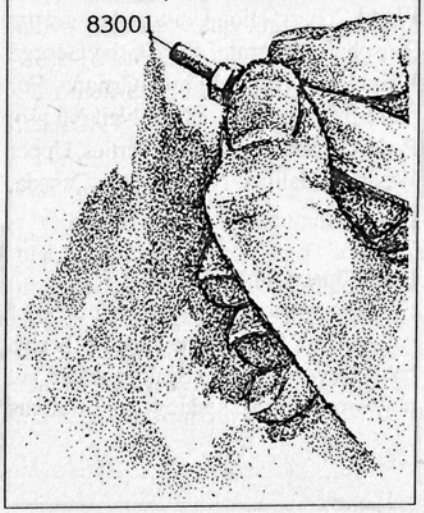

Patrick Dengate

Buy Back The Dacks

Only 42% of the six million acre Adirondack State Park is protected by public ownership—and of this amount, less than half is designated Wilderness. Much of the private land for sale within the park is threatened by development...and recent legislative initiatives are insufficient to capitalize on this opportunity to buy ecologically sensitive lands from willing sellers. *Wild Earth* magazine invites individuals to support Adirondack conservation through its **Buy Back The Dacks** fund.

Buy Back The Dacks is a dedicated fund working to help keep the Northeast's crown jewel Forever Wild. All money raised by the fund is transferred to The Nature Conservancy's Adirondack Chapter to purchase imperiled lands. Contributions to **Buy Back The Dacks** go directly toward land acquisition/preservation—not to support the other important work of either TNC or *Wild Earth*.

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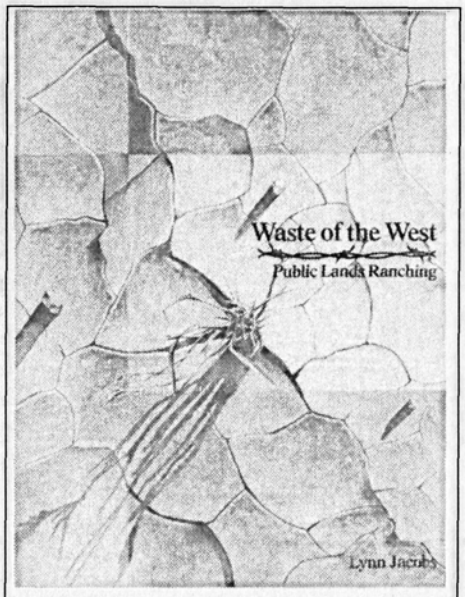

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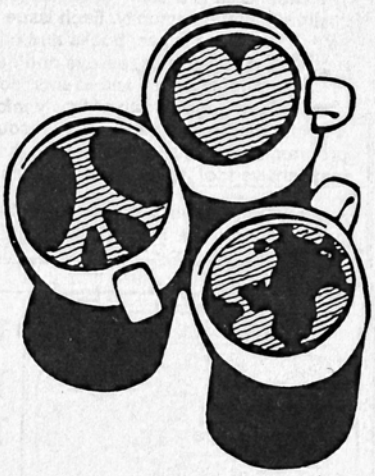

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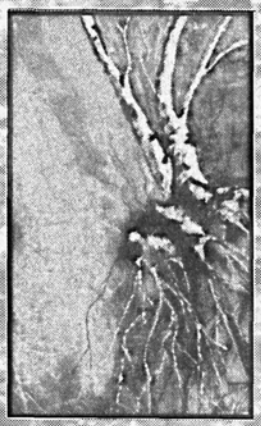

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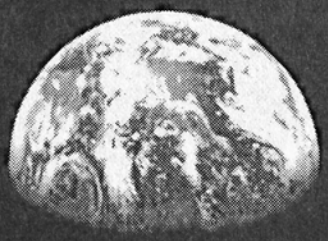

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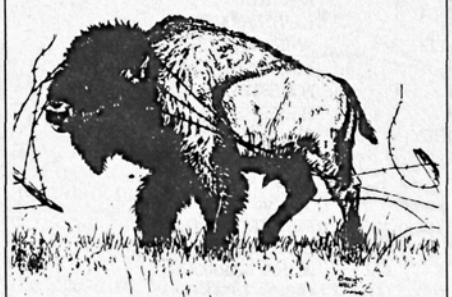

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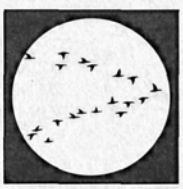

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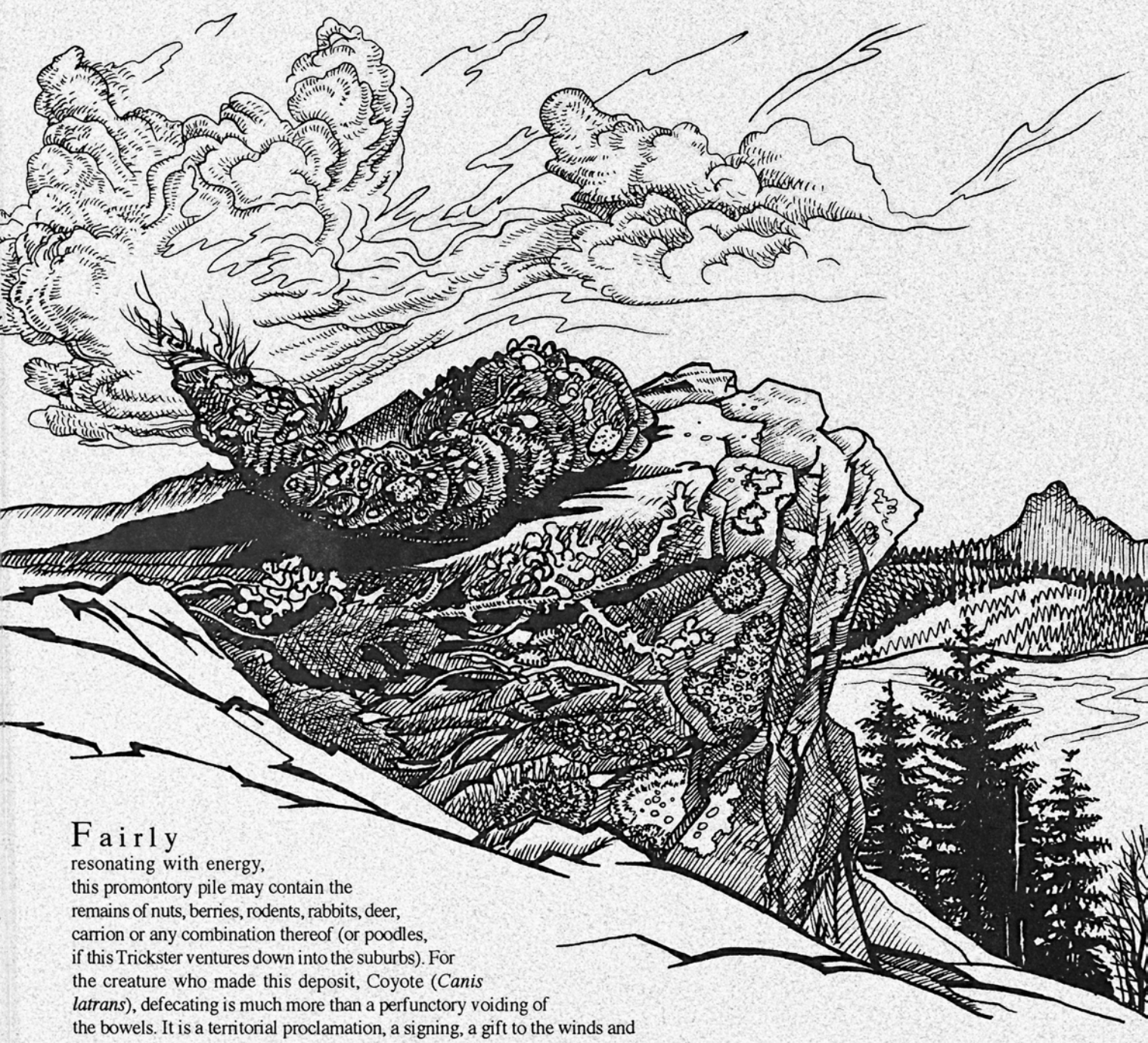
Feces Spotlight

Scatting to the Four Directions

Coyote (*Canis latrans*)



Fairly resonating with energy, this promontory pile may contain the remains of nuts, berries, rodents, rabbits, deer, carrion or any combination thereof (or poodles, if this Trickster ventures down into the suburbs). For the creature who made this deposit, Coyote (*Canis latrans*), defecating is much more than a perfunctory voiding of the bowels. It is a territorial proclamation, a signing, a gift to the winds and (we may reasonably guess) a tremendous relief.

In his masterful book, *Tracking and the Art of Seeing* (Camden House Publishing, 1992), Paul Rezendes gives clues as to why and where excrement transpires:

Like most canine scat, coyote scat is usually found in the middle of trails, sometimes at a high point, on a stone, or on some other raised object. It also may be deposited near these objects. Another good place to look is where trails cross. A trail sporting several coyote droppings usually indicates high coyote activity.

Coyote scat usually has a mild, musky odor, similar to that of a fox but unlike a domestic dog's. As you probably know, dog scat can stink to high heaven, making differentiation between coyote and dog scat quite easy. —JD

O

Artist Davis Te Selle (5835 Dry Creek Road, Napa, CA 94558) attended California College of Arts And Crafts and holds an M.F.A. in printmaking from the San Francisco Art Institute. His cover illustration—*Wind, Rocks, and Ice*—is one of 27 original lithographs commissioned for Stephanie Kaza's book *The Attentive Heart: Conversations With Trees* (Ballantine Press, 1993). Limited edition prints of these illustrations (50 or fewer per image) are available from the artist. —TB

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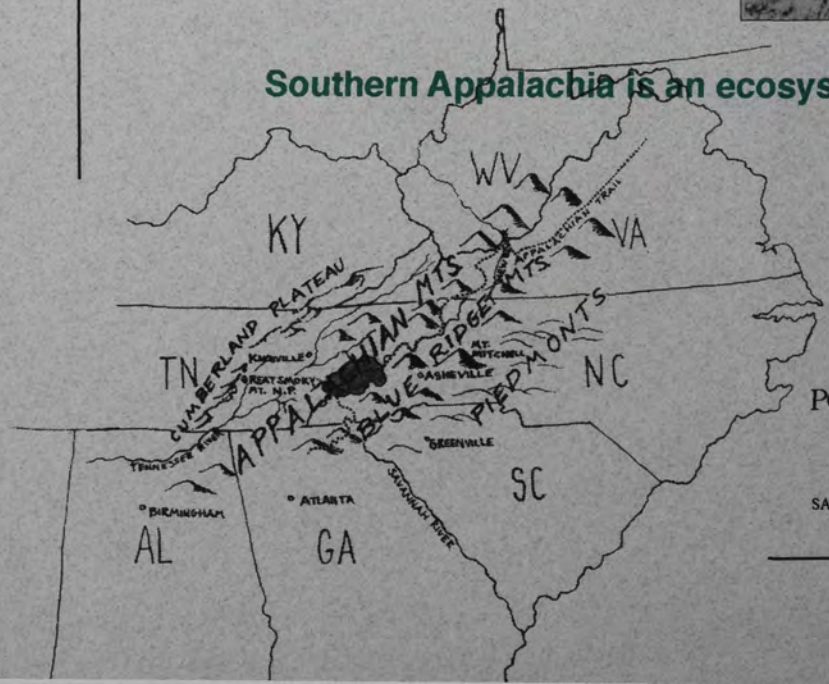

map by Rodney Webb