Wild EARTH

WINTER 1998/99

A Wilderness Revival

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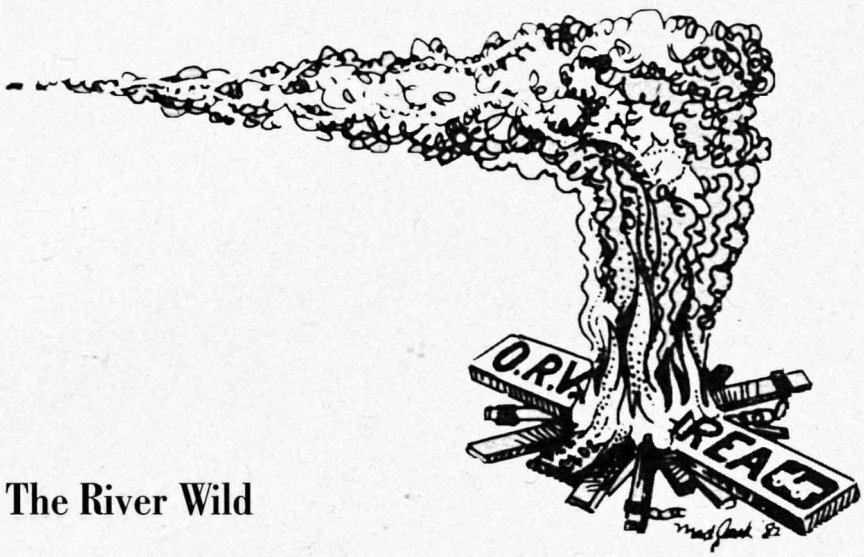
Around the Campfire

by Dave Foreman



The River Wild

This issue of *Wild Earth* is a sweeping "NO!" to social scientists and others who proclaim the wilderness idea dead or mortally wounded. Across the United States and Canada we see a revival of Wilderness Area designation campaigns. I believe these campaigns are a key to fulfilling the goals of The Wildlands Project—to protect and restore the biological richness of North America.

In "Rewilding and Biodiversity: Complementary Goals for Continental Conservation" (fall 1998 *Wild Earth*), Michael Soulé and Reed Noss clearly show that science-based Nature reserve design does not come to bury traditional Wilderness Area designation, but to marry it. To see how this is so, we need both a lookout that takes in the whole conservation movement and a metaphor that can limn it.

The metaphor I use for the conservation movement is that of a river's watershed, with streams dropping off high saddles and cirques and flowing down to mix as currents in the river. A good perspective from which to ken this watershed is that of an eagle, where we can see it all spread out before us. Soulé and Noss touched on this metaphor of currents in the conservation stream; I'd like to fill it out here.

The headwater streams that flow together to make the River Wild are wildlife protection, stewardship, beauty, and forest protection. Down-river, the streams of wilderness, ecosystem representation, carnivore protection, and connectivity flow in. Nearby, but apart, are watersheds for the rivers of resourcism and environmentalism. Some of the headwaters of the Resourcism River come off the same ridges and peaks as those that feed the River Wild, but they flow in a different direction. The Environmental River does not spring from the same divides as the River Wild, but its course later runs parallel to the River Wild with only a low ridge between the two.

From the farthest mountain pass flows the sturdy stream of Wildlife Protection. Contrary to common wisdom, American conservation began with wildlife. English aristocrat William Henry Herbert came to America in 1831 and brought with him the "code of the sportsman." In his woodsy role as "Frank Forester," Herbert fought the

continued on page 2

The opinions expressed in Campfire are my own, and do not necessarily reflect official policy of The Wildlands Project or *Wild Earth*. —*DF*

About Wild Earth *and The Wildlands Project*

Wild Earth is a quarterly journal melding conservation biology and wildlands activism. Our efforts to strengthen the conservation movement involve the following:

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

The Wildlands Project is the organization guiding the design of a continental wilderness recovery strategy. Through advocacy, education, scientific consultation, and cooperation with many regional groups, The Wildlands Project is drafting a blueprint for an interconnected, continental-scale system of protected wildlands linked by habitat corridors.

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

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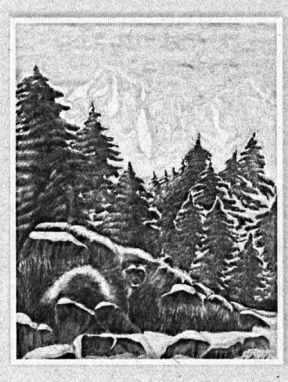
Contents



inside front cover
Around the Campfire

5
Letters

7
Wild Earth Update

8
A Wilderness View

77
Poetry
by Norma Thomas

104
Book Reviews

111
Announcements

112
Artists This Issue

inside back cover
Species Spotlight:
Solenobia walshella

cover art
scratchboard with acrylic by Cynthia Armstrong

A Wilderness Revival

Perspectives

10 Wilderness and the American Heart *by William Meadows*

14 Bear Necessities: Grizzlies, Wilderness, and the Science of Extinction *by Louisa Willcox*

19 On Wilderness Values and Wild Rivers: A Canadian Perspective *by Juri Peepre*

23 On Wilderness and Cultural Restoration in the Northern Appalachians *by Jamie Sayen*

30 A Conversation at the Edge of Wilderness *by John Elder*

Politics

36 Downpayments on the Rewilding of America *by Carl Pope*

40 America's Heritage Forests: Save 'em Now or Maybe Never *by Ken Rait*

43 Size Does Matter: A Big Wilderness Legislative Strategy *by Jim Jontz*

47 A Dark and Stormy Night: A Political Forecast for Wilderness Legislation *by Debbie Sease & Melanie Griffin*

50 The Domino Theory: Rejuvenating the Concept of Wilderness in Today's Political Dark Ages *by Mike Matz*

Campaigns

56 Oregon Forest Wilderness Revival *by Ken Rait*

58 Wildlands 2000: New California Wilderness for the New Millennium *by Celia Barotz & Paul Spitler*

62 Nevada Wilderness: The West's Best Kept Secret *by Lois Snedden*

65 Restoring Wilderness at Grand Canyon *by Kim Crumbo & Bethanie Walder*

69 Allied for Wild New Mexico *by Jean Crawford*

71 Protecting Colorado's Forgotten Canyon Country *by Suzanne Jones*

74 Utah Wilderness Inventory: Stalking and Walking the Wild Lands *by Tom Price, Kevin Walker, and Jim Catlin*

78 NREPA: Ecology Meets Politics in the Northern Rockies *by Mike Bader*

The Wildlands Project

81 Using Focal Species in the Design of Nature Reserve Networks *by Brian Miller et al.*

Sidebar: Case Study of the Klamath-Siskiyou Ecoregion

Conservation Strategy

93 The Politics of Y2Y, part 3 *by David Johns*

96 A Turning Point for Northeastern Wolf Recovery *by Kristin DeBoer*

98 Group Profile: Bluewater Network

Landscape Stories

99 Rutting Season *by George Keithley*

Population Problems

100 Political Correctness and the Population Problem *by William Ryerson*

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Around the Campfire, continued from inside front cover

era's rapacious market hunting and spurred sportsmen to band together to fight game hogs. National hunting magazines began publishing in the 1870s, and they joined the battle against commercial exploitation of game and fish. Sport hunters and their magazines raised a din against the senseless slaughter of the buffalo. The first national conservation group was not the Sierra Club (founded in 1892), but the Boone and Crockett Club founded in 1887 by Theodore Roosevelt and his fellow hunters. The role of Boone and Crockett in creating the first National Parks, wildlife refuges, and forest reserves has generally been overlooked by historians as well as by today's conservationists.[1]

The second headwater stream is that of Stewardship. One of the most remarkable Americans of the 19th century was Vermont's George Perkins Marsh. As Lincoln's ambassador to Turkey and later Italy, Marsh took in the sights of the Mediterranean, where among the ruins of classical civilizations he found ruins of

The headwater streams that flow together to make the River Wild are

Down-river, the streams of wilderness, ecosysten

the land. The rocky, treeless hills of Greece were as much a testament to a fallen civilization as was the crumbling Acropolis. His 1864 book, *Man and Nature; or, Physical Geography as Modified by Human Action*, is one of the benchmarks of both history and science. He wrote, "But man is everywhere a disturbing agent. Wherever he plants his foot, the harmonies of nature are turned to discord." Former *New York Times* foreign correspondent and then environmental reporter Philip Shabecoff writes, "Marsh was the first to demonstrate that the cumulative impact of human activity was not negligible and, far from benign, could wreak widespread, permanent destruction on the face of the earth."[2]

The third headwater stream is Beauty (Monumentalism)—protection of National Parks because of their spectacular, inspiring qualities. Yosemite Valley in the Sierra Nevada of California was not discovered by whites until 1851 and the mighty sequoias near it were not described until 1852. Within a few years both were already attracting visitors who wanted to see their splendor. In 1859, Horace Greeley, editor of the *New York Tribune*, visited the Yosemite and wrote to his readers that it was "the most unique and majestic of nature's marvels."[3] Five years later, on June 30, 1864, taking time from the burden of the Civil War, President Abraham Lincoln signed a bill transferring the monumental natural wonders of Yosemite Valley and the Mariposa Grove of sequoias to the state of California as a public park. Yellowstone and the other early National Parks were also set aside primarily because of beauty.

The fourth and final headwater stream is that of Forest Protection. It falls out of a cirque-held tarn, but cascades only briefly before a great sharp ridge splits the stream. One side pours off into the Resourcism River with Gifford Pinchot and the

1. Reiger, John F., "The Sportsman Factor in Early Conservation," in Nash, Roderick Frasier, ed. *American Environmentalism: Readings in Conservation History* (McGraw-Hill Publishing Co., New York, 1990) p. 52–58.
2. Shabecoff, Philip, *A Fierce Green Fire: The American Environmental Movement* (Hill and Wang, New York, 1993) p. 55–59.
3. Runte, Alfred, *National Parks: The American Experience, Second Edition Revised* (University of Nebraska Press, Lincoln, 1987) p. 19–20.

other falls into the River Wild with John Muir. The 1891 Forest Reserve Act "merely established reserves; it did not provide for their management," according to historian Samuel Hays. Conservationists ranging from Muir to the sportsmen of the Boone and Crockett Club hoped to keep the forest reserves off-limits to commercial logging, grazing, and other uses. They wanted the reserves protected for their watershed and scenic values, as well as habitat for wildlife. Gifford Pinchot, however, pushed strongly for "management" which would include logging, grazing, and dam building. The 1897 Organic Act, which Pinchot pushed, opened the reserves for commercial exploitation.[4]

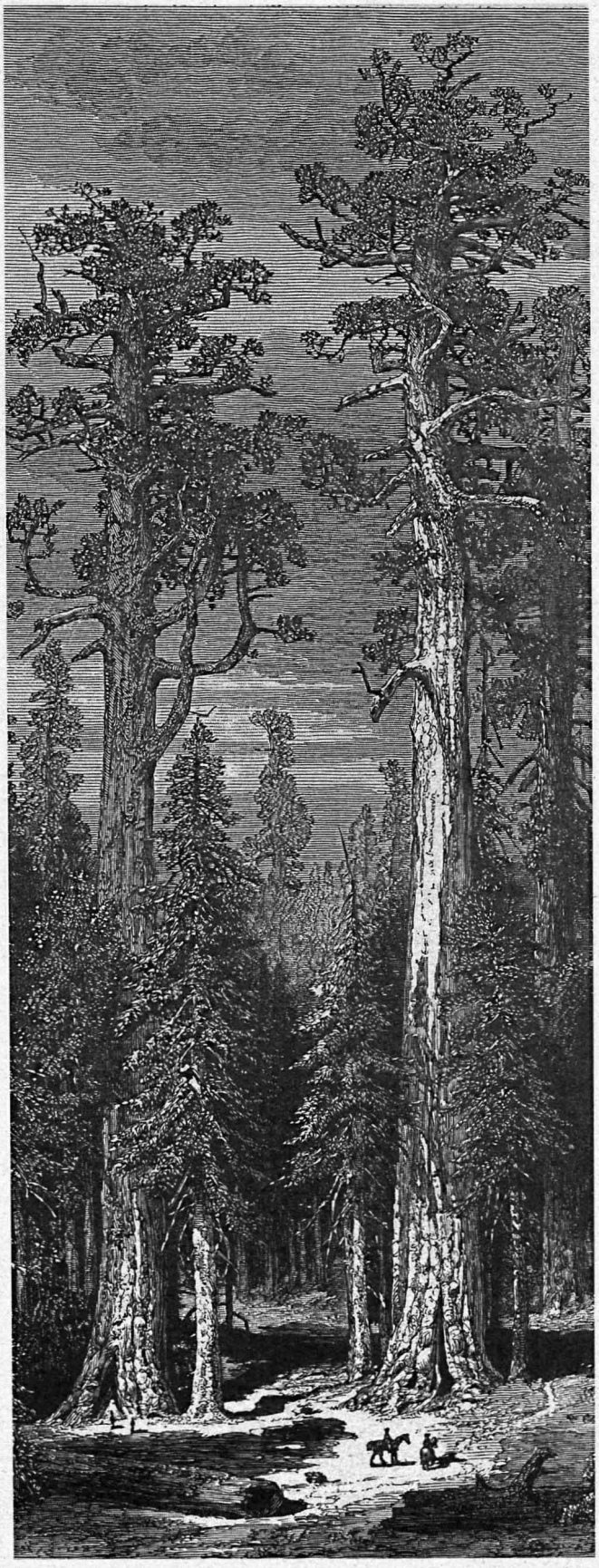
Roderick Nash explains how Muir and Pinchot fell out over the "opening up" of the forest reserves for exploitation. In 1896,

llife protection, stewardship, beauty, and forest protection.

resentation, carnivore protection, and connectivity flow in.

with a $25,000 appropriation from Congress, Secretary of the Interior Hoke Smith set up an advisory commission to recommend management for the forest reserves. Harvard botanist Charles Sprague Sargent and John Muir called for protecting forests as undeveloped wilderness, but Gifford Pinchot and Arnold Hague of the US Geological Survey thought their task was to "get ready for practical forestry." The commission appeared deadlocked. Sargent and Muir seemed to win the debate when President Grover Cleveland withdrew from disposal (i.e., transfer to private ownership) another 21 million acres of new forest reserves on February 22, 1897. But Congress passed the Forest Management Act on June 4, 1897; the act opened the reserves to the kind of intensive use and management that Pinchot wanted.[5]

The split between Muir and Pinchot was such that one of Muir's closest allies, Robert Underwood Johnson, an editor of the leading literary magazine of the time, *Century*, came to call Pinchot a "de-conservationist." And Pinchot, as organizer of the 1908 Governors' Conference on the Conservation of Natural Resources, "carefully kept Muir, Johnson, and most other preservationists off the invitation list." Nash argues that Muir, recognizing Pinchot's control over the forest reserves, turned his attention to promoting National Parks—federal areas that could be protected from lumbering and grazing.[6]



4. Hays, Samuel P., *Conservation and the Gospel of Efficiency: The Progressive Conservation Movement 1890–1920* (Atheneum, New York, 1979 [1959]) p. 36.
5. Nash, Roderick, *Wilderness and the American Mind* (Yale University Press, New Haven, CT, 1967) p. 135–137.
6. *Wilderness and the American Mind*, p. 138–139.

Big Trees—Mariposa Grove (detail) by James D. Smillie (ca.1870s)

From the other three of these headwater saddles, streams also flowed into the watershed of Resourcism. Hays says that Pinchot and other resource scientists in Theodore Roosevelt's administration believed that emerging science and technology were opening up "unlimited opportunities for human achievement" and thus they were filled "with intense optimism." While they worried some about possible resource shortages in the future, "[t]hey emphasized expansion, not retrenchment; possibilities, not limitations." These professional men did not believe in the preservation of the land. "In fact, they bitterly opposed those who sought to withdraw resources from commercial development."[7]

Early on the divide between conservation and resourcism was a knife-edged ridge.

Down the River Wild another stream—Wilderness—comes in. The specific movement to preserve wilderness came from Forest Service rangers, such as Art Carhart and Aldo Leopold, who wished to keep the frontier alive in America's geography. Leopold, who railed against "Ford dust" in the backcountry, feared that growing automobile access to the National Forests would destroy and replace the pioneer skills of early foresters. "Wilderness areas are first of all a series of sanctuaries for the primitive arts of wilderness travel, especially canoeing and packing," said Leopold.[8] He defined wilderness as "a continuous stretch of country preserved in its natural state, open to lawful hunting and fishing, big enough to absorb a two weeks' pack trip, and kept devoid of roads, artificial trails, cottages, or other works of man."[9] Leopold wrote in 1925, "The day is almost upon us when a pack train must wind its way up a graveled highway and turn out its bell mare in the pasture of a summer hotel. When that day comes the pack train will be dead, the diamond hitch will be merely a rope and Kit Carson and Jim Bridger will be names in a history lesson."[10] Wilderness Areas were the geography of American history.

On the other side of the River Wild, just below the confluence with the Wilderness stream, the Ecological Representation stream joins in. As early as 1926, the *Naturalist's Guide to the Americas*, edited by prominent biologist Victor Shelford, called for protecting ecologically representative Natural Areas.

Soon after, the Predator Protection stream splashes down as a stunning waterfall. In "A Nature Sanctuary Plan," unanimously adopted by the Ecological Society of America on December, 28, 1932, Shelford wrote, "Biologists are beginning to realize that it is dangerous to tamper with nature by introducing plants or animals, or by destroying predatory animals or by pampering herbivores...." The Ecological Society said we needed to protect whole assemblages of native species, including large carnivores, and the natural fluctuations in numbers of species.[11] At that time, protecting wolves and mountain lions was—well, bold, hence my seeing it as a waterfall.

Those of us who float rivers know that it can take a long time before the water from an incoming stream mixes fully with the main current. We see this when a creek full of glacial milk dumps into the gin-clear waters of a river in the Yukon. A similar scene occurs in the Southwest when a clear mountain stream plunges into a red river full of silt. For miles, there may be two currents shown by their distinct tints.

So it has been with our river. The wildlife protection, stewardship, beauty, forest protection, and wilderness streams mixed fairly well, but the currents of ecosystem representation and predator protection did not blend as well initially.

During the last twenty years, ecosystem protection, predator protection, and the new connectivity stream (island biogeography) have flowed into the River Wild. Readers of *Wild Earth* have canoed down many words of the mixing of these currents.

And now, with publication of the Soulé/Noss rewilding paper, a new stream has entered. Unlike the other currents, this rewilding stream churns all the other currents together into a deep, wide, powerful river.

Metaphors are never perfect, but this view of conservation as the watershed of the River Wild with different side streams adding power, diversity, and nutrients is pretty darn good. It allows us to see that new streams did not replace old streams. It recognizes that the headwater streams that initially formed the River Wild did not disappear when new streams flowed in. And it embraces the compatibility of the "scientific" streams with the aesthetic and recreational streams.

This issue of *Wild Earth*, full of wilderness campaign reports, is an eagle's flight affording a splendid view of the diversity and power of today's River Wild.

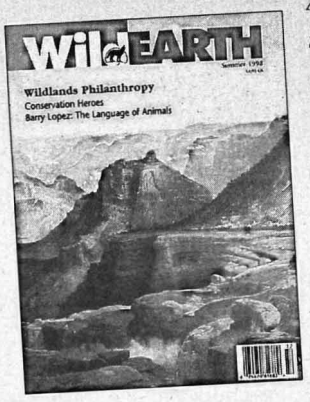
Happy Trails.

—DAVE FOREMAN
Mesa Guacamaya

Portions of this essay are excerpted from The War on Nature, *a book-in-progress by Dave Foreman.*

7. *Conservation and the Gospel of Efficiency: The Progressive Conservation Movement 1890–1920*, p. 2.
8. Leopold, Aldo, *A Sand County Almanac* (Oxford University Press, New York, 1987 [1949]) p. 193.
9. Leopold, Aldo, "The Wilderness and Its Place in Forest Recreational Policy" (originally published in *The Journal of Forestry*, 1921) in Flader, Susan L. and J. Baird Callicott, eds. *The River of the Mother of God and Other Essays* by Aldo Leopold (The University of Wisconsin Press, Madison, 1991) p. 79.
10. Leopold, Aldo, "The Last Stand of the Wilderness," *American Forests and Forest Life*, XXXI (1925) p. 600–604.
11. Shelford, Victor E., "The Preservation of Natural Biotic Communities," *Ecology* April 1933.

THE SUMMER *WILD EARTH* GENERATED CONSIDERABLE—AND LARGELY *favorable—attention. Publications as diverse as the* Chronicle of Philanthropy *and the British botanical journal* Plant Talk *noted our theme issue on wildlands philanthropy. A few readers, including some prominent conservation leaders, warned that overemphasizing private funding for conservation could undercut public lands advocacy. With this issue's theme coverage on the revival of the American wilderness movement we hope to dispel that concern, and stress that we see traditional wilderness activism and private philanthropy as complementary and necessary strategies for wildlands protection.*



Your theme section

on wildlands philanthropy [summer 1998 *WE*] was well done and interesting. But a perspective that I found missing was that wildland protection—certainly on the scale that The Wildlands Project advocates—is an activity that will require the financial commitment of the entire society, and that commitment, in the United States, comes through government action, either federal or local.

I welcome the activities of land trusts and other kinds of private philanthropies in protecting the places we love. But in some cases direct acquisition with private funds is an expression of the funder's distrust of the democratic process. Certainly democracy is messy, and many of the players in our political system have dubious or downright malicious attitudes toward the land. However full of manure the political system may be, it can be used to fertilize some wonderful crops.

The simple political act of persuading (or compelling, given the political realities of our day) Congress to honor the commitment to use the Land and Water Conservation Fund for its intended purpose would generate a billion dollars a year for adding to the public domain, and certainly a successful campaign to do this would cost only a fraction of a billion dollars.

It would be tragic if a flowering of wildlands philanthropy were to fall short of its goals because a withering of advocacy philanthropy crippled the public arm of the public-private partnership that land preservation requires.

CARL POPE

Carl Pope is executive director of the Sierra Club, San Francisco, California

In your special issue

on wildlands philanthropy, you highlighted a somewhat neglected part of the American conservation movement.

As a member of the Northcoast (California) Land Trust, I know the value of protecting private lands through private initiatives. Through my participation in this land trust, I have assisted, in a small way, in protecting public access to beaches near my home in Trinidad, California.

However, as a member of the lower middle class, I have never had the financial resources to buy even a few acres of old-growth redwood forest in my bioregion. Instead I have joined with millions of other California residents in voting for state bonds that use tax revenues to acquire redwood forests for public use and preservation of biodiversity.

I would like to make a few remarks concerning preservation of redwood forests in order to emphasize the point that in many cases private resources can supplement—but not replace—the use of tax money to protect biodiversity.

In Chris McGrory Klyza's chronology "Land Protection in the United States, 1864-1997," he notes that Redwood National Park was created in 1968. He fails to mention the expansion of Redwood National Park in 1978, which resulted from a decade of continuous political action by committed conservationists to get the state and federal government to buy lands for this National Park.

The political battle to establish the park involved expenditure of enormous political capital by conservationists, and the total cost of Redwood National Park was nearly one billion dollars. As far as I know, no private individual or foundation has provided the resources to spend a billion dollars on a single park project in the United States.

Private funds have never been sufficient to buy significant stands of old-growth redwoods because the market value of these forests is so high. Currently the federal and state governments are in the process of acquiring the last large, privately owned parcel of old-growth redwoods (Headwaters Forest) from Charles Hurwitz (Maxxam Corporation) for $380 million. Approximately 7000 acres are included in this proposed purchase.

Conservationists have strenuously argued that during the past decade Maxxam Corporation has overcut its nearly 190,000-acre property and that the logging operations of the corporation should be more strictly regulated to protect habitat for Threatened and Endangered species such as salmon and the Northern Spotted Owl. The Public Trust doctrine incorporated in the California Constitution holds that private landowners are responsible for the welfare of public resources including wildlife habitat, rivers and streams, and fish habitat. When landowners act irresponsibly, the government should respond with strong and effective regulation.

In many cases it is more cost effective for private individuals to fund public campaigns for preservation than to attempt to acquire threatened lands with private resources.

One of the real failures, in my estimation, of the conservation movement over the past two decades has been our inability to protect the federal Land and Water Conservation Fund. This fund was established by Congress with revenues from federal oil and gas leases to allow agencies to acquire lands for parks, wildlife refuges, and wildlife sanctuaries. Successive Congresses have looted nearly $20 billion from this fund to pay for social services and reduce the budget deficit.

Despite the growing number of billionaires in the United States, it is doubtful that we will see $20 billion donated to private wildlands philanthropy efforts in the short term. The David and Lucile Packard Foundation is devoting $175 million to land acquisition in California over the next five years, but these funds are not adequate to buy significant parcels at current market value.

Similarly, the $100 million in the 1998-99 California state budget for public lands protection is also inadequate funding to serve the conservation goals in this state. And land prices are expected to continue to rise in California partly because of increasing population pressure.

Clearly, we need to strongly encourage private wildlands philanthropy initiatives at all scales, but private donations must be leveraged with public money—and with government regulation—to achieve conservation goals.

BILL DEVALL
Trinidad, California

I know how difficult

it is to compile a concise chronology of land protection in the USA. Nevertheless, I wanted to point out that [Chris McGrory Klyza's] listing of 1990 Tongass Wilderness designations might also have noted that 728,000 additional acres of the Tongass were designated by Congress to "protect their wildland character in perpetuity."

Although technically not "Wilderness" this designation was "a rose by any other name." These wild watersheds were withdrawn from commercial logging, road-building, etc. In total, the Tongass Timber Reform Act placed permanent protection on over 1.3 million acres. (This figure includes almost 300,000 acres of salmon stream buffer zones protected by law.)

Beyond this particular point, I was very impressed with the summer issue—keep up the good work.

BART KOEHLER
Bart Koehler is executive director of the Southeast Alaska Conservation Council, Juneau, Alaska

If conservation

biologist Dr. McLarney's letter [summer 1998 *WE*] was "one of the most thoughtful" received in response to the Roy Beck and Dave Foreman articles in the winter 1997/98 issue (which touched on the US immigration and population nexus), the standards for thought on this subject are declining. Civility in Dr. McLarney's case largely means he waited until the eighth paragraph before implicitly unleashing the stigmatic epithets (the dreaded "R" and "X" words) on Beck and Foreman.

As a physical scientist, I am always amused watching a biologist struggle with the interpretation of data. After generally agreeing with most of Dave Foreman's and Roy Beck's premises in the first seven paragraphs of his letter, McLarney retreats into cliché to make his points. For example, his rhetoric includes terms like "opponents of immigration" and "closing the border." Foreman and Beck are better characterized as opponents of "overimmigration." No serious reformer is talking about closing borders or zero immigration. In fact, many organizations working for immigration reform would probably settle with US immigration at 500,000 persons per year (i.e., the levels of the early 1980s, roughly half current levels). That would still leave the US as the *largest* people-importing nation in the world by far.

Dr. McLarney also repeats the vacuous saw about population being a "global" problem requiring a "global" solution. Calling a problem "global" is only useful, as pointed out by Garrett Hardin, if there is a plausible "world solution." Should we hold yet another global population conference where the Vatican, allied with theocratic Muslim nations plus most of Latin America, will

filibuster the conference thereby guaranteeing failure?

McLarney is supporting, perhaps unintentionally, a "Mobil Oil Kyoto Agreement." Essentially the carbon industry stalled the global warming conference in December 1997 in Kyoto, Japan by arguing that unless *every* nation agrees (i.e., a global solution) no effective action should be taken.

Even a practitioner such as Dr. McLarney of the largely qualitative science of biology must notice the operation of numerically skewed "80/20" effects. The three most populous nations in the world (China, India, US) hold about 35% of the "global" population. Motivating only these three nations to address population "locally" would have tremendous impact, immune from any Vatican interference—plus their example would greatly help induce other nations to follow. Hence effective solutions usually start locally; global solutions rarely happen.

Never globalize a problem if it can be addressed locally. Beck and Foreman urge the US to address its population problem, first locally—and that means, by simple Census Bureau statistics, that addressing "overimmigration" must be part of the solution since it accounts for about half of US population growth.

DR. WILLIAM E. MURRAY JR.
Portola Valley, California

Wild Earth Update

Living as a conservationist during our planet's most devastating extinction spasm in 65 million years guarantees the experience of continual loss. Even when a species' extinction appears to be averted, as with the reintroduction of Mexican gray wolves to the US Southwest this past spring, the disappointment of learning less than a year later that four of the original eleven were shot in an apparent sabotage attempt is almost expected.* Although we may be weary from repeated setbacks, we need to take care to celebrate the victories we do accomplish.

In New England, for example, biologists from the Vermont Fish and Wildlife Department have observed—for the first time in 200 years—six nests of spawning sea-run Atlantic salmon in tributaries of the Connecticut River (the fish were stocked as inch-long fry in 1994 and spent two years in fresh water before migrating to the Atlantic Ocean). In another encouraging development, the US Fish and Wildlife Service announced on September 29, 1998 that it will begin designing an eastern timber wolf recovery plan for Maine, New Hampshire, Vermont, and New York during the winter of 1999 (see "A Turning Point for Northeastern Wolf Recovery" by Kristin DeBoer, p. 96).

Wild Earth has good news to share as well. We were listed as a finalist in the 10th Annual *Utne Reader* Alternative Press Award in the General Excellence (under-50,000 circulation) category, and *Wild Earth* publisher Dave Foreman, together with fellow TWP Board members Michael Soulé and John Terborgh, was named one of the century's "100 Environmental Heroes" in the November-December 1998 issue of *Audubon* magazine.

Sometimes it seems that only a virulent airborne virus or some other equally cataclysmic event—by drastically reducing human numbers and our ecologically destructive activities—will end the current biodiversity crisis. But if we are somehow spared such a fate, conservationists' unrelenting defense of wild Nature may eventually help create a society which (to paraphrase E.O. Wilson) considers its biodiversity as precious a part of its national heritage as its art, language, and culture. May it be so.

—MONIQUE MILLER

* Since the reintroduction in January, four wolves were shot, one was found dead, one is missing and presumed dead, and three were recaptured for possible re-release.

ERRATA *In the fall issue, a phrase in Dave Foreman's "Around the Campfire" was inadvertently repeated. The paragraph should have read:*

Michael Soulé and Reed Noss, in their landmark paper "Rewilding and Biodiversity: Complementary Goals for Continental Conservation" in this issue of *Wild Earth*, identify three currents in the stream of American Nature protection:

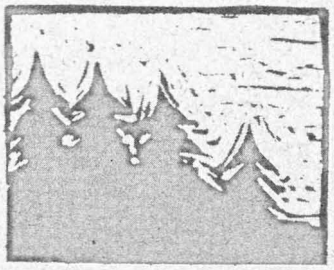
1) The traditional wilderness movement with emphasis on beauty, inspiration, and recreation;

2) Biodiversity conservation with emphasis on ecosystem representation and protection of biological hot spots; and

3) Island biogeography with emphasis on connectivity in the landscape.

Additionally, Wendell Berry's excerpt from "The Farm" was miscredited; the poem was originally published in A Timbered Choir *(Counterpoint, 1998).*

Our apologies to both authors.



A Wilderness View

Wilderness Revival

Let us try to be done with a wilderness preservation program made up of a sequence of overlapping emergencies, threats, and defense campaigns! Let's make a concerted effort for a positive program that will establish an enduring system of areas where we can be at peace and not forever feel that the wilderness is a battleground.

—Howard Zahniser, in "How Much Wilderness Can We Afford to Lose?" (1951)

This past June, after a lengthy negotiation, part of Whitney Park—a 51,000-acre private estate within New York's Adirondack Park (and a parcel long atop conservationists' wish lists)—was added to public ownership. Through the leadership of Governor George Pataki, and with the support of the Adirondack Council, Adirondack Nature Conservancy, Sierra Club, and other groups, a 15,000-acre tract of the Whitney lands encompassing most of Little Tupper Lake and nine ponds to its west became the newest addition to the Adirondack Forest Preserve.

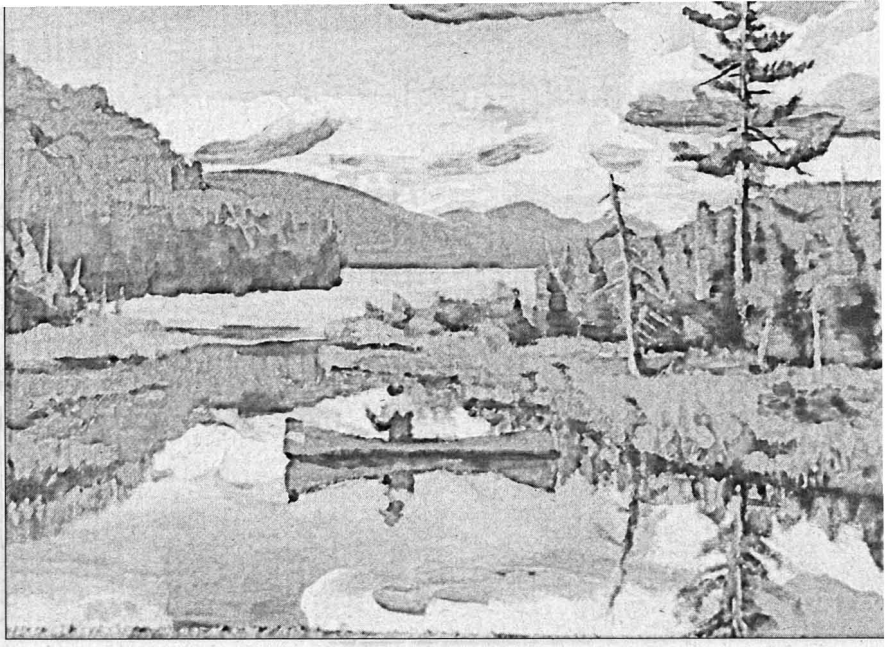
On August 15, hundreds of paddlers launched canoes and kayaks en masse on Little Tupper during a rally to support permanent wilderness classification for the Whitney acquisition. The "Canoe-in for Wilderness," sponsored by the nascent Motorless Lakes Coalition (under the leadership of the Residents' Committee to Protect the Adirondacks), was a resounding success.

In early December, as the *Wild Earth* staff scrambled to complete this issue, I took advantage of an unusual warm spell to steal away to the Adirondacks for a final, year's end canoe trip. Unlike the day in August, when the Little Tupper boat launch was awash in a sea of wilderness advocates carrying their multi-colored craft to the water's edge, this time the parking lot was empty. The lake's surface was grey and choppy—and free of any human presence, save our party's two canoes. Even the loons were gone.

The trip afforded us a classic wilderness experience—the opportunity for solitude and primitive recreation in a sublime setting. A few minutes' paddle from the put-in and the works of man would be substantially unnoticeable. On this day, with a stiff breeze churning the water into whitecaps, natural processes informed and constrained our actions. Despite the comfortable air temperature, the water was frigid. A capsized boat near shore would have been extremely unpleasant; far from shore, probably fatal.

Soon after embarking, we rounded a point and were exposed to the full force of the wind. We noted the remaining daylight, formidable waves, range of abilities in our group, and the consequence of swamping. A decision was made: We would forsake the miles of upwind paddling to our intended campsite and retreat. We made camp on calmer waters.

I recount recent events affecting Little Tupper's fate and my experience there because I believe them instructive in several ways. On a personal level, my brief escape to the Adirondack wilds is notable for its very *ordinariness*. Millions of Americans visit wilderness areas every year—both designated and de facto wilderness on public lands administered by federal and



state agencies. There we find beauty, spiritual renewal, physical challenge. Sometimes, if we are lucky, wilderness teaches us that the desires of individual human beings mean very little in the face of a gale or swirling snow. To extend Wallace Stegner's metaphorical invocation of wilderness as the "geography of hope," visitors to wild Nature's realm often find it a kingdom of hope and *humility*.

Moreover, the campaign to save Whitney Park is emblematic of the wilderness movement's lately immersion in the roily waters of "overlapping emergencies, threats, and defense campaigns." Indeed, it took an emergency—the proposed subdivision and development of Little Tupper, the Northeast's largest undeveloped lake in single private ownership—to generate a groundswell of political and conservationist action to secure its protection. It was an important, but partial, victory.*

Many leading figures in the American conservation movement, several of whom are represented in this issue of *WE*, have noted that this defensive posture seems to be giving way to a more ambitious agenda. A resurgence of interest in Wilderness designation campaigns is underway; wilderness lovers across the continent are abandoning timidity and going on the offensive, walking roadless area boundaries and drafting proposals for adding existing roadless areas to the National Wilderness Preservation System.

This revival is palpable and heartening, and dovetails nicely with a growing interest in wildlands philanthropy—privately funded efforts to protect wilderness and wildlife. Conservation purchases such as the recent acquisition of the 30,000-acre Mallory Swamp in Florida (by two generous individuals) are a necessary complement to campaigns for expanded Wilderness on federal and state public lands.

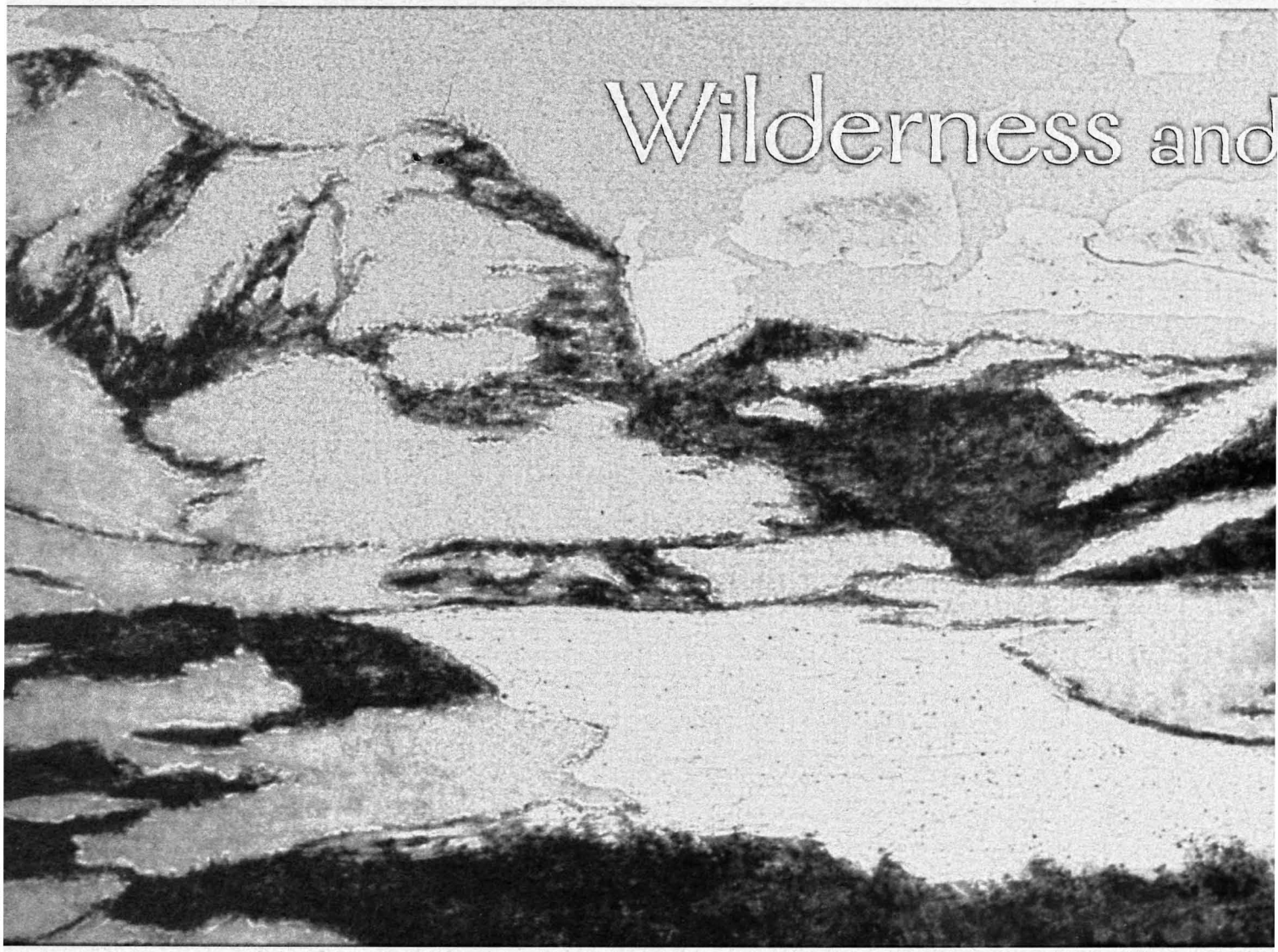
Ironically, Mallory Swamp and the Whitney tract are far from untrammeled; both have been logged extensively. But each is a key to restoring ecological connectivity on the landscape. Mallory Swamp will help link existing protected areas, providing a critical movement corridor for Florida black bears and panthers. Whitney Park's full acquisition by the public, if and when it occurs, will be a boon both to wildlife and to recreationists—by reopening traditional canoe routes closed since William C. Whitney purchased and posted the lands in the 19th century. Wilderness protection for it and other key private holdings, including large blocks of industrial timberland now being sold by International Paper and Champion International, would bolster the recovery of the Northern Forest's extirpated large mammals and go far toward fulfilling the promise of the Adirondack Park, a region that has been recovering its ecological health since the Forest Preserve was created in 1885 after decades of timber cutting.

This, of course, is the wilderness revival that lovers of wildlands and wildlife most anticipate and celebrate—not only the physical and spiritual renewal we receive from travels in wilderness, not only a reinvigorated conservation movement rediscovering wilderness protection as a central organizing principle, but a revival of *wildness* on the landscape as old wounds heal and Nature regains strength. This, truly, is the geography of hope.

—TOM BUTLER

* The socialite Marylou Whitney-Hendrickson, who inherited Whitney Park and an estate valued at $100 million from her late husband Cornelius Vanderbilt Whitney, backed out of a related agreement that would have placed a 10-year development moratorium on her remaining 36,000 acres and given the state a window of opportunity to complete the purchase.

untitled Adirondack landscape by Bill Amadon



by William Meadows

Maggie Wille uses a wheelchair because of a physical disability similar to multiple sclerosis. Not long ago, she testified against reopening truck portages in the Boundary Waters Canoe Area Wilderness before a congressional subcommittee. Anti-wilderness forces in Minnesota retaliated with a vicious personal attack on Maggie, even claiming she fakes her disability. Maggie didn't back down; she hardened her resolve and deepened her commitment to the Boundary Waters. She testified yet again, this time before one of the most virulent anti-wilderness members of Congress, Helen Chenoweth. She continues to appear regularly in the media and to speak at rallies.

Over Memorial Day weekend, a remarkable group of 50 people came together near Tucson. Some were the legendary and near-legendary "warhorses" of the American wilderness movement; the rest were "young Turks" newly immersed in the issue and eager to hear the veterans' stories, share their passion, learn their tactics.

In June, some 450 wilderness advocates gathered in Seattle for a National Wilderness Conference. Speakers ranged from the Archdruid David Brower to a young activist in his teens, wise beyond his years, whose passion for wild Nature was already fully developed. It was a

illustration by Amy Grogan

three-day celebration of and rededication to the wholly American idea—and ideal—of formally protecting wildlands as designated Wilderness.

Such gatherings, if not yet commonplace, are no longer rare. And Maggie Wille's story of quiet, even lonely, courage is remarkable but not unique: countless others have similar stories of fortitude in the defense of wilderness. These people are truly citizen-heroes. I am grateful to them and proud to call them partners, friends, and even family. They, in their diversity, their endurance, and their growing numbers, are the reason we should remain optimistic about the future of Wilderness protection in America.

It is only through the passion and commitment of the conservation community that we have successfully turned back repeated assaults by zealots in Congress to sell, give away, and develop America's wildlands. After four years of this nonsense—and a dozen before that as earlier Administrations attempted to turn public lands into private profit centers—we have had enough. I heard it resoundingly at the Wilderness Conference in Seattle, and I've heard it again and again at a host of gatherings since. It is time to move beyond the mind-numbing business of endlessly staving off attacks. It is time to begin designating and permanently protecting new Wilderness—and lots of it.

I propose a reasonable and prudent goal: 200 million additional acres be protected as wilderness in the coming decades. There is at least that much federal public land currently deserving such protection. I may or may not live long enough to see that full amount protected, but I firmly believe the next generation of wilderness heroes will see it happen in their lifetimes.

Naive? Perhaps, but I don't think so. I sense a profound awakening within mainstream America, a recognition of the importance of wildlands in our lives. *The Washington Post* captured its essence recently, reporting that families are literally lining up for naturalist-led hikes in and around the DC metropolitan area. Sadly, there are not enough natural areas left in the region to meet the burgeoning demand. Sprawl has chewed up most wild places, spitting out housing developments and shopping malls in their stead.

From Atlanta to Los Angeles, this story is repeated throughout the country. It is no coincidence that America's awakening to its own love for wild things and wild places comes in the face of relentless sprawl. The loss of forests, meadows, and wetlands reminds us all that we have a deep emotional and spiritual need for Nature wild and free. The nation's newspapers regularly report on this sense of loss and on the mounting anger people feel over rampant development.

That anger spills over to the clearcutting, overgrazing, and raucous motorization of our public lands. Here—on the people's lands—citizens have some say in what happens. What more and more of them are saying is: protect our lands for their wilderness values. A Wilderness Society poll conducted in October 1997 found that 67% of the respondents favored protecting roadless

forests over 1000 acres from development. This past June, a Republican pollster found that 70% of Utah residents favor designating undeveloped Bureau of Land Management lands in that state as Wilderness.

The Chief of the Forest Service, Mike Dombeck, acknowledged this sentiment in an extraordinary open letter to Forest Service employees dated July 1, 1998:

> *Values such as wilderness and roadless areas, clean water, protection of rare species, old growth forests, naturalness—these are the reasons most Americans cherish their public lands....First and foremost, we must be loyal to our agency's land ethic. In fifty years, we will not be remembered for the resources we developed; we will be thanked for those we maintained and restored for future generations.*

Our challenge, of course, is to hold the agency to the chief's words. A good start is for the Forest Service to strengthen and make permanent its temporary road-building moratorium. Each of the approximately 60 million roadless acres left on our National Forests should be protected as wilderness. We have lost too much already.

It is useful to wonder what fires this revitalized American wilderness movement. For many, it is the fundamental belief that wild things have a right to exist in their own space and time, without our defining, framing, or limiting them. This is the very essence of wilderness—Nature operating under its own rules, free of human controls. In recognizing this right, and in choosing to protect wilderness, we acknowledge the deep emotional and spiritual needs we have for healthy and wild landscapes. I have heard that sentiment nowhere better expressed than in the words of a Gwich'in leader with whom we work for the protection of the Arctic National Wildlife Refuge: "It is a holy place to us. We don't even go there for fear that even looking at it might harm it."

This is the very essence of wilderness—Nature operating under its own rules, free of human controls. In recognizing this right, and in choosing to protect wilderness, we acknowledge the deep emotional and spiritual needs we have for healthy and wild landscapes.

It is this deeper, more profound connection to place that gives rise to the commitment and courage demonstrated time and time again by activists from Maine to Alaska, from Florida to California. Each of us is working to protect a special place, one that we grew up with as children or perhaps grew to love as adults. To each of us in our own way these are sacred places that grace our lives with beauty and wonder and offer us a way to experience solitude and connection simultaneously. These wild places help make our lives whole.

Specific places allow us to tell compelling stories—of the dependence of vast caribou herds on an unspoiled Arctic coastal plain, or the stark beauty of the remote and rugged canyonlands of Utah, or the awe we experience knowing grizzly bears and wolves still roam roadless areas of the northern Rockies.

Many Americans have these same kinds of feelings for the smaller patches of wildness—in parks and natural areas—still found within their communities. Although not *wilderness* in the strictest sense, these *wildlands* can help protect some ecological values and offer people opportunities to experience Nature, escape the city's congestion, and perhaps even find some solitude. If we are to protect big Wilderness Areas, we must reach beyond our own movement and connect with these people who recognize the restorative and redemptive powers of wild places.

It is on this deeper level that The Wilderness Society hopes to connect with a new constituency for big wilderness. We seek to do so by establishing a nationwide network of wildlands, one that protects and connects important open spaces and natural areas in cities, suburbs, and rural managed landscapes with large Wilderness Areas. The network should be designed in part on biological considerations. Where should the key reserves and habitat linkages be established to maintain the nation's biodiversity? At the same time, the network should be based on spiritual connections to the land, a shared love for wild things. That love is expressed by wildlife advocates across the US—by residents of Bozeman who are working with a local land trust to develop a trail network that connects city neighborhoods with nearby open space, by Iowa farmers incorporating wildlife habitat among the corn fields, and by forest activists successfully appealing timber sales in roadless areas.

A nationwide wildlands network would be built upon the notion that wildness exists in many different forms, in many different places—it exists across the landscape along a continuum. At one end is Wilderness, which encompasses those places on the landscape that are most wild; at the other end is the highly developed. In between are lands of varying wildness, some of which can be considered wild only within the context of the surrounding landscape. For example, while not true wilderness, the Santa Monica Mountains situated in the midst of urban Los Angeles contain a great deal of wildness. Coyotes, rattlesnakes, and

abundant wildflowers are just a few of the reasons why many people in Southern California might think of those mountain parks when they hear the word "wilderness." It is the network's capacity to include smaller, relatively wild places at the community, county, and state level that makes it a powerful tool for reaching new wilderness constituents, for most Americans' experiences of "wilderness" are not in the Glacier backcountry, for example, but occur in more modest parks and natural areas closer to home.

Speaking of the intrinsic and emotional value of wildlands can be a powerful advocacy tool. In 1997, then-Forest Supervisor of the Lewis and Clark National Forest Gloria Flora decided not to allow oil and gas leasing along Montana's Rocky Mountain Front, capturing in the final Record of Decision the following:

> *[People] simply want to express heartfelt emotions about a place they consider special. Many feel that development of any kind, particularly oil and gas development, would "ruin" the special feeling of the Front, regardless of whether they ever saw or experienced the results of the development. Their perceptions about the value and spirituality of a place would be affected. Many feel that relatively undeveloped lands such as those on the Front are a diminishing resource, and increasingly hard to find. They point to its uniqueness in that sense. They also feel the need for oil and gas does not outweigh the intrinsic values of the lands in and along the Rocky Mountain Front.*

The values described here are universal. One can swap "Rocky Mountain Front" with the names of countless local forests under threat of development and it would likely still make perfect sense.

Obviously, The Wilderness Society cannot establish a national wildlands network on our own. Fortunately, there are many efforts to establish networks at the regional, state, and local level already underway; Yellowstone to Yukon, Florida 2000, and the Delaware Bay Watershed projects are just three examples. We believe a national network will both benefit from and complement such efforts. Just as protecting every mile of the Appalachian Trail became a national priority precisely because it was a part of the trail, so too can the national network help groups leverage their work to save important wildlands all across the country. With the network as the common goal, the Land and Water Conservation Fund provides an excellent mechanism by which new political partnerships between wilderness activists and groups working to protect urban, suburban, and rural places can be forged.

The Wilderness Society is committed to helping nurture the revitalized American wilderness movement and to help it shift to the offensive. We'll need a return to basics and as many new and effective resources as we can marshal. We must find ways to pass on the experience and expertise of our long-time wilderness advocates to a younger generation—and to learn from that generation fresh ideas and the use of new tools. Activists delineated most of the National Wilderness Preservation System's 100-plus million acres with hand-drawn maps; maps of the next 200 million acres will likely be computer-generated. Storied wilderness organizers assembled an army of conservationists with endless phone calls to dog-eared lists; today we organize also through list serves and e-mail. But the principles still apply: we must strengthen wilderness coalitions and campaigns, and build new ones where they don't exist. We must train advocates to organize, lobby, handle media, and raise the money to sustain their work. The Wilderness Society views that task as its proper work and is committed to it.

That the effort to revitalize the wilderness movement comes on the eve of the 50th anniversary of the publication of *A Sand County Almanac* is entirely appropriate. Aldo Leopold inspired many of us to commit our lives to protecting wild places. He did so in part by introducing us to a concept he called a land ethic, a relationship of harmony between people and the land.

Leopold was no idealist. He understood all too well the daunting challenge of fostering a land ethic within the American public. Yet what an opportunity he might see today—for, as growing numbers of Americans express their love for—and commitment to protecting—wildlands and Wilderness, isn't the land ethic at the very heart of this public awakening? ❙

William Meadows is president of The Wilderness Society (900 17th Street NW, Washington, DC 20006). A native of Tennessee, he served for many years as a leader within the state and local chapters of the Sierra Club.

illustration by Lezle Williams

BEAR Necessities

Grizzlies, Wilderness, and the Science of Extinction

by Louisa Willcox

The survival of the grizzly and the wolf in the US Northern Rockies is no accident. Without extensive wildlands—public and private—and relatively low numbers of people, large carnivores such as grizzlies and wolves would be discussed here as they are in most of their former range: in the past tense. Since the mid-1970s the Endangered Species Act (ESA) has also buttressed the survival of grizzlies and wolves by prohibiting their killing, trapping, and harassment. As scientists learn more about how and why sensitive species such as the grizzly bear become extirpated, it becomes increasingly clear that the need for secure habitat is fundamental, and the scientific arguments for an expanded system of Wilderness deepen. So too does the case for a much more comprehensive program of ecosystem protection, for even if every acre of potential Wilderness were protected in the Northern Rockies, the grizzly populations here could still "wink out" due to conflicts on adjacent public and private lands.

This article will focus on what science tells us about the needs of the grizzly—the most telling barometer of the health of Northern Rockies' ecosystems—and will revisit the essential role of wilderness in grizzly recovery. It will also highlight how the Wilderness Act, by itself, is limited in the complex arena of Endangered species recovery. Other complementary tools will be necessary to ensure a sound future for this icon of the American West and the wildland ecosystems that it represents.

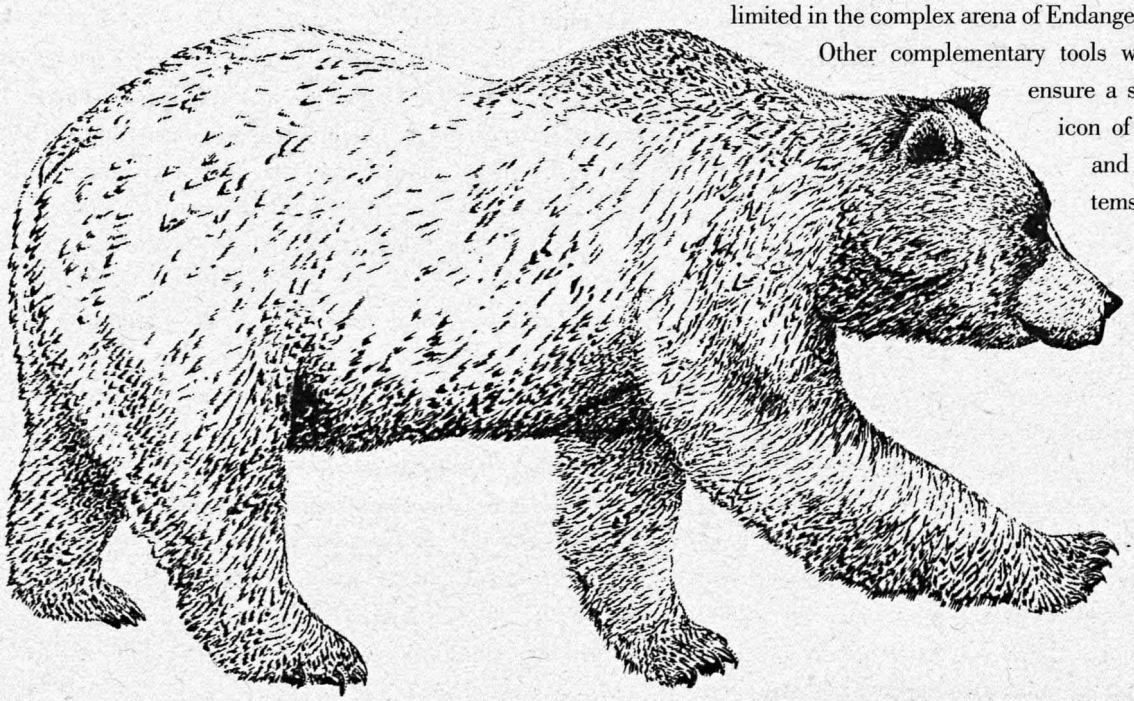


illustration by Cynthia Armstrong

The Great Bear's Bottom Line

Although the scientific data and literature on *Ursus arctos horribilis* stand as tall as a grizzly on hind legs, the relevant findings boil down to two simple concepts: bears need protection from people who would harass and kill them, and they need secure habitat to forage, den, and reproduce successfully. It is important to note that grizzlies come into the world with formidable biological strikes against them: a low reproductive rate (the slowest in North America after the musk ox), small litter sizes (two per litter is average), and a palate similar to ours (with a memory and nose far keener), which can bring bears into conflicts with humans in the course of seeking human food. Furthermore, grizzlies require a long rearing period with mom (2–3 years), which is essential for a bear to learn how to live within a particular ecological landscape. And whereas male bears often disperse great distances, females typically do not, setting up home territories next to or within the range of their mothers. Thus, unlike wolves, bears cannot easily recolonize formerly occupied ecosystems hundreds of miles away.

Additionally, the bear has some major public relations challenges to overcome: although exceedingly few people have been hurt or killed by a grizzly, fear runs deep. (For example, out of the 47 million people who have visited Yellowstone National Park in the last 25 years, .00001% of those visitors were injured by bears.) In contrast to other wildlife (even other carnivores), human conflicts—and even high rates of human contact—with grizzlies regularly results in dead bears.

With so many strikes against them, grizzlies (like some inner-city youth) tend to die young and not of natural causes. Areas where bears survive in the lower 48 states are characterized by expansive wild country and few people—places where grizzlies can avoid frequent human contact. A recent study of historical data on grizzly extirpations shows that the bear's persistence correlates with western mountainous areas covering roughly four or more million acres of wild lands, configured geographically in a round rather than elongated shape. With less habitat than that, grizzly populations have tended to disappear.

Within grizzly territory, habitat quality varies dramatically: the best places for bears, such as valley bottoms and riparian areas, are where we humans typically have chosen to settle. The more spread-out foods are geographically (by natural or human causes), the bigger the table needs to be in order for the grizzly to win the caloric race against winter. Furthermore, nature's meals are not on the same table from year to year. In Yellowstone, for example, where the amount of key high-fat foods such as whitebark pine nuts and army cutworm moths fluctuates enormously, grizzlies respond by redistributing themselves from year to year. This natural variability in foods and their scattered distribution helps to explain why the home range sizes of Yellowstone bears are the largest in the lower 48 states (an average of 900 square miles for males, and 350 square miles for females).

As scientists learn more about how and why sensitive species such as the grizzly bear become extirpated, it becomes increasingly clear that the need for secure habitat is fundamental, and the scientific arguments for an expanded system of Wilderness deepen.

This also helps to explain why in years when several essential food supplies crash, grizzly bear mortality rates skyrocket. For example, when whitebark pine and cutworm moths went bust in 1995, 17 bears (out of a total population of a few hundred animals) died at human hands as they sought foods at lower elevations, in closer proximity to people. These facts underscore the importance of developing a system of land protection that provides secure habitat and foraging alternatives when key food sources fail.

Several studies have attempted to quantify grizzly security needs. In the South Fork of the Flathead National Forest near Glacier Park, researchers Rick Mace and Tim Manley showed that a female grizzly needs nearly 70% of her home range in security condition (i.e., "wilderness" or "roadless with no motorized vehicle use"). Similar studies in Yellowstone show slightly higher needs for secure habitat—most likely due to the drier, more open nature of the country as well as greater variability of natural foods. Furthermore, studies by members of the Interagency Grizzly Bear Study Team (IGBST) in Yellowstone indicate that a grizzly bear needs roughly 5000–7000 acres of secure foraging habitat, and that these areas need to be linked across the landscape to enable a bear to get from one to another without a high probability of bumping into people or human developments.

In addition to the need for core security habitat, these and other studies in Canada, Alaska, and northern Montana have

demonstrated the link between roads and grizzly mortality levels. Several studies have quantified the probability of people and bears colliding (and bears dying) with an increased number of roads and motorized vehicle use. Using different methodologies, studies in Yellowstone and the South Fork of the Flathead have pointed to the need for total open road densities below one mile per square mile in order for females to survive. Refining the analysis to account for topographic variability and forest cover, the IGBST found that for bear habitat to be secure, road densities should be as low as .26 miles per square mile in the flat, overcut Plateau Area of the Targhee National Forest, where ten miles of clearcuts define the border of Yellowstone National Park.

These studies have underpinned efforts to improve road management for grizzly recovery on the Flathead, Gallatin, Targhee, and other National Forests in the region. It should be noted that these studies would not have been used effectively or completely by land managing agencies were it not for litigation under the ESA brought by Earthjustice Legal Defense Fund on behalf of conservation organizations.

Studies considering road impacts on elk and wolves show similar results, but the grizzly is the most sensitive to roads of any species studied in the Northern Rockies. Thus the road closure and obliteration and restoration efforts brought about through grizzly conservation work have greatly benefited other wildlife including fish—and the health of the ecosystem as a whole.

It is clear that the more wild habitat in an ecosystem, and the fewer roads and people, the better are the prospects for grizzly bears (and other sensitive species) to survive and successfully reproduce. The scientific evidence reinforces conservation efforts for the expansion of Wilderness Areas and wildlands networks such as would be created by passage of the Northern Rockies Ecosystem Protection Act.

But this is not the end of the story.

Wilderness: One Tool in the Chest

Protection of key remaining roadless areas as Wilderness is vital to the Great Bear. However, this will not be enough. Grizzly bear research has also pointed out the limitations of Wilderness as a tool for bear conservation:

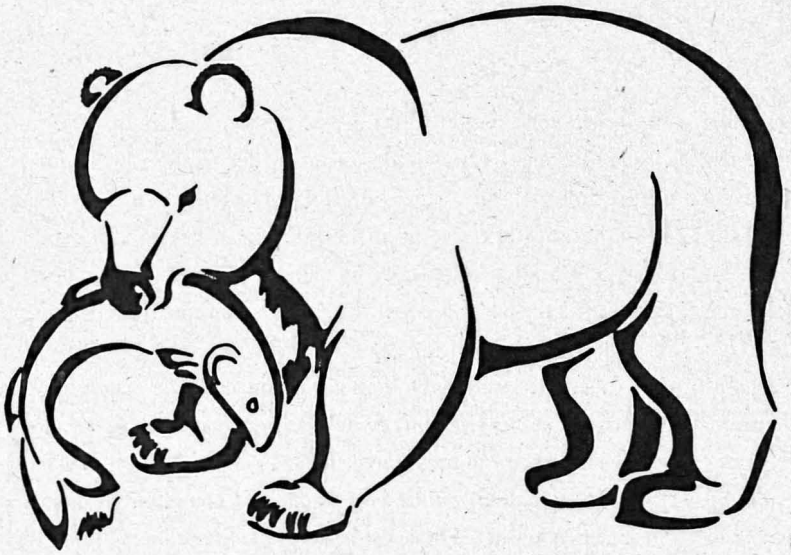
1. Designation of areas as Wilderness does not address threats to bears *within* Wilderness, particularly sheep herders, and in some areas, elk hunters and recreationists. Although domestic sheep and grizzlies are a lethal mix, Wilderness designation does nothing to restrict livestock grazing, recreation, or hunting—or human behavior generally—even if detrimental to protection of imperiled species. Viewing sheep as an irresistible delicacy, a grizzly in sheep country rarely escapes herders' guns. Conflicts with elk hunters can have similar results if grizzlies learn to track gun shots in search of gut piles. Since 1975, more than 50 bears have died as a result of conflicts with sheep herders and elk hunters.

Efforts to remove sheep allotments in grizzly country have been successful on the Gallatin and Targhee National Forests; however, domestic sheep grazing (in designated Wilderness in the Wind River Mountains, for example) will continue to limit the expansion of grizzly bears into areas needed for recovery. Elk hunter conflicts are far worse in the Greater Yellowstone area than any other lower-48 grizzly ecosystem—even in some designated Wilderness and lands under special management for wilderness values.

Although administrative protection of the Yellowstone backcountry as a de facto wilderness did not prompt the Park to prohibit overnight camping in a number of critical bear areas, the grizzly's biological needs did. The Park Service's decision 11 years ago to implement a policy that does not allow overnight use in certain areas used heavily by grizzlies is considered by many experts to be a primary reason why the animal has survived in that ecosystem to this day. This decision was based on biological considerations and not on wilderness values per se.

2. Wilderness designation does nothing to limit human uses and development on adjacent public lands. In the wake of the unsuccessful 1972 Parker case, which argued for "buffer zones" near Colorado's Eagle's Nest Wilderness, the term buffer zone has become a dirty word, and the notion of using the Wilderness Act to limit development on adjacent public lands has been abandoned like a bear den in the spring. Still, the location of key foods and habitat on lands adjacent to existing Wilderness means that certain protections (such as road restrictions) must be instituted—even though these lands may not be suited for Wilderness designation. The failure to do so on the Targhee National Forest abutting 2.1 million acres of wildland in Yellowstone Park resulted in massive roadbuilding and clearcutting from the late 1960s to 1993, which in turn caused extirpation of resident grizzly bears in two bear management units on the forest (a bear management unit roughly corresponds to a female bear's home range). The core habitat protected inside Yellowstone Park was not enough to compensate for the severe impacts and prevent the loss of grizzlies on a portion of the Targhee.

In 1993 conservationists successfully sued the Targhee National Forest under the ESA, forcing an 11-year moratorium on clearcutting and a road closure and obliteration program



designed to restore habitat for bears, elk, and other species. It should be noted that the Wilderness Act could not have forced such restoration efforts that were vital to making the Park wilderness ecologically "whole" again.

3. Wilderness designation is limited to public lands. In recent years the role of habitat on private lands has been noted by scientists as increasingly important for grizzly recovery. Bear scientists and population biologists have stated repeatedly that the continued isolation of several hundred animals, such as in Yellowstone, will lead to a high risk of extinction in the long term.

Questions about how to expand grizzly bear populations within ecosystems and how to link ecosystems together (and ultimately to Canadian populations) have been addressed by several studies, including one recently completed by Drs. Lance Craighead and Rich Walker. Craighead and Walker found that the best potential linkages between Yellowstone and Glacier ecosystems would be comprised largely of private lands. This study underscores the need for expanding the role of land trusts involved in volunteer easement protection for private lands, as well as economic incentives for private land protection and planning at the county level. With human population growth proceeding at a runaway pace in the Northern Rockies—especially around Yellowstone and Glacier—these studies point to the urgent need for identifying and protecting key private lands within and between ecosystems. Without maintenance of important private lands as functional habitat, the grizzly bear might not survive.

4. Wilderness designation is limited to the US only, and has no influence over the management of adjacent lands in Canada. Four of the five remaining grizzly bear ecosystems in the lower 48 states straddle the Canadian border. Despite evidence of severe habitat loss and high grizzly mortality north of the 49th parallel, the US Fish and Wildlife Service (USFWS) unwisely continues to rely on an influx of Canadian bears to bolster grizzly recovery. Unfortunately, Wilderness designation on lands in the US that abut the 49th parallel does nothing to influence Canadian land use policy. In addition, Canada has no Wilderness Act, no Endangered Species Act, and no road standards that apply to grizzly bear habitat—even though many of the original studies on roads and grizzlies were conducted there. As Canadian grizzly expert Dr. Stephen Herrero says, "Don't count on Alberta saving the grizzly bears for America—it's likely to be the other way around."

5. The Wilderness Act does not account for distant and indirect impacts on habitat quality even within Wilderness Areas. Habitat quality for grizzlies and other species is greatly influenced by forces outside Wilderness boundaries. For example, the introduction of white pine blister rust disease, a Eurasian exotic, virtually wiped out whitebark pine from the Glacier and Selway-Bitterroot ecosystems. The disease is spreading in the Yellowstone ecosystem as well, with 11% of the whitebark pine study transects now infected by blister rust. Trees are dying in the Beartooth Mountains, the southeast part of Yellowstone Park, and northern portions of the Tetons, lowering the quality of habitat inside Wilderness.

Moreover, climate experts predict that rising global temperatures could prevent whitebark pines from growing in the higher elevation areas where they now occur. Should this happen, the grizzly would have to redistribute itself to lower elevations in closer proximity to humans—a recipe for high mortality of bears and injury to people. In addition, there is uncertainty about the location and security of the army cutworm moth's wintering farmland habitat. In the current debate about Wilderness, such uncertainties and their implications in terms of habitat quality are almost never considered.

Time For New Bear Conservation Strategies

Clearly, the science calls upon us to expand land protection using designated Wilderness and a variety of other appropriate tools. And we have made some significant headway: Wilderness legislation passed in 1984 for Wyoming gave protection to several hundred thousand acres of current and potential grizzly habitat, including important lower-elevation areas in the Shoshone National Forest. The ESA litigation described earlier has forced the Forest Service to incorporate better science into

illustration by Helen Wilson

road management policy and has spurred restoration activities on several National Forests. Effective public campaigns created the political will necessary to stop oil and gas leasing on several hundred thousand acres of important habitat on the Rocky Mountain Front near Glacier National Park and to prevent the development of Noranda's proposed gold mine near Yellowstone Park. Furthermore, legislation to consolidate public lands on the Gallatin Forest will make it easier to manage grizzly bear habitat as a coherent whole and to designate this area as Wilderness. And, recent funding granted under the Land and Water Conservation Fund has made it possible to purchase critical parcels such as portions of the Church Universal and Triumphant's Royal Teton Ranch near Yellowstone Park's northern boundary.

Ultimately, though, a more comprehensive approach to protecting whole ecosystems will be necessary, using mechanisms not yet invented. Increasingly, scientists are calling for integrating existing data on single species into a broader multi-species context. They are asking for risk assessments to be included in the analysis of population viability management activities on imperiled species, and they are calling for broadening our understanding of cumulative human impacts by looking at larger scales and greater time horizons than we have previously. How can we as conservation activists help with this process?

Our first duty is to protect the toolmakers. Scientists who work with species particularly sensitive to human impacts and who maintain a moral compass aimed at species protection tend to be at risk of losing their jobs (especially if they work for land management agencies). Sensitive species such as the grizzly bear, which predictably are extirpated if mortality or habitat destruction is excessive, require caution and restraint on the part of humans—traits which often rub against the pro-development ethos of the prevailing culture. In his book *Science Under Siege*, Todd Wilkinson describes clearly and compellingly the stories of numerous endangered species biologists who stood up for principle and sound science in the protection of imperiled creatures. If there is hope for a broader ecosystems approach, it starts with the survival of these "scientists under siege."

Second, we need to get relevant scientific publications off the shelf and into the public discourse. Too often science—especially that which argues for limiting land use—is left to collect dust. To make the situation worse, unlike the field of medicine, forest managers are not rewarded for continuing their education about ecological processes and species' needs. If concerned members of the public do not shoulder the responsibility, who will?

In conjunction with this, we need to ensure that the relevant science is translated for a broader audience. Because of the internal rules and protocols of scientific inquiry, many important works are published that are not easily understood by lay audiences. We need to encourage and even provide training for our science allies so they can make their findings widely understood.

Finally, we need to figure out how better to match the recommendations emerging from the science arena with the strategies necessary to implement them. Economic incentives, legislation, litigation, public education, and community organizing are but a few of the tools available to us. International laws, such as the Boundary Waters Treaty Act and NAFTA, corporate campaigns and market initiatives, and the electoral process are all under-used instruments of change.

In addition, we need to take a hard look inside ourselves and our society and ask why humans are still the primary cause of death of predators such as grizzlies. After thousands of years of relatively peaceful coexistence with an animal we have called "guide" and "teacher," why in the last few hundred years have we driven grizzly bears to the brink of extinction, and why does this trend continue? What can we do to transform how we view and behave in grizzly country? Tackling these issues of human behavior and values is ultimately as critical as protecting wildlands for an animal that needs space and tolerance from the dominant species on the landscape—*Homo sapiens*.

In sum, protecting lands as Wilderness, administratively or legislatively, is an essential first step—without which the grizzly would not stand a chance in the face of rapid development. However, we must also remember that grizzlies could go extinct even if every remaining acre of wildland in the Northern Rockies were protected as Wilderness.

A bolder vision that integrates Wilderness, invents other tools, and taps new energy and talent for the job is our ultimate challenge. Otherwise, in a few hundred years, the grizzly could be another species in the lower 48 states discussed in the past tense. If Aldo Leopold were alive, he would repeat, "Relegating the grizzly to Alaska is like relegating happiness to heaven: the problem is you may never get there." In short, we need to make our heaven, with grizzlies, here and now. ▮

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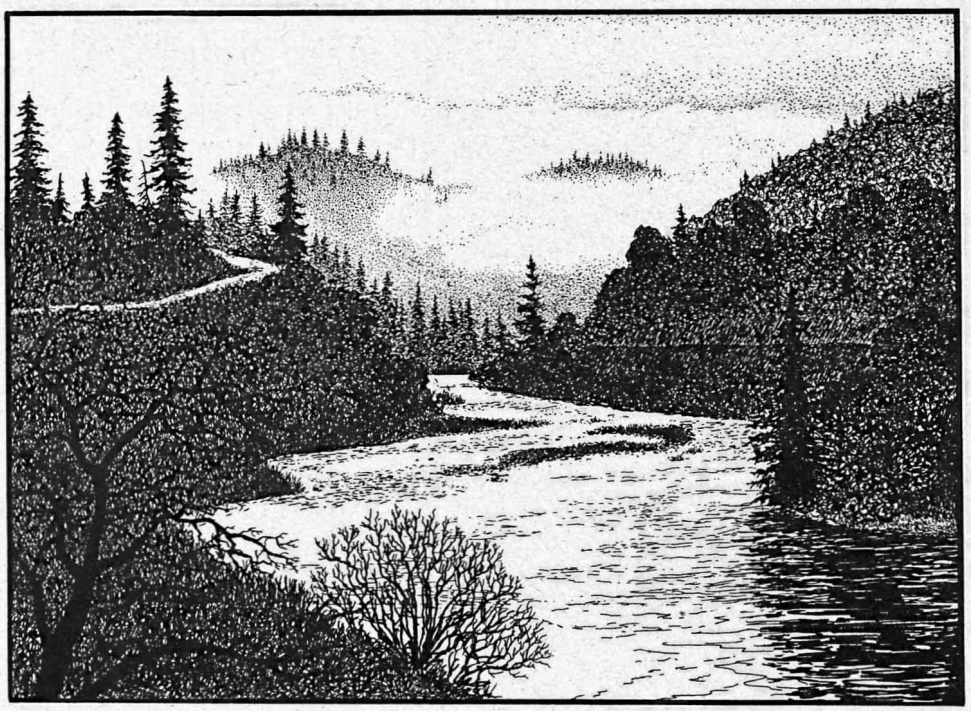
On Wilderness Values and Wild Rivers

A Canadian Perspective

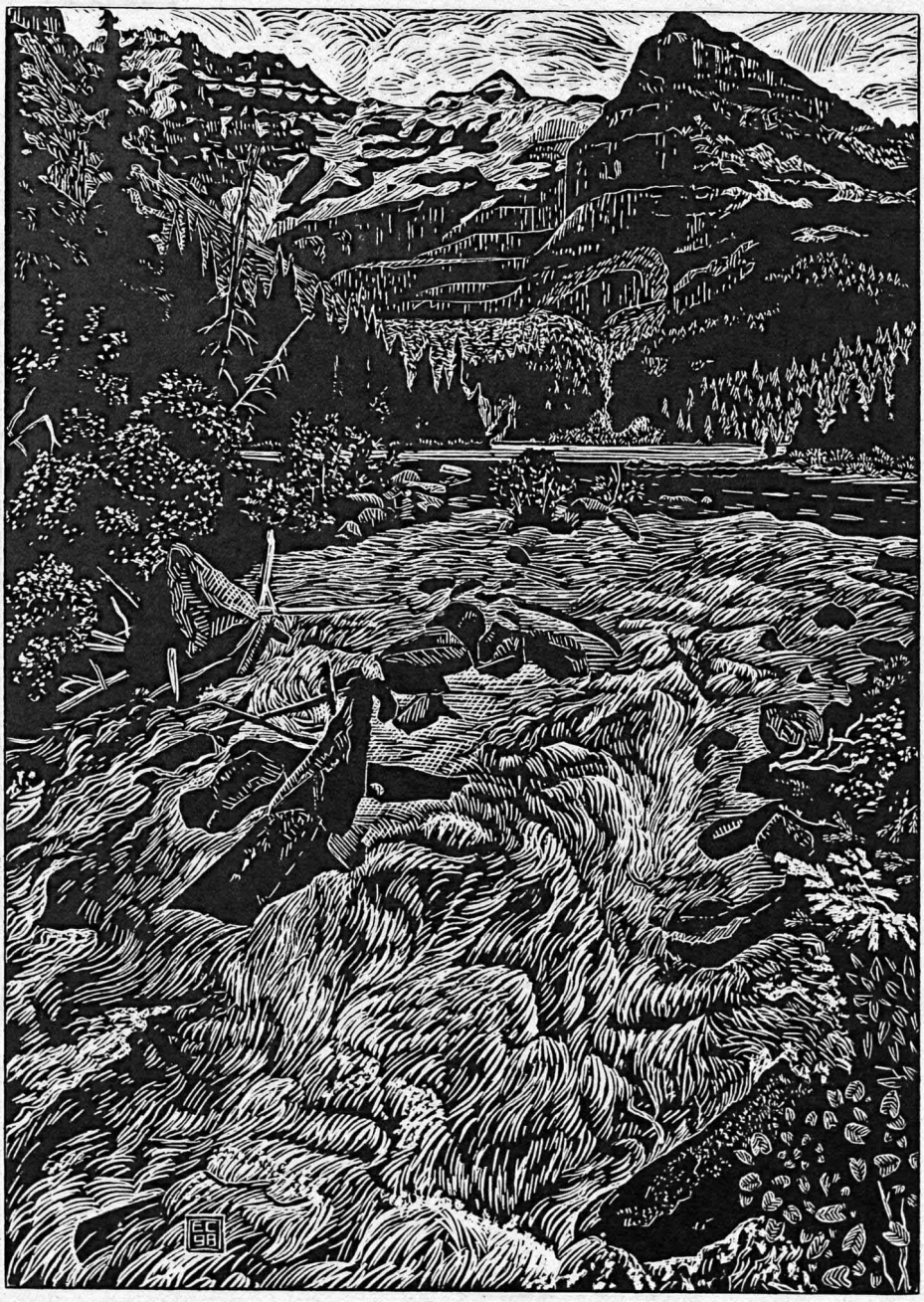


by Juri Peepre

Wilderness, with its origins in the medieval English "wildeornes" (from *wildeor*, wild beast), is an ancient idea, laden with religious meaning. The word and its many interpretations in North America have long been synonymous with conservation and protected areas. Although wilderness in the United States is associated most closely with specific legal land designations, its meaning in Canada is perhaps somewhat broader. Vast areas of Canada endure as wilderness, with no legal protection. Wilderness remains an integral part of Canadian life, although we most often refer to it as "the bush." The word wilderness is not found in aboriginal languages, yet for many people in the North it has come to mean a still wild or natural condition found in "our homeland." Wilderness in much of Canada includes indigenous people and their traditional activities—it is not perceived as a recreational playground for visitors. More recently, wilderness has been recognized worldwide as an essential and dwindling reservoir of biodiversity and freely evolving ecosystems.

Yet the wilderness idea in Canada is under renewed attack, and the conservation community itself is partly responsible for the recent gains made by advocates of unlimited exploitation of wildlands.

illustration by Gus diZerega



Representation science, when combined with the pervading government paradigm of minimizing the size of protected areas, has led to a dismal national failure in our efforts to protect entire watersheds and wild rivers.

In many parts of Canada in the 1980s, wilderness framed the conservation discussion; the notion of protecting entire rivers and watersheds seemed possible and was widely supported. For example, in British Columbia the Wilderness Advisory Committee, appointed by government to make recommendations in response to escalating land use conflicts, focused much of its effort on wilderness values.

By 1989, we needed a better way to define what should be protected, and biodiversity emerged as the tool of choice. The science of conservation biology gave us representative protected areas using ecoregions as the basic building block. The Endangered Spaces campaign was launched by the World Wildlife Fund and the Canadian Parks and Wilderness Society with the eventual support of all jurisdictions, thousands of Canadians, and many non-governmental organizations (NGOs) across the country. Some individuals and NGOs have criticized the campaign as a minimalist agenda, but in fact its proponents always considered it just a starting point: the 12% goal for representative protected areas was conceived as a floor, not a ceiling. In 1989, the idea of protecting large parts of all of Canada's ecoregions was bold and exciting, not timid. (For the record, as the Endangered Spaces coordinator in the Yukon, I have worked enthusiastically to implement the goals of ecoregion representation. I am committed to this effort as one key part of the conservation picture; we would have little forward movement in the Yukon and elsewhere in Canada without the Endangered Spaces push.)

Lake O'Hara, British Columbia by Evan Cantor

By the 1990s, ecosystem representation and biodiversity protection were the rationales of choice for selecting protected areas in virtually all jurisdictions. The Tatshenshini River was protected as an "ice age wilderness," but among many people in the civil service, it was the biodiversity argument that swayed opinions. Even in the Whitehorse Mining Initiative (in part, a multi-stakeholder attempt to resolve conflicts between mining and protected areas), industry agreed to support the prohibition of mining in core protected areas, but only those areas required to represent ecoregions—other areas would remain open to mining. So the initiative led to agreement, but at a high potential cost to proposed protected areas not based on representation.

Representation science has evolved to include ecological integrity, incorporating corridors, buffers, and other ecological links; few conservationists have suggested that just saving representative areas is sufficient. The scientific arguments for protecting rivers and streams, for example, are often based on "corridors" of riparian habitat that are integral to maintaining ecological integrity across the landscape. Yet wilderness is now a dwindling part of the language of ecological integrity.

The evolution in thinking to meet the challenge of completing a protected areas network was unquestionably a good thing. It took the spotlight off "elitist wilderness advocates" and put it on the biota and natural processes that we are trying to protect. Emphasizing representative areas provides defensible arguments for conservation more likely to be supported by governments and industry, refocused attention on biologically rich lands and waters, and a clear goal that is achievable.

It seemed as though we were going to get much more protection with a science-based campaign. But I would argue that this emphasis has compromised our advocacy for river ecosystems and wilderness. This was unintentional, and most NGO proponents of conservation biology and representation science have never devalued wilderness. It is governments, industry, and consumptive recreationists who have seized and twisted conservation science in an attempt to marginalize wilderness values, and thereby minimize the scope of protected areas. Science has become the *only* conservation argument in some circles, instead of one of many complementary arguments. For example, there are biologists who support representative protected areas, but want no part of wilderness because they are not well equipped to articulate reasons for its value.

Representation science, when combined with the pervading government paradigm of minimizing the size of protected areas, has led to a dismal national failure in our efforts to protect entire watersheds and wild rivers. Rivers are the arteries of our land and the keepers of much of our history and culture—yet where are they on the protected areas maps? Ironically, our focus on representative protected areas has led to gaps in the types of areas protected and to diminishing support for the range of human values associated with wilderness.

Here are some of the problems associated with our addiction to following one limited view of science:

■ Aquatic ecosystems are largely ignored in much of the applied representation science. Larger rivers and watersheds do not fit neatly into representation science or ecoregion boundaries. Only "core" areas are receiving full protection, while rivers are relegated to fuzzy types of special management.

■ The whole spectrum of wilderness values has declined in importance; intrinsic and spiritual values have lost their punch and perhaps even their legitimacy. The range and variety of human experience as part of the protected areas spectrum has been impoverished. Too often wilderness values are dismissed as lacking objectivity. But science is not free of subjectivity; it, too, is based on assumptions.

■ Conservation science has disenfranchised many local people who know and love wilderness. Protecting wildlife and wilderness—not biogeoclimatic zones—instills passion in advocates for the natural world.

■ Industry uses representation science as a means to minimize protected areas and wilderness by arguing that all proposed areas have to be scientifically defended. Conservation biology is now used as a weapon against conservation. Wilderness is "unscientific," and thus has no standing.

■ Exclusive reliance on science can leave wild areas vulnerable to more and more management. Science can imply control of ecosystems. "Ecosystem management" subverts the wilderness idea and puts wilderness advocates on the defensive.

Is this just another alarmist fret? Consider the Bonnet Plume Canadian Heritage River Management Plan in the Yukon. At the outset, government planners told us that permanent wilderness status was not even an option for discussion, even though virtually all of the Bonnet Plume *is* wilderness now. Some conservationists have become satisfied that multiple-use industrial rivers are good enough, and that we can reach accommodation with a mining industry that claims a new responsible attitude (on-the-ground evidence for this new attitude is scarce). "Wise use" has arrived in the North. I've heard the Bonnet Plume Management Plan praised by Heritage Rivers supporters even though it offers no room for wilderness protection or even, in legal terms, a higher standard of care than the status quo.

During the preparation of the Yukon Protected Areas Strategy strong efforts were made to exclude all reference to wilderness. In early government papers it was omitted from the vision statement and all of the objectives, with only passing reference in sections on protection criteria. This is particularly noteworthy since the Yukon Environment Act, introduced in 1991, formally recognizes wilderness values and provides a means to protect them. The Act refers to the intrinsic ecological as well as economic values of wilderness, and alludes to humans' cultural, aesthetic, and spiritual relationship with the land. Later Protected Areas Strategy papers in 1998 included wilderness, but only after persistent lobbying.

Industry spokespeople are now touring the country trying to separate conservation science from wilderness advocates. They are doing their best to denigrate and isolate the wilderness idea. These spokespeople are denying the value of wilderness, as repositories of biological diversity and evolutionary processes, necessary to natural ecosystems. The emerging idea of "rotating parks," also known as "sequential protected areas," is a broken derivative of conservation biology. Based on the assumption that we have enough knowledge of ecosystems to engage in "total landscape management," it suggests core protected areas are unnecessary. This perspective minimizes wilderness values—including intrinsic worth and the benefits of protecting wilderness for biodiversity.

Conservation science, when it is set forth as the *only* reason for protected areas, cuts the heart out of the main reason why many people want protection: to preserve the complex and unpredictable patterns of wild Nature and allow room for the myriad layers of human expression.

The grand vision of The Wildlands Project emerged in the early 1990s to counter the "protected areas as islands" problem. The best example of this idea in Canada is the Yellowstone to Yukon Conservation Initiative—where entire rivers can once again be included in conservation schemes as corridors or core protected areas on a vast scale. The Wildlands Project's genius is that it combines the wilderness idea *with* science—activists and scientists work together. It is a combination of representative protected areas, wilderness, and "rewilding" approaches to conservation.

In Canada we must finish the Endangered Spaces project and acknowledge its unprecedented contribution to continental conservation. Looking ahead to the next half century, we need to embrace the big vision of The Wildlands Project and its manifestation in the "Yellowstone to Yukon" and "Algonquin to Adirondacks" initiatives. With this essay, I plead for renewed support for *wilderness* as a foundation for Canadian conservation efforts. The importance of the wilderness idea has never left our minds, but in many parts of the country it has drifted down the list of reasons for wild river conservation. It seems that conservationists are afraid to draw the sword—to unsheathe our sharpest weapon for protecting Nature.

I propose that we unleash the power of wilderness in our conservation campaigns. Let's help the public rediscover the wisdom of the continent's great conservation thinkers—past and present—who recognized that science *and* beauty should not be separated from advocacy for wild places.

Tenaciously and aggressively let us remind them that:

In wildness is the preservation of the world. —Henry David Thoreau

A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise. —Aldo Leopold

...National Parks ensure that...the beauty of the landscape is protected from profanation, the natural wild animals, plants and forests preserved, and the peace and solitude of primeval nature retained. —J. B. Harkin, who established Canada's park service

We may give science a holy place at the altar, but in reality, what guides our decisions and fuels our passions are the myths we live by....Science is a powerful tool to help us see connections and relationships; but it is the vision—not the science—that will capture people's hearts, and ultimately their minds. —George Wuerthner

We must reaffirm wilderness values, particularly those of wild rivers and streams. We should speak of protecting entire wilderness watersheds *for their own sake*. We need to use the tools of conservation biology, including ecosystem representation and ecological integrity, to support our efforts to protect wilderness waterways. But we should also be unafraid to protect rivers for their beauty. We must resist attempts to "manage" wild ecosystems. We should reacquaint Canadians with the language of wilderness and appeal to their pride, culture, and history for support. And we need to be mindful of the different meanings of wilderness—especially in the North, where aboriginal views add a distinct dimension to the debate.

Above all, as Canadians who love wild rivers, wildlands, and *wild life*, we should help fashion a culture that accommodates and values wilderness: We must learn to live with wildness. ▮

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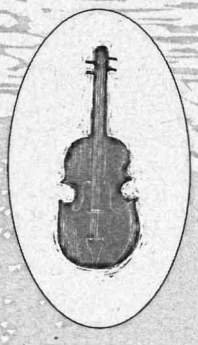
On Wilderness and Cultural Restoration in the Northern Appalachians



by Jamie Sayen

October 6, 1998: As I begin to write about the opportunities to establish big ecological wilderness in the Northern Appalachians, SAPPI (a South African-based paper company) is announcing the sale of 905,000 acres in northern Maine to the Plum Creek Corporation, a notorious timber liquidator from the western United States. Instead of celebrating the protection of critical wildlands (admittedly degraded) around the Moosehead Lake region, we have squandered yet another opportunity to begin to heal the rift between humans and Nature. Plum Creek will assume the lands that SAPPI acquired in 1994 from Scott Paper and plunder what's left of them to pay off its leveraged investment. Conservationists will wring their hands—again; politicians will celebrate the perpetuation of the industrial "working" forest—again; and the collapsing paper industry will continue its downward spiral by thrashing what's left of the ecological basket case once proudly known as the Maine Woods.

illustrations by Suzanne DeJohn

Paper Company Lands For Sale—Again

I'm weary of writing the same story over and over.

■ In 1988 Diamond sold a million acres in Maine, New Hampshire, Vermont, and the Adirondacks of New York. Some acreage was protected by public acquisition; most remained in the hands of absentee liquidators.

■ In 1989 and again in 1991, 2.1 million acres of lands owned by Great Northern Nekoosa changed hands in a hostile takeover and then a spin-off. The current owner, Bowater, sold over 650,000 of these acres to McDonald Investment Corp. of Alabama this fall (one of three major Maine timberland sales in a month), and is looking for a buyer for the remaining acreage.

■ In 1994 SAPPI acquired its lands from Scott Paper.

■ In 1996 Mead Corporation acquired around 800,000 acres in Maine, New Hampshire, and Vermont from Boise Cascade.

■ In 1997 Champion International put over 300,000 acres in the Adirondacks, Vermont, and New Hampshire on the block. These severely degraded lands are still for sale, and curiously, there appears to be serious interest by timber investors for acquiring these lands at a high price, even though there is nothing much left to cut on the New Hampshire and Vermont lands.

After each sale, the new buyer has had to pay off debt incurred in the purchase. While local politicians crow about saving jobs by keeping these lands out of the public domain, the new owners move in; liquidate the timber resources; lay off hundreds of mill workers; bring in ever heavier equipment (thereby laying off hundreds of loggers); and then put the biotic debris on the market again.

There is plenty of blame to go around. The paper companies and large non-industrial timberland owners are guilty of imposing ecological, economic, political, and cultural degradation on this region. The politicians are guilty of taking their money and doing their bidding. The public is guilty of surrendering control over our region's destiny and allowing this unconscionable situation to grow ever worse. And the conservation community has demonstrated that trying to play the insider's game with the timber industry and its politicians is a doomed strategy. After a decade of these blockbuster land sales, no mainstream conservation group in Maine, New Hampshire, or Vermont has offered a viable alternative to business as usual. Worse, some of these organizations have, on more than one occasion, done industry's bidding to defeat or marginalize meaningful attempts to address the crisis in our forests. What are we waiting for?

As the millennium ends with a whimper, the questions that matter are: When will our culture begin to heal its rift with Nature? And how, specifically, will such rapprochement occur?

When will our culture begin to heal its rift with Nature? I propose that healing the natural and human communities of the Northern Appalachians will require big wildlands, low-impact forestry, biological democracy, and cultural restoration.

I propose that healing the natural and human communities of the Northern Appalachians will require:

■ **Big Wildlands** that provide landscape-level protection of native species and natural communities and the interactions between them.

■ **Low-Impact Forestry** on lands that are appropriate for timber management and a regional economy that meets the needs of the region, rather than one that enriches absentee global investors and speculators while impoverishing the local communities—both human and wild.

■ **Biological Democracy** that assures equal rights for all native species and future generations. How do we explain the fact that every opinion survey conducted in this region in the past decade finds that 60–85% of the residents support wilderness acquisition and protection, but no regional politician at the state or national level will say a kind word about wilderness?

■ **Cultural Restoration,** a subject that will be addressed in the second half of this essay.

Presettlement Forests of the Northern Appalachians

If we are to protect natural diversity, we need to know what the region's forests were like before European culture leveled them. Although our knowledge of "presettlement" forests is incomplete, some things are clear:

■ A higher proportion of late-successional tree species (sugar maple, beech, red spruce) dominated the presettlement forest, and a much lower percentage of early-successional species (paper birch, aspen, red maple, balsam fir) were present. These early-successional species dominate much of today's industrial forest.

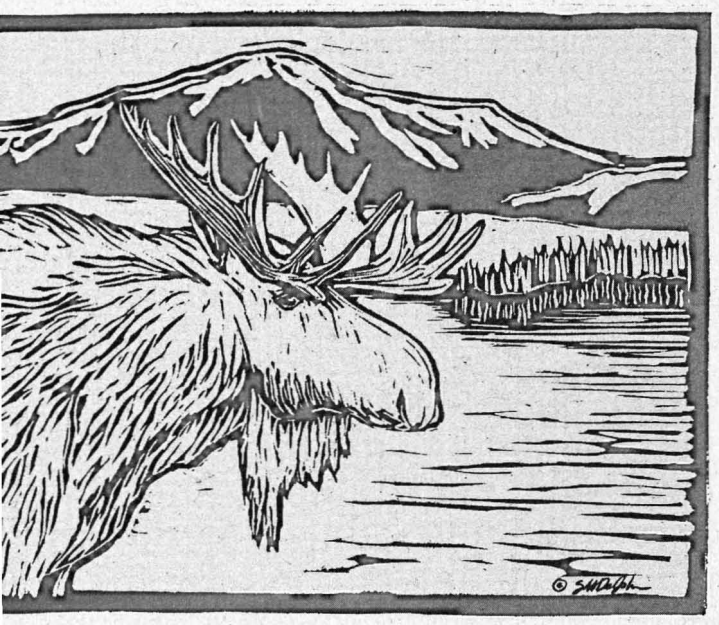


illustration by Suzanne DeJohn

■ Ecologist Craig Lorimer estimates that 84% of the presettlement forest of northeastern Maine was more than 75 years old; 59% was older than 150 years; and 27% was over 300 years of age. By contrast, a 1980 survey found that 93% of trees in Maine were younger than 80 years (and since that time, the cutting has intensified dramatically).

■ Natural disturbance regimes of the presettlement forest created small gap openings. Less than one percent of such openings were greater than one-quarter acre. Thus, a clearcut of as little as five acres is way off the bell curve. Sadly, over 2000 square miles of Maine—including entire townships—have been clearcut since 1980.

■ Presettlement forests were unfragmented and were characterized by layered canopies. They had large amounts of standing and down dead wood that was critical habitat for a variety of species. It may require 350 years or more for a clearcut to begin to recover this lost structural component.

■ The forest floor of the presettlement forest had a high degree of local topographical diversity (pit and mound) due to root pulls and decayed stumps. This created microhabitats for a wide range of seedlings and herbaceous plants. Industrial forestry has flattened much of this diversity.

■ Undisturbed forest floors were important sites for nutrient cycling and retention and provided critical protection against soil erosion. Industrial forestry has compacted these soils; caused significant soil erosion; depleted nutrients; and disrupted hydrological cycles and disturbance regimes. These stressed soils are further assaulted by acid deposition from midwestern power plants, automobiles, and other industrial sources.

■ Presettlement forests were home to large predators that have been extirpated due to human activity.

■ Loss of old growth in the Northern Appalachians has eliminated old growth-dependent species. Studies have identified lichens and boreal beetles that are found only in old-growth stands. What else have we lost?

Visions of Big Eastern Wildlands

Clearcuts won't be transformed into old growth in our lifetimes, or in the next seven generations. But we can begin the healing process today through the establishment of large wilderness reserves. The most ecologically realistic current proposals are RESTORE: The North Woods' call for establishment of a 3.2-million-acre Maine Woods National Park (MWNP) and the Northern Appalachian Restoration Project's proposed 8-million-acre HEADWATERS Wilderness Reserve System on paper company lands in northern Maine, New Hampshire, and Vermont.

Maine Woods National Park. The MWNP[1] includes the watersheds of the East Branch and West Branch of the Penobscot River; over 700 miles of rivers on the American Rivers *Outstanding Rivers List*, including the first 50 miles of the Allagash Wilderness Waterway and the headwaters of the Aroostook, Kennebec, and St. John Rivers; most of Moosehead Lake, the largest lake in New England; habitat for Endangered and sensitive species such as the Canada lynx, Bald Eagle, pine marten, northern bog lemming, Spruce Grouse, blueback trout, pale green orchid, and small-whorled pogonia; critical spawning habitat for the Endangered Atlantic salmon; habitat for extirpated species such as the eastern timber wolf, cougar, wolverine, and woodland caribou; and many more cultural, historical, and ecological features. Public acquisition of the SAPPI and Bowater lands for sale in 1998 would have brought more than half of the proposed National Park into public ownership. While political demagogues disparage "wilderness romantics," public support for the park is growing inside and outside Maine.

HEADWATERS. The proposed HEADWATERS Wilderness Reserve System[2] is a network of 16 reserves stretching from Vermont's Northeast Kingdom across northern New Hampshire into western and northern Maine. In addition to providing a critical linkage between northern Maine and the Adirondack Park in New York, the reserve would encompass the wild and

1. For information on how to help make the Maine Woods National Park a reality, contact RESTORE: The North Woods, 7 North Chestnut St., Augusta, ME 04330; 207-626-5635.
2. See "A Second Chance for the Northern Forests" *Wild Earth*, Winter 1995/96, pp. 37–39. For a copy of the full proposal, see *The Northern Forest Forum*, vol. 3 no. 5, available from the *Forum*, POB 6, Lancaster, NH 03584.

remote sections of the headwaters of the region's major rivers: the Connecticut, Androscoggin, Kennebec, Penobscot, St. John-Allagash-Aroostook, and Saco. The proposal calls for incorporating existing public lands—such as Baxter State Park, the Allagash Wilderness Waterway, the White Mountain National Forest, Nash Stream State Forest, Victory Bog State Forest, and the future Maine Woods National Park—into the wildlands system. Almost all the remaining lands—approximately seven million acres—are currently owned by paper companies, heirs of 19th century timber barons, pension funds, or real estate speculators.

There are no year-round residents living on the lands proposed for the HEADWATERS Wilderness Reserve System.

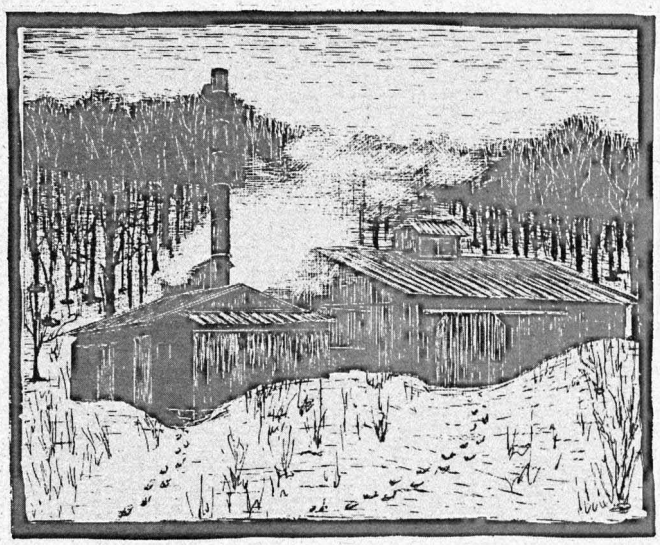
The cost of acquiring seven million acres for publicly owned wilderness reserves is surprisingly low—approximately $2 billion, a couple of weeks' income for Bill Gates.

A2A. Another creative proposal, A2A—Adirondacks to Algonquin—links the Northern Appalachian region with wildlands of Ontario.[3] A2A would facilitate the return of native species such as lynx, moose, and wolves to the Adirondacks along the Frontenac Axis, a geologically and geographically distinct zone stretching between the Adirondack Park and Ontario's Algonquin Provincial Park. The Frontenac Axis, the most extensive, least degraded north-south corridor across the St. Lawrence Valley, connects the boreal forests of Canada with the hemlock-pine and northern hardwoods forests of the northeastern United States.

Appalachian Trail Corridor. Another proposal to establish regional ecological connectivity would link the Northern Appalachians to the Central and Southern Appalachians by using the 2000-mile Appalachian Trail corridor.[4] This vision to preserve Appalachian wilderness calls for the widening of the AT corridor to at least five miles and developing corridors to connect wilderness reserves throughout the Appalachians to the AT corridor. This single unified wilderness network would join Maine and the Maritimes with Georgia and Florida. Such inter- and intra-regional linkages will be key to integrating wildlands reserves throughout North America.

Cultural Restoration

Cultural restoration is fundamental to ending the 400-year-old ecological crisis of Euro-American culture. Understanding the evolution of our cultural estrangement is central to appreciating why current efforts to protect Northern Appalachian forested ecosystems have failed. Such an understanding can guide us back into a healthy relationship with the natural world that sustains our life.



sugarhouse by Suzanne DeJohn

Limits. For the purposes of this discussion, there are two types of cultures: those that have intimate local knowledge of a given bioregion, watershed, or ecosystem and attempt to live within its limits, and those—invariably ignorant of local limits—that do not.

Twenty-five hundred years ago, Greek tragedy grappled with the limits of the human condition—that humans are mortal and cannot escape their destiny. In a curious way, ecology teaches a similar message about ecosystems and our relationship to them: we have no choice except to abide by the limits of physical and ecological reality; no species can long thrive if it exceeds the carrying capacity of an ecosystem. Indeed, an ecosystem's integrity can be imperiled by the excesses of a single species.

Local cultures, with intimate local knowledge, are far less likely to exceed the limits of ecological reality; they are more likely to constrain their actions to respect ecological limits and not override these limits with inappropriate political, economic, or cultural demands.

Control. Living within limits requires self- and collective-control. Cultures that are ignorant of local ecological limits, that place political and economic demands ahead of such limits, and that have bought into the global economic promise of unlimited growth that will satisfy unlimited demands, have eschewed self-

3. Contact the Greater Laurentian Wildlands Project (4 Laurel Hill Dr., South Burlington, VT 05403; 802-864-4850) for more information.
4. See Jamie Sayen, "The Appalachian Mountains: Vision and Wilderness," *Earth First!*, May 1, 1987.

control for a more authoritarian form of control: control and exploitation of others—both human and non-human. As Gary Nabhan writes: "People who care, conserve; people who don't know, don't care."[5]

Local culture is derived from direct contact with the natural world over long periods of time. The food we eat, the stories we tell, the medicines, fuel, clothing, and shelter that sustain us are all part of the local ecology. It takes time for a transplanted culture to acquire the knowledge necessary to live within local limits. After four centuries, Euro-American culture still hasn't learned how to live in North America, and each passing generation grows more removed from direct contact with the natural world and more destructive of the remnants of that natural world, thereby foreclosing future options to heal the rift.

Euro-American Attitudes on Wilderness and North American Ecosystems. Early colonists who settled in "New England" approached the North American wilderness with a triple handicap: 1) they were a transplanted culture unfamiliar with the local ecology; 2) they arrived from Europe with preconceived ideas of their mission in the New World to redeem the dismal wilderness, bring order to the wild chaos, and remake it into a model of European agriculture, while saving the souls of the Native American "savages" they encountered; and 3) they were terrified of the "howling wilderness," the supernatural monsters it held, the un-Christian natives, and, worst of all, of the very real possibility that they themselves might revert to savagery in this new environment. Unconsciously, they feared that they might learn to live like a local, not a transplanted, culture.

Parallel to the colonization of North America was the rise of capitalism. Adam Smith, the great 18th century philosopher of capitalism, viewed wilderness as land without value, as something beyond the pale of culture. It was an obstacle to progress, a wasteland to be exploited. In his scheme, capitalism transforms worthless wilderness into material value.

Ironically, while the colonists succeeded in "redeeming" the wilderness, North American wilderness also exercised a powerful transformative influence on Euro-American culture. The result is that our culture has profoundly ambivalent attitudes toward wilderness.

One strain of thought still views wilderness as alien to humans, an unknown and terrifying place, a hell, a place of exile, an economic wasteland—a place to be conquered and tamed.

Another celebrates wilderness as a place of wild creatures—a place not under the control of humans, a sanctuary from persecuting society, the source of life and culture. Thoreau believed that freedom resides in Nature; in wilderness he "felt the presence of a force not bound to be kind to man." Orwell's totalitarian rulers abolished wilderness because it encourages freedom of thought and action. For nearly a thousand years English culture has taught that wilderness is a refuge, essential to dissent, through the story of Robin Hood whose band of Merry Men found refuge from despotism in Sherwood Forest.

The Commons, Private Property, Absentee Ownership, and Resumed Public Ownership. Early New England villages were a mix of relatively small farm holdings and common lands. With the rise of capitalism, the market economy, and global trade opportunities, the common lands—which served to nurture communal welfare—were absorbed by private (often absentee) interests, thereby impoverishing the public interest.

In the less settled regions of northern Vermont, New Hampshire, and Maine, what we euphemistically call today "the Northern Forest," the timber lands were originally controlled by the states. But, beginning in the Colonial period and accelerating in the 19th century, these remote timberlands were "sold" to wealthy, absentee speculators for pennies, so that by 1880, essentially all public land had been turned over to the precursors of today's corporations.

As these paper company lands again come on the market, the public should acquire them so we can begin our daunting, but exciting task of ecological and cultural restoration. In an ideal world, the absentee owners would be held responsible for their past management practices. By such a reckoning, they would owe the public many thousands of dollars per acre for the destruction of our region's presettlement forest ecosystems, human communities, and local economies. However, the more critical need is that the public repurchase these lands today, even though the purchase price rewards irresponsible behavior once again. Note, I am speaking here only of large, absentee holdings; small landowners who reside on their lands and must live with the consequences of their management activities will continue to live on their lands. What these landowners need is overdue economic reforms that reward caring, low-impact stewardship, instead of the current ostensibly "free market" system that generally rewards the most destructive practices, while penalizing responsible stewards.

5. Gary Paul Nabhan, *Cultures of Habitat: On Nature, Culture, and Story*, Counterpoint, Washington, DC, 1997, p. 72.

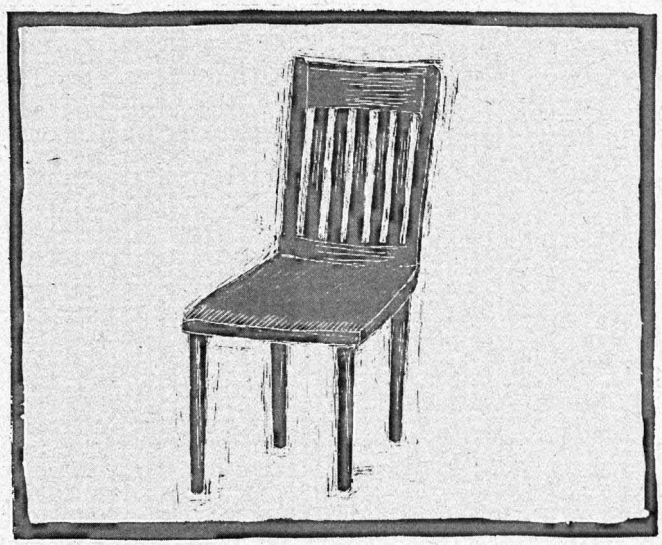
Wilderness Restoration Requires Cultural Restoration. A culture of absentee ownership and global economics cannot restore and maintain local ecological or cultural integrity. We must try something new (and old). We need to recognize that wilderness sustains cultural diversity just as it sustains biological diversity; further, we need to understand that protection of biological diversity requires protection of cultural diversity. As the modern global economy pushes inexorably to achieve one homogenized consumer culture, we must remember and recover the cultural wisdom that has sustained local cultures for over 99% of our species' history. We must protect all remaining indigenous cultures and the wild lands that sustain them, recognizing that destruction of indigenous, wilderness-based cultures, whether in the Amazon or in Maine, has contributed to destruction of biological diversity.

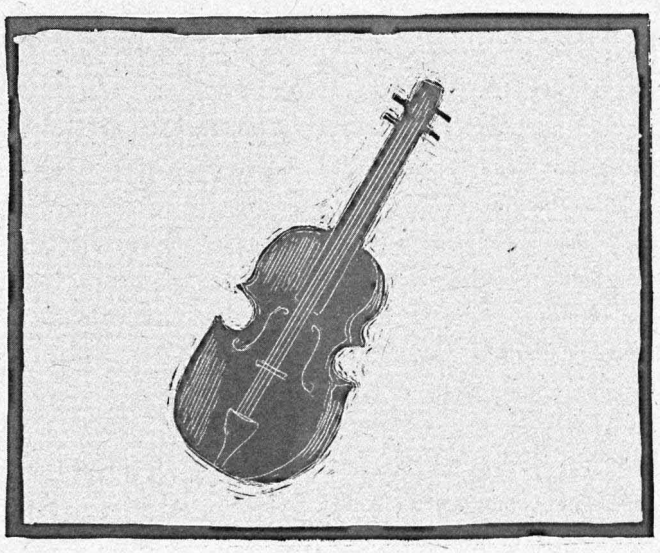
In the Northern Forest and across the continent, we must build distinctive, vibrant, bioregional, and watershed- and ecosystem-based cultures. Models for this work abound.[6] In the Adirondacks, despite many political and economic problems, we have a century-long experiment in humans and wilderness coexisting. But this is only a beginning. Our schools need to nurture knowledge of local natural history, not global resourcism. Our economies need to meet local needs, not global whims.

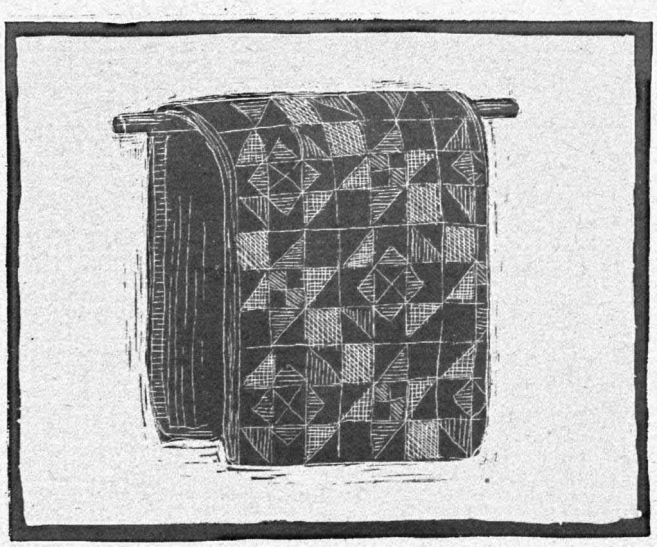
Several years ago I proposed the creation of a Northern Connecticut River Valley Restoration Academy that would teach natural history and ecological restoration, and socially responsible, watershed-based economics.[7] An allied vocational school would teach low-impact forestry and agriculture techniques, and other skills and crafts that add value to wood. This school of lifelong learning would offer courses and workshops to non-degree candidates of all ages. A natural history museum would be on the Academy campus. Smaller satellite museums treating various aspects of our regional legacy could be built in many of the small towns of the region.

If we are to develop an economy that produces quality wood products such as fine furniture and musical instruments, we will need to train workers in skills that have largely been forgotten. The vocational component would draw on the elders of our community who could impart their knowledge of traditional agricultural practices, crafts such as quilt-making, and woodworking skills to younger members of the community.

Finally, and this is the core of my message regarding cultural restoration: our wildlands and forestry protection efforts need to acknowledge the values, needs, and concerns of our







illustrations by Suzanne DeJohn

6. For starters, see Bill McKibben, *Hope, Human and Wild: True Stories of Living Lightly on the Earth*, Little, Brown, and Company, Boston, 1995.
7. "Cultural Restoration: The Key to Ecological and Economic Sustainability," *The Northern Forest Forum*, Mud Season, 1993.

neighbors in rural, timber-dependent communities of the region. No pandering, no patronization. Just hard-boiled political pragmatism that recognizes: 1) our campaigns ultimately will flounder so long as demagogues such as Maine's Governor Angus King continue to manipulate (some of our more vocal) neighbors into loathing wilderness and wilderness defenders; and 2) a great many of the concerns that render our angry, frightened neighbors vulnerable to industry-sponsored demagogues are shaped by wilderness defenders. In short, wilderness defenders and residents of timber-dependent communities are natural allies. So long as we play into the hands of the exploiters' tactics of divide and conquer, our forests and our forest-based cultures will be degraded.

How do I know that rural citizens and wilderness defenders are natural allies?

■ We both recognize that the current economic and political systems are terribly wrong. However, while wilderness defenders focus on threats posed by absentee corporations in the Northern Appalachians, many rural residents worry about political threats from Washington and the United Nations.

■ We agree that the current economy is a mess and getting worse. Thousands of paper mill workers have been laid off in Maine in the last decade. On October 2, 1998 another 109 Mainers were laid off by SAPPI. We have no control over our economic destiny, scant value-added processing opportunities in the region, and minimal economic diversity.

■ We know that our educational system is a failure. Political groups (and individuals) from both the left and the right are working to achieve greater local control over education through home education or formation of alternative schools. Unfortunately, most of these reform initiatives do not appear to realize that teaching local natural history is essential to preparing our children to live sustainably and happily within the limits of their region. Indeed, Reed Noss reports that universities are abandoning the great tradition of teaching natural history in the field in favor of molecular biology, computers, and high tech.[8]

■ Residents of the Northern Appalachians, like residents of rural regions everywhere, love their homes and want to protect the land and the culture that sustains them.

■ Opinion surveys in the past decade in northern Vermont, New Hampshire, and Maine reflect that 60–85% of the residents of the region support more public land for wilderness, for wildlife habitat, for recreation. Even the most controversial of these proposals—the 3.2-million-acre Maine Woods National Park, a target of such anti-wilderness romantics as Governor King and the Sportsman's Alliance of Maine for several years—is supported by 63% of Maine's residents. Only 21% oppose and 16% are undecided.

Despite this support, there is a disconnection between public values and public policy. Politicians beholden to resource exploiters and the global economy continue to win election (it helps that their opponents share the same loyalties). They continue to abuse their responsibilities by acting as if the views of the 21% who oppose the Maine Woods National Park were the majority and by allowing the desires of the absentee corporations to take precedence over the welfare of the natural and human communities of the region.

Why do we let them get away with it? I submit it is because we—the wildlands conservation community—have failed to understand the connection between culture and wildlands, and because we have failed to respect the culture and cultural needs of rural, resource-dependent communities. As we face unprecedented opportunities for cultural and wilderness restoration here in the Northern Appalachians, let's try something new next millennium. ▮

Long-time wildlands activist Jamie Sayen is a founder of the Northern Appalachian Restoration Project (NARP) and its indispensable bimonthly newspaper The Northern Forest Forum. *Recently retired from day-to-day duties as NARP's executive director, he continues to write, agitate, and serve as publisher of the* Forum. *(For a sample copy or to subscribe to* The Northern Forest Forum, *write POB 6, Lancaster, NH 03584.)*

Addendum: *Just as this issue of* WE *went to press, a deal was struck to sell the 300,000 acres of Champion lands in the Adirondacks, northeast Vermont, and northern New Hampshire to the Conservation Fund—a non-profit land conservancy based in Arlington, Virginia—for $76.2 million.*

While many details of this complex agreement remain unclear, it seems that some ecologically sensitive lands will be protected, while more than 200,000 acres will be resold into corporate timberlands ownership, albeit with conservation easements attached that prohibit some kinds of development. Among the many unresolved questions is the degree of ecological protection that will be afforded the lands that may come into public ownership in NH and VT, and the easement language governing lands to be resold. Will it stipulate low-impact forestry, or allow more clearcutting, road-building, and herbiciding that is the status quo on the industrial "working" forests in the region? —JS

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8. "Does Conservation Biology Need Natural History?" *Wild Earth*, Fall 1998.

A Conversation at the Edge of Wilderness

by John Elder

illustration by Jean Cannon

Our six Wilderness Areas within the Green Mountain National Forest range from less than 4000 acres in Bristol Cliffs to almost 22,000 at Bread Loaf. Gates of the Arctic they're not. Stone walls break through the ferns and jewelweed of these slopes, broken choker cables lie half buried beside trails that were logging roads not so long ago, and cellar holes collect and compost leaves in the thick woods far from any trail. These tracts of third-growth forest were not included under the original 1964 Wilderness Act, being neither "primeval" nor "untrammeled." Only after passage of the 1975 Eastern Wilderness Act, which Vermont's George Aiken helped move through the Senate, were the lands protected because of their beauty and their biological significance. They were allowed, in effect, as afterthoughts—honorary Wildernesses.

Such Vermont woodlands may have seemed marginal when added to the National Wilderness Preservation System in 1975 and in 1983. I believe, however, that they and the other Wilderness Areas of the Northeast are now emerging as central to our national conversation about nature and culture. I don't mean this in a spirit of regional competitiveness. The great Wildernesses of the West and Alaska are incomparably magnificent. I will always be grateful for the protection those holy sites have received and for the opportunity to travel to them on pilgrimage. But we do seem to have arrived at a moment—in our nation's ongoing dialogue about how human society will accommodate wildness—when a place like Vermont might have a helpful word to say. Our modest Wilderness Areas here offer an ecological edge, or ecotone, between both landscapes and perspectives that might earlier have seemed to be distinct, or even opposed. Wildernesses like those in Vermont are, to put it another way, *centrally marginal*. They define a boundary zone where the wilderness ethic may engage with recent developments in the field of environmental history, and where the ideal of preservation transcending a narrow utilitarianism may engage with the tradition of stewardship. We need to move beyond polemic in our discussion of these important matters. Vermont's wilderness offers one promising landscape within which to reframe the conversation.

Like much of northern New England, as well as the Adirondack region of New York, Vermont is a landscape in recovery. The first half of the 19th century saw deforestation in our region that was as rapid and relentless as anywhere in America. Trees were cleared not only to open fields for crops but also to raise cash for the farmers and other early entrepreneurs of the region. Throughout the Green Mountains, logs were stacked up to form enormous, pyramidal kilns that smouldered day and night, producing charcoal and potash for the forges, mills, and factories along the nearby rivers. Between the deforestation and the scantiness of our heavily glaciated topsoil, Vermont went from being the fastest-growing state in the Union after the Revolution to being the slowest-growing one for most of the time between the Civil War and World War II. Since the middle of the last century, however, this wet land so good at growing trees has also gone from being 60–70% deforested to being almost 80% reforested. Bill McKibben has described our region's natural resurgence as "an explosion of green."

The irony of eastern Wilderness is that, while it may have seemed to receive that title as a courtesy, the *vector* of wildness may actually be more remarkable here than anywhere in the West. Not just the trees but also the animals have returned to a dramatic extent. When Zadock Thompson wrote his *Natural History of Vermont* in 1854, he described an ecological wasteland in which most of the larger wild mammals, including deer and beavers, were effectively extinct. Today, not only do we have those two particular species in bewildering abundance, but we also have rapidly increasing populations of moose and substantial numbers of such animals as bobcats, fishers, and black bears. Sightings of catamounts too are reported with increasing frequency. And current proposals to reintroduce wolves into the Adirondacks and Maine hold out the possibility that we may some day see those predators in at least the northern portions of Vermont, as well.

"Recovering wilderness" would perhaps have seemed an oxymoron just a few years ago. But that concept reflects an intriguing convergence between the environmental history of Vermont and the current emphasis upon "rewilding" within The Wildlands Project. Corridors, or "connectivity," between relatively undisturbed areas of wild habitat are one main emphasis of the Project. The striking resurgence of wildlife in Vermont, even in the absence of large "core reserves," suggests that there are already special possibilities for connectivity within our state's distinctive natural and human situation. I don't just mean corridors connecting and extending protected habitat. I am also referring to the connections between human culture and the wild here, as well as to the potential for a more diverse and ecologically inclusive approach to conservation thought in America.

Author's note: My perspective on the evolution of wilderness thought has benefited from the writings and conversation of my Middlebury colleague Christopher McGrory Klyza. I have also profited while working on this piece from the relentlessly challenging questions of *Wild Earth*'s Tom Butler. Neither of them bears any responsibility, however, for the sins I am about to commit. —*JE*

A GOOD PLACE TO REFLECT ON THE PROMISING IRONIES of eastern wilderness is in the meadow across from the Bread Loaf Inn, in Ripton. State Highway 125 crosses the Green Mountains here, and the beautiful old buildings where the Bread Loaf School of English and Writers' Conference are held each summer run along the highway for a couple of hundred yards. But this spot is also in the middle of the northern block of the Green Mountain National Forest. The Bread Loaf Wilderness begins right at the edge of the campus, not too far behind the Inn. To the south, in the towns of Hancock, Goshen, and Rochester, lies a part of the National Forest that is in many ways equally wild. A group of Vermont conservationists has recently begun discussing ways to expand the system of protected Wilderness in our state, any future proposal might well include wildlands in the stretch of the forest just below Bread Loaf. On the level of corridors and rewilding, such designation would certainly make sense. This area already fosters robust populations of moose and bear. There have been credible reports of catamounts near the Bread Loaf building known as the Printer's Cabin—less than 100 paces west of this meadow. Those big cats were tracking along in a band of rugged, heavily forested land—one that reaches down this ridge to connect the southern part of our state with the much less interrupted habitat of northeastern Vermont and Canada.

Discussions of rewilding in *Wild Earth* describe the need for certain forms of human agency, including careful scientific analyses and vigorous policies to protect or establish wildlife corridors. This is an exciting prospect. It's also worth noting, though, that another kind of rewilding has already been accomplished in Vermont, more or less while people weren't looking. By the time the National Forest was established in 1932, the hill-farms, sheep pastures, and forges had long since been abandoned. The forests had returned without sponsorship. Ours is a providential wilderness and, accordingly, a messy one. The forested heights define a wild corridor running north and south between the towns planted along Route 7 and those following Route 100. But the east-west traffic on Route 125, with its Victorian resort turned writers' conference, also establishes a *human* presence in the midst of *wilderness*. Such a convergence makes this a good place to ponder the ways in which nature and culture have each other surrounded.

Wilderness in Vermont is a fruitful confusion, inseparable from the history of human enterprise and excess, failure and insight, associated with this place. Such a landscape of reversals may help us move beyond the current polarization between advocates of Wilderness and their critics among environmental historians. When I follow the sometimes contentious exchanges between representatives of these groups, I am often struck, in fact, by how important the insights are on both sides. On the one hand, I identify strongly with the wilderness movement's testimony about the inherent value, and the sanctity, of wild places. One of the greatest contributions of environmentalism in the tradition of Muir has been its resolute challenge to narrow economic assumptions about the uses and value of land. At the same time, it is important to acknowledge that the wilderness movement itself is an historical phenomenon, inextricable from the social history, religious values, and economic situation of its proponents. Such a recognition does not mean defeat or repudiation of the wilderness ideal. It's simply a reminder that the transcendent values people espouse are always informed by and complicated by their immediate human contexts. I am convinced that the best way to consolidate and extend the wilderness ethic today—and to protect wild habitat—will be to integrate it with a more inclusive social perspective and a more ironic self-awareness.

William Cronon's essay "The Trouble with Wilderness" has caused particular consternation among activists with its description of "a dualism at the heart of wilderness" (85). I believe there is truth in this assertion, if not the whole truth. From John Muir to the present, there has been a religious dimension to the wilderness movement. Not surprisingly, sectarian language has sometimes been the result. One example would be Bill Devall and George Sessions's influential 1985 book *Deep Ecology*, which provided a valuable service in pulling together many of the sources informing spiritual and ethical aspects of the wilderness movement. But it sometimes slid into an approach of separating the sheep from the goats—to the extent of downgrading a constructive environmental thinker like Rene Dubos for his "narrow Christian stewardship" or declaring that a writer of Wendell Berry's stature "falls short of deep ecological awareness" (122). The point I want to make, though, is that our thinking about wilderness continues to evolve. This holds true for subsequent writing by wilderness thinkers, including Sessions and Devall, and is even more dramatically evident in the ambitious innovations of The Wildlands Project. My main reservation about Cronon's essay is finally that it wields too broad a brush, painting the wilderness movement as both more monolithic and more static than it really is. Still, his analysis remains a useful spur forward.

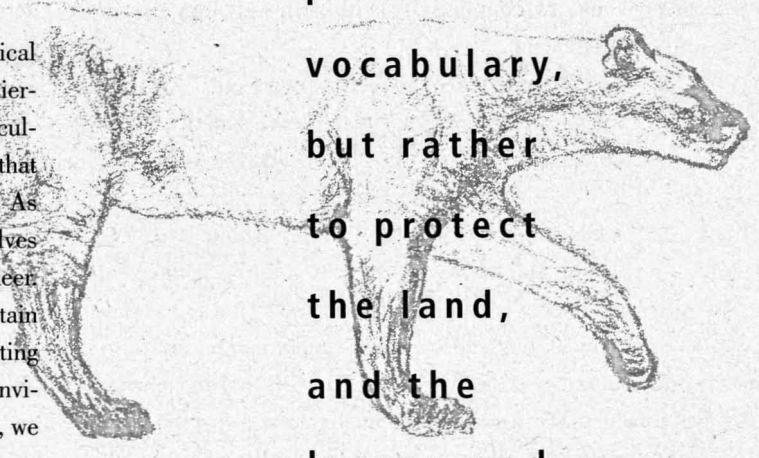
The part of Cronon's essay that I find most useful is his discussion of "wildness" (89). He points out that Thoreau preferred this word, with its more qualitative connotations. Muir, by contrast, emphasized the expansiveness of "God's wilderness." From my Vermont vantage point, I find both words useful—

"wildness" for evoking the exhilarating recovery of our cut-over landscape, and "wilderness" for defining the new protectiveness and ambitiousness with which we are beginning to regard our forests. There need be no war between these alternative terms, any more than celebration of Vermont's third-growth implies a lessening of support for Oregon's old growth. Whatever the differences in their language, the fact remains that Muir claimed Thoreau as one of his chief inspirations, propping his Concord ancestor's picture on the mantel of his Martinez ranch. The most important task is not to defend a particular vocabulary, but rather to protect the land, and the human and non-human communities which it supports. This distinction might emerge even more clearly from the Cronon essay if its title were slightly altered to read "The Trouble with 'Wilderness'." Though "wilderness" is an exciting and resonant word, the mysterious web of life to which it points is not captured by *any* language. Our plans and our vocabulary are fine as far as they go, but the world always offers vistas beyond our expression.

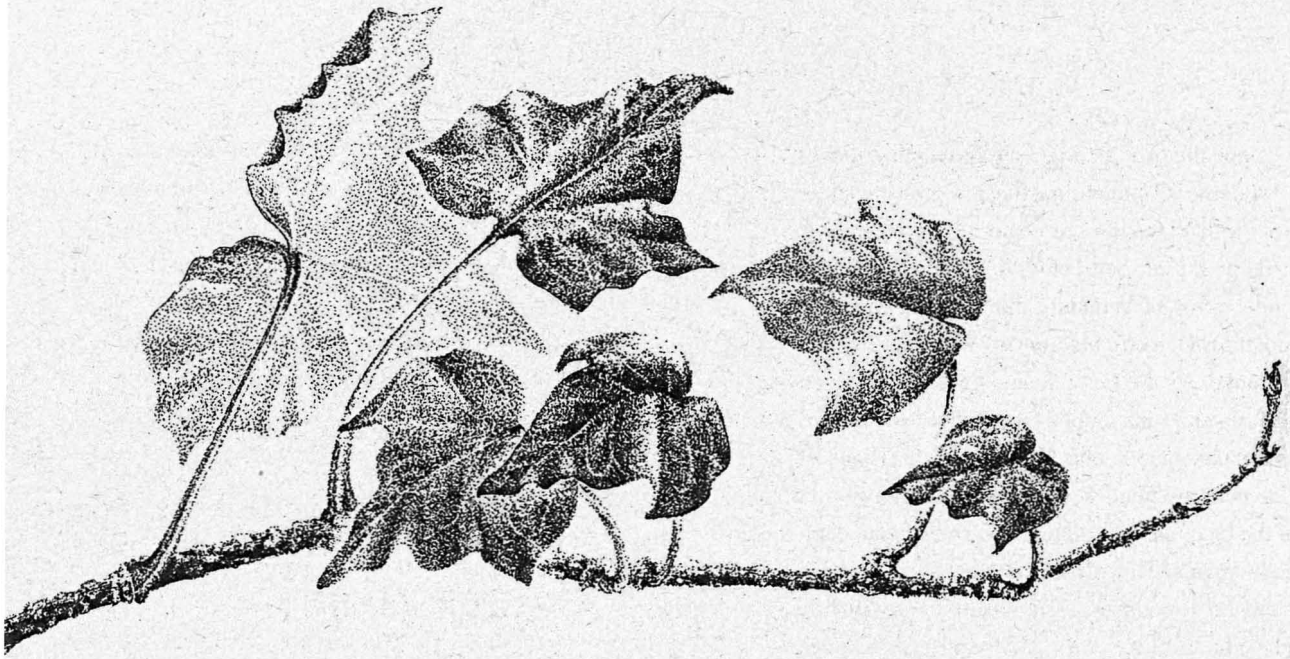
We need not only to understand ecology as a biological dynamic, but also to enact it as a more encompassing, less hierarchical approach in our thinking about conservation and culture. The science of ecology describes a circuit of energy that includes and sustains the full range of biological diversity. As Aldo Leopold evoked in "Thinking Like a Mountain," wolves have always been much more than the "natural enemy" of deer. By controlling the size of a herd, they protect an entire mountain against overgrazing and allow it, in turn, to continue supporting healthy populations of deer and other animals alike. In our environmental thinking no less than in our approach to wildlife, we need to focus less on apparent antagonisms and more on a broader ecology of relationships. While never ceasing to affirm the value of wolves and wilderness, we must also pursue a respectful dialogue with those whose livelihood is on the land and with advocates of healthier cities. Many efforts of this sort are already under way.

One reason to avoid defensiveness is to keep from getting stuck at an earlier stage of our own thinking. I have already referred to a shift in wilderness thought over the past decade and a half. One aspect of this, as my colleague Chris McGrory Klyza has pointed out to me, has been a move from valuing Wilderness primarily in relation to human solitude to focusing on its importance for the protection of endangered species. Similarly, as The Wildlands Project moves from the conceptual phase to that of implementation, it places greater emphasis on such concepts as stewardship. An illustration of this evolution comes in a recent Sky Island Alliance document co-authored by Dave Foreman. "Stewardship Zones," both at low-use and moderate-use levels,

The most important task is not to defend a particular vocabulary, but rather to protect the land, and the human and non-human communities which it supports.



catamount by Bob Ellis



are affirmed as supporting the health and connectivity of core reserves (11). Such a discussion is pertinent to "linkages" or "corridors" at the biological level. But it also reflects an enhanced sense of connectivity within the ecology of our environmental thought.

It may be helpful to place the recent arguments of environmental historians within a larger context. Native American writers, for example, pose their own trenchant challenges to the wilderness ethic when they argue for the importance of human experience and stories to the character and value of sublime western landscapes. Leslie Marmon Silko has written in this connection about her own Pueblo ancestors' reliance on storytelling to sustain their bond with the landscape, not simply in a narrow utilitarian way but rather at the deepest level of personal and spiritual identification. These stories, which often have a specific topographic reference, have been passed down from the ancestors but constantly revised in light of individuals' own experience. Silko writes that her people "perceived the world and themselves within the world as part of an ancient continuous story composed of innumerable bundles of other stories" (251). "Bundles," like "ecology," is a helpfully inclusive image for our ongoing conversation about wilderness. New perspectives add to, and sometimes help to correct, our previous insights. There's always room for one more story if it's rooted in attentiveness to the land, or for a new take on one of the beloved old tales.

The wilderness of Vermont adds its own story to the bundle. It offers an antic, and an encouraging, tale in which the wilds surge across and between the roads of history. Such apparent incongruity can be disconcerting, but it can also be an opportunity to tune our ears to new harmonies. When the great New England composer Charles Ives was growing up, his father George was a town bandmaster who loved to have two bands march past each other on the town green playing different tunes. Ives compositions like "The Fourth of July" and "Putnam Camp" lovingly recreate such effects. Harmonies grow thicker, discords more jagged, as the bands march closer and closer. It's hard work listening to such massive and playful novelty, just as it is trying to negotiate a vocabulary in which "wilderness" and "stewardship" can enter into non-antagonistic dialogue with one another. But it's also exciting to begin discerning new harmony where we earlier found only conflict. As the different tunes and vocabularies converge, moments also come when the familiar songs soar up with a new glisten. Then the bands march on, though with new ears, and the music and controversy fade into the quiet of this dusky corridor in the Green Mountains. Now comes evening, and the darkness of a Vermont unrestricted by the history or politics of "Vermont." Now begins the nightly conversation of a wilderness more wary and improvisatory than any lexicon. ▮

John Elder is Stewart Professor of English and Environmental Studies at Middlebury College (Middlebury, VT 05753). He is the author of Following the Brush, Imagining the Earth: Poetry and the Vision of Nature, *and* Reading the Mountains of Home, *which was published this spring by Harvard University Press.*

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illustration by Robin Peterson

American Wilderness

Old Wilderness

New Mexico's Gila (Gila NF): **540,000 acres "preserved intact and designated as a special primitive area"** at the urging of Aldo Leopold; 1924

New Wilderness

Oregon's Opal Creek (Willamette NF): **12,800 acres designated Wilderness** in largest remaining tract of Cascade Range old-growth forest, part of 34,132-acre Opal Creek Wilderness and Scenic Recreation Area; 1998

Birth of Wilderness System

Number of areas and acreage placed in the National Wilderness Preservation System with the passage of the 1964 Wilderness Act: **54 units, totaling 9,139,721 acres**

Original Eastern Wilderness

Areas, acres, and percentage of Wilderness protected by the 1975 Eastern Wilderness Act: **16 units** (located east of the 100th meridian) **covering 206,988 acres,** comprising 2% of eastern National Forests

Big Wilderness in Alaska

1. Wrangell-St. Elias (NP) 9,078,675 acres
2. Arctic (NWR) 8,000,000 acres
3. Gates of the Arctic (NP) 7,167,192 acres
4. Noatak (NP) 5,765,427 acres
5. Katmai (NP) 3,384,358 acres
6. Glacier Bay (NP) 2,664,840 acres

Big Wilderness in contiguous US

1. Death Valley (NP) 3,158,038 acres; CA
2. Mojave (NP) 1,419,800 acres; CA
3. Everglades (NP) 1,296,500 acres; FL
4. Olympic (NP) 876,669 acres; WA
5. Boundary Waters Canoe Area (NF) 807,451 acres; MN
6. Cabeza Prieta (NWR) 803,418 acres; AZ
7. Joshua Tree (NP) 793,955 acres; CA

Small Wilderness

1. Wisconsin Islands (NWR) 2 acres; WI
2. Barbours Creek (NF) 5 acres; VA
3. Pelican Island (NWR) 6 acres; FL
   Birch Islands (NWR) 6 acres; ME
4. Michigan Islands (NWR) 12 acres; MI
5. Three Arch Rocks (NWR) 15 acres; OR
6. Island Bay (NWR) 20 acres; FL
7. Wisconsin Islands (NWR) 27 acres; WI

Wilderness Debacle

FOREST SERVICE INVENTORIES KNOWN AS THE ROADLESS AREA REVIEW AND EVALUATION:

RARE I (1972): Out of 56 million roadless acres identified, the Forest Service recommends **12.3 million acres for Wilderness protection** (22%)

RARE II (1977): Out of 62 million roadless acres identified, the Forest Service recommends **15 million acres for wilderness protection** (24%)

National Wilderness Preservation System Today

WILDERNESS AREAS MANAGEMENT

	AGENCY UNITS	ACRES	% OF PUBLIC LAND
Bureau of Land Management (BLM)	134	5,243,616	1%
Forest Service (FS)	413	34,763,021	6%
Fish and Wildlife Service (FWS)	75	20,685,372	3%
National Park Service (NPS)	44	44,083,003	7%
TOTAL	**666**	**104,775,012**	**17%**

- Total land area of the 50 states: **2.3 billion acres**
- Percentage of US land area in National Wilderness Preservation System: **4.6% (104,775,012 acres)**
- Most Wilderness State: **Alaska** (49 units, administered by FS, FWS, NPS, totalling 57,408,442 acres)
- Least Wilderness States: **Connecticut, Illinois, Iowa, Kansas, Maryland, Rhode Island** (all have none)

Vanishing Wilderness

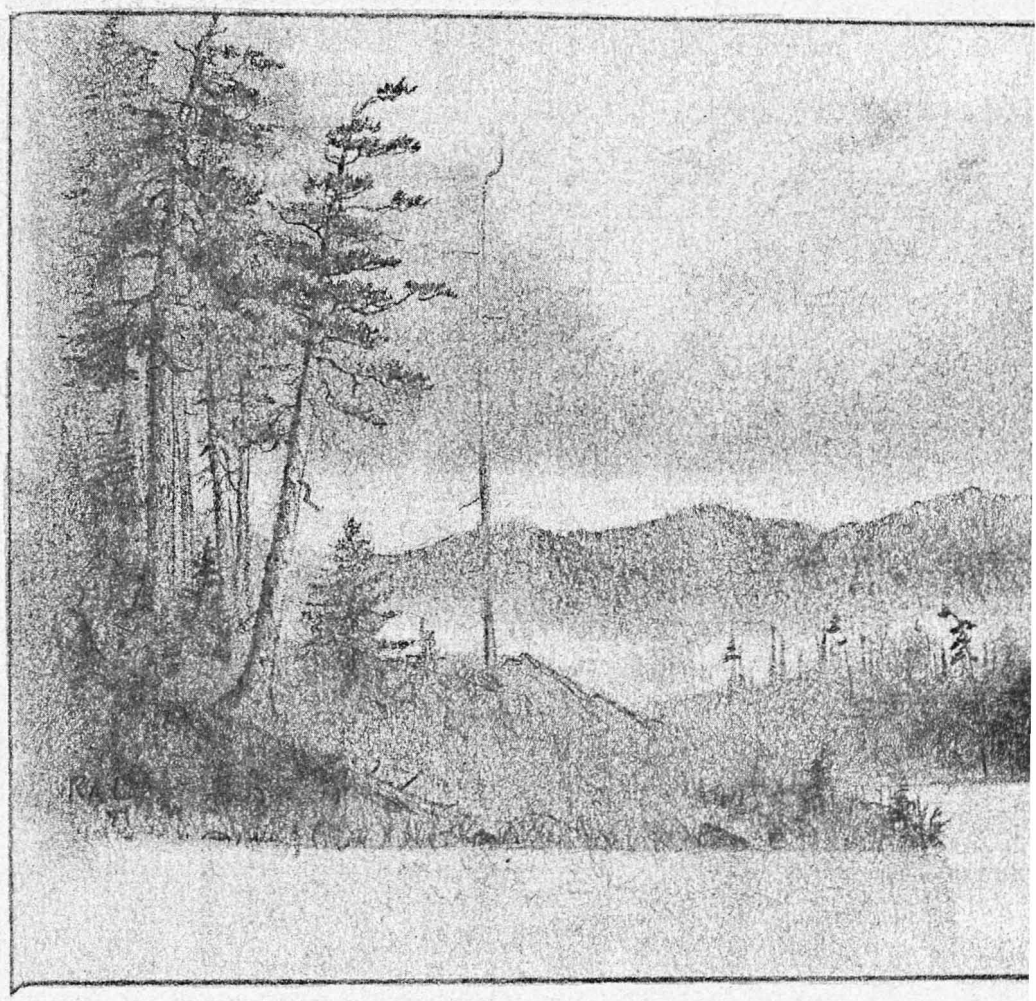
- Average amount of unprotected wilderness logged by the Forest Service annually: **1,000,000 acres**
- Average amount of unprotected wilderness destroyed by mining, and oil and gas exploration annually: **1,000,000 acres**

Threatened Wilderness

Arctic National Wildlife Refuge
Boundary Waters Canoe Area Wilderness
Cabeza Prieta National Wildlife Refuge
Cascade Crest
Cumberland Island National Seashore
Izembek National Wildlife Refuge
Klamath Basin National Wildlife Refuges
Mojave Desert
Okefenokee National Wildlife Refuge
Owyhee Canyonlands
Petroglyph National Monument
Routt National Forest
Utah Wilderness
Maine Woods

Compiled by Wild Earth intern Lucinda Newman. Sources: Battle for the Wilderness, Revised Edition by Michael Frome (1997); The Wilderness Society; Congressional Quarterly Almanac; Public Land Statistics; Audubon; and The Oregonian.

Upper Yellowstone Falls by Thomas Moran and S.V. Hunt (ca. 1870s)



Downpayments on the

A new century is coming, and with it a formidable challenge—to rewild America.

A long national debate—do we want this continent tamed or wild?—has dominated recent decades. Whether the combatants were Muir vs. Pinchot, Ickes vs. Wallace, or Brower vs. Dominy, the conservation battles of the 20th century have, at their heart, been about whether we want to reclaim and maintain—or let slip away—the part of the American character that springs from the frontier, from large animals and large landscapes left outside the control of humans, from wilderness.

Don Young and Jim Hansen notwithstanding, I believe that the most important fact about today's political landscape regarding conservation issues is that the American people have resolved that debate: They want wildness back. That's what the numbers in the public opinion polls mean to me.

Now how do we help them get it?

Let's imagine that we were having this dialogue five hundred years ago. With wisdom and foresight we might have moved across the continent and set some of it aside as we explored: a continuous wildway, perhaps a quarter of the whole, but a connected, thoughtful quarter—the major riparian zones (with cities as refugia for commerce within them), the ridge-tops and moun-

illustration by Rob Leverett

Rewilding of America

by Carl Pope

tain ranges for more connectivity, and then perhaps one watershed in five, from ridge to river, set aside for purposes other than the material needs of human beings—for wilderness, spiritual refuge, watershed protection, a genetic reservoir—and as a means of honoring our obligations to the rest of life.

Alas, we can't erase five hundred years of agricultural and industrial expansion. Nor can we rely solely on a set-aside strategy when little wilderness remains. What is still untouched, whether in Alaska, Utah, the Northern Rockies or the Adirondacks, we must jealously guard. Beyond the remnants of wildness, however, we need to give back to Nature space that we have occupied.

Natural processes—alluvial deposition, eutrophication, succession, speciation, flooding, fire, coevolution—are quite robust, and can work very effectively to regenerate wildness around us, our cities, our technologies, and our toys. They need only space to do their work. As protected places grow, we will replace fragmentation with connectedness. We will see a wild landscape begin to re-emerge, a landscape that humans live within, not across.

And space means, among other things, *public land*. Only public ownership can reliably, certainly, durably allow certain natural processes the room they need. Since we didn't set aside that thoughtful quarter of the continent, we need to begin to reassemble a simulacrum of it. Wildlands philanthropy, and the development of respect by private landowners for Aldo Leopold's land ethic, are key ingredients—but they cannot flourish without a major increase in public ownership.

Such an increase in public ownership should be funded by the public. This is both morally correct and politically pragmatic. Large community endeavors in our society are carried out by the government, and they are funded by taxes. At the national level, the Land and Water Conservation Fund (LWCF) exists as the appropriate vehicle. It needs to be fully funded, not just for one year, but decade after decade—and our definition of fully funded needs to expand as our national commitment to the rewilding of America becomes more concrete.

This may seem futile, given the recent history of the LWCF. I want to propose a different strategy to resolve this dilemma, one that has, for conservationists, been the road less taken.

Over the years, we have crafted two very different messages in our efforts to obtain full funding of the Land and Water Conservation Fund. One melody, sung year after year, has been that Congress should keep its promises. Off-shore oil leases were issued, in part, on the promise that a portion of the revenues would be dedicated to protecting America's natural heritage through disbursements from the LWCF. On the same general principal that has been used by truckers to defend the "Highway Trust Fund" or by the American Association of Retired Persons to defend Social Security, environmentalists have argued that full funding of the LWCF is a simple matter of promise-keeping.

Congressman Morris Udall, at the end of his Congressional career, offered legislation to obtain this goal by placing appropriations for the LWCF "off budget," and House Minority Leader Dick Gephardt has offered legislation with the same goal this year.

And whenever this message, or similar messages, are tested, the public likes them. People think Congress should keep its promises. People like the idea of purchasing imperiled wildlands for their children. People understand the concept of using revenues from exploiting non-renewable resources (oil) to increase the public investment in renewable resources on the land.

But the public is not Congress.

Year after year this argument has failed to avoid the steady decline of appropriations for the Fund. Long before Newt Gingrich occupied the Speaker's chair, indeed going all the way back to the beginning of Ronald Reagan's tenure, support for the Fund, as measured in real dollars, has steadily declined.

The notable—and notorious exception—was 1996, when Congress appropriated $700 million for the LWCF as part of the budget deal enacted that year. And the argument for this extraordinary step-up in funding was *not* that Congress needed to keep its promise. Nor was it that the federal government could now afford to resume adding to the public lands, since the decision to increase the Fund was made before anyone really believed that the budget deal would end the federal deficit. It wasn't even that the anti-conservation "wise-use" politicians from Utah, Idaho, Alaska and elsewhere in the rural West needed to demonstrate that they meant what they said about "compensating" private landowners for complying with the Endangered Species Act. (It is the Land and Water Conservation Fund that is supposed to compensate landowners for habitat acquired under the Endangered Species Act. Compensation in this context normally means paying someone money—and the government cannot pay unless it first appropriates.)

No, as Congress demonstrated early in 1997, the Gingrich-Lott leadership had no interest in past congressional promises, no willingness to use the budget windfall to protect critical habitats, and utterly no shame at simultaneously calling for landowners to be compensated more generously while being more miserly in voting funds for the purpose.

What call moved Congress in 1996, if not commitment, logic, or consistency?

Oink.

The call of pork.

Congress appropriated $700 million for the Land and Water Conservation Fund in 1996 because of public demand. Across the country, conservationists had organized and built support for saving important places—Sterling Forest, land in the Santa Monica Mountains, the Everglades—through public acquisition. These campaigns coincided with the Clinton administration's decision that acquisition was the best way for the administration to demonstrate its commitment to blocking the New World Mine in Montana and saving the Headwaters Grove in Northern California.

This is our second melody—love of place. It was the politics of place—local place, expressed as pork—not the politics of promises or principle, that powered the $700 million appropriation.

Members of Congress believe that they get elected by making things happen for their constituents. They notice that whatever Americans say, they don't vote on the basis of what politicians stand for—they vote on the basis of what politicians deliver. This tradition goes back in American history to Henry Clay's "American system," the national network of canals and roads that Clay bet would make him President. (It didn't.) Lincoln with the Homestead Act, Teddy Roosevelt with the National Forests,

~ Only public ownership can reliably, certainly, durably

Woodrow Wilson with the Ag Extension Service, Franklin Roosevelt with an entire alphabet soup of federal programs for every community, Eisenhower with the Interstate Highway System, and Johnson with Medicare demonstrate that Clay was merely ahead of his time.

But since Ronald Reagan took the White House with his message, "Government is the problem, not the solution," and created the deficit crisis (which Ross Perot and Bill Clinton solved), the scope for such "delivery" of programs and benefits for local constituencies has steadily shrunk.

There are fewer legitimate opportunities for new public facilities and programs, less public support and more criticism of current government spending, and far more scrutiny of the shenanigans by which members of Congress get credit for these investments.

As a result, land acquisition is one of the few remaining ways a member of Congress can "bring home the bacon" for his or her constituents. People believe public lands are a good investment—something they are otherwise skeptical about where government is concerned. When we have more highways, ports, bridges, and public buildings than we want or need, it's hard to get excited about another one—the supply has outrun the demand. But with parks and wild places, the supply steadily shrinks, the demand continually increases, and members of Congress are beginning to realize that even voters who don't like government programs do like public land.

Moreover, land acquisition is cheap. Full funding of the LWCF at $900 million a year would barely build a mile of interstate highway, but it will create open space, wildlife habitat, and recreational opportunities in hundreds of congressional districts.

So I would argue that the future of public acquisition of threatened wildlands lies in tapping into people's love of *specific places*, and organizing campaigns around the need for public funds to protect them. Rather than organizing a mega-coalition around the Land and Water Conservation Fund, we may need stronger midi- and mini-campaigns around particular wetlands, wildlife corridors, prairies, and cut-over timber lands that will recover their natural diversity if given time and opportunity. We must create a vision of the specific landscapes that a new, wild America will need, and then engage the American people in the effort to acquire them.

This has not been our historic emphasis in lobbying for the LWCF; I think it needs to become our new strategy.

The proposed Maine Woods National Park is an example at the grand scale of this promise: more than three million acres (larger than Yellowstone) almost all in private ownership that will change hands in the next 20 years,* some pristine, some badly hammered, with hundreds of lakes and thousands of miles of streams—and a price that exceeds any reasonable ability of the people of Maine or wildlands philanthropy to complete, although they will undoubtedly make a critical contribution in the early years.

But that price, perhaps $700 million, overwhelming as it may seem to the state of Maine or to private philanthropists, is less than one year's disbursement from a fully funded Land and Water Conservation Fund. Imagine that it takes twenty years to build public support for the creation of this park, and for all the lands to come on the market at a reasonable price from eager sellers. Over that period a fully funded LWCF could sustain a dozen such major projects and still have ample funding for smaller purchases of key parcels, corridors, inholdings, and buffer zones.

Not all of the fall-out from the recent, highly politicized process has been beneficial. The congressional leadership has held up approval of the actual spending of much of the $700 million, so that critical land parcels remain at risk, notably the Church Universal and Triumphant Ranch on the edge of Yellowstone. Many wildlife advocates argue that the New World Mine could have been blocked by appropriate regulation alone, and that taxpayers will end up paying far too much for the redwoods they purchase in the Headwaters watershed because neither the Wilson administration in California nor the federal government acted to properly regulate logging in the area prior to the purchase.

As the Headwaters debacle shows, there are risks and downsides in any acquisition strategy. The very tools that mobilize public opinion on behalf of a place—emphasizing its special qualities, highlighting its critical role in ecosystem functioning, bringing out its emotional power—are those that enable a rapacious seller to jack up the price. It's not an accident that John D. Rockefeller made his land purchases around Jackson hole quietly and privately—he knew how to get value.

Eminent domain, in the right political climate, can help undercut the worst extortionists who will seek excessive profit following campaigns to mobilize public love for a privately owned place. Even here, however, the history of the US Court of Claims in defending the public purse is tattered. Taxpayers may have paid almost as exorbitant a price for Redwood National Park, acquired by eminent domain, as for the Headwaters, brokered in a deal.

allow certain natural processes the room they need. ~

It is critical to insist that abuses of the land be halted, if at all possible, by regulation, before negotiations for purchase begin. If California and the US government had properly regulated logging in the Redwood Empire, they would have unloaded the gun that Charles Hurwitz held to the taxpayer's head. The same love of place that creates the political will for purchase must also be mobilized on behalf of such principled regulation—first.

But I suggest that side by side with an insistence on regulation that respects the land must be a vast, but varied, outpouring of citizen energy to purchase and protect the next generation of public lands—lands that today show as no color of green on a map. ▮

Carl Pope is executive director of the Sierra Club. Founded in 1892 by John Muir, the Sierra Club (85 Second St., San Francisco, CA 94105; 415-977-5500) is America's largest and most influential membership-based environmental organization.

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* *Editor's note:* So fast are the paper company lands being bought and sold, the author would hardly have exaggerated to say they'd "change hands in the next 20 days." Indeed, while this issue of *WE* was in production, three land deals were consummated that resulted in roughly 2.5 million acres of Maine changing hands: SAPPI, the South African pulp and paper giant, sold 905,000 acres to Seattle-based Plum Creek Timber Co.; and the South Carolina-based Bowater Inc. sold one million acres to JD Irving Ltd., the Canadian corporation infamous for its industrial forest practices in New Brunswick, as well as 656,000 acres to McDonald Investment Corp., a private investment firm from Alabama. (So much for "local control.") The lands sold for $200–236 per acre. Of the lands changing ownership, approximately one million acres lie within the proposed Maine Woods National Park boundary. —*TB*

America's Heritage Forests

Save 'em Now or Maybe Never

by Ken Rait

During the next 18 months, the Clinton administration will decide the fate of America's last tracts of wild, roadless, public forests—our Heritage Forests. In January of 1998 the Clinton administration announced a lukewarm interim policy placing an 18-month moratorium on the construction of new roads in some roadless areas within National Forests. This policy, expected to be implemented in mid-December, is the first phase of administration plans to develop, over the course of the next year, a comprehensive transportation policy for forest lands. This initiative is conservationists' best opportunity to protect these remaining wildlands in the near term.

The US Forest Service manages 191 million acres of public land. Barely 18%, less than 35 million acres nationally, have been permanently protected as Wilderness. The other 82%, or more than 150 million acres, are open to timber cutting, oil and gas development, mining, and other abuses. While a great deal of this acreage has been damaged by decades of exploitation, roughly 60 million acres, or 30% of public forest lands in America, remain wild (but without formal protection)—these are America's Heritage Forests. The interim policy will shield roughly 40 million acres of these forest wildlands from new road construction—but not from logging, mining, and other damaging uses.

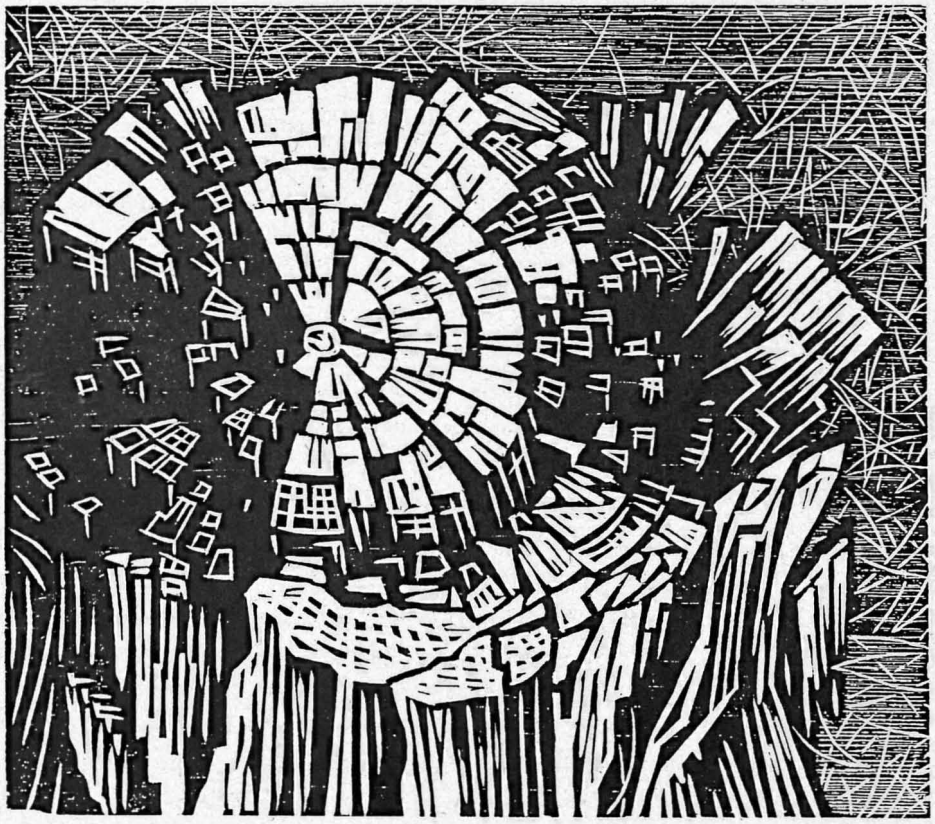
America's Heritage Forests serve a variety of important public values: They are sources of clean drinking water and are critical fish and wildlife habitat; they are a haven for the human spirit and a wellspring of future Wilderness Areas. For these reasons, conservationists have made the protection of our Heritage Forests a top priority. If we succeed and ensure permanent stewardship of our natural heritage, America's last untouched scenic wilderness will continue to provide spiritual, biological, economic, and recreational benefits.

Policy Genesis: The Beltway Battleground

One of the arenas in which the fate of these wildlands is decided is the Interior Appropriations process, where each year the Forest Service's road-building budget is intensively debated by Congress. Roads wreak havoc on wildland ecosystems. Roads fragment wildlife habitat; introduce exotic pests, pathogens, and plants; cause direct wildlife mortality; fill streams with sediments, choking fish and other aquatic species; increase toxic pollution from runoff; erode potential wilderness values; and increase noise pollution and access for off-road vehicles and other motorized use.

In recent years, the conservation community has played an increasingly important role in reducing the Forest Service roads budget through the appropriations process. In 1997, efforts to dramatically reduce the agency's road-building budget came closer than ever to succeeding, failing in both chambers by just one vote. The administration took the close votes in both the House

illustration by Claus Sievert



and Senate as a signal to develop policies that would defuse the contentiousness over the forest roads budget (i.e., keep the money flowing from Congress).

In his statement accompanying the signed Interior Appropriations bill, President Clinton commented on roadless areas:

> *...the Forest Service is developing a scientifically based policy for managing roadless areas in our national forests. These last remaining wild areas are precious to millions of Americans and key to protecting clean water and abundant wildlife habitat, and providing recreation opportunities. These unspoiled places must be managed through science, not politics.*

Clearly, the administration wants to develop a comprehensive policy to forestall potential budget reductions by Congress. Whereas President Clinton extolled the value of all of our remaining roadless areas, Forest Service Chief Mike Dombeck has limited the scope of the interim policy to affect just some—not all—roadless areas. What is most notable about Dombeck's announced interim moratorium is its log truck-sized loopholes.

Rhetoric vs. Result: A Loophole-Ridden Moratorium

The Forest Service's interim policy, when implemented, will *explicitly exempt* roadless areas in National Forests that have revised forest plans or are covered by the Northwest Forest Plan. Consequently, about 15 million acres (including 9.5 million acres in Alaska, 3 million acres in the Northwest, 1.4 million acres in Colorado, and 0.8 million acres in Idaho) would receive no protection. This amounts to approximately 30% of all of the inventoried roadless land in the National Forest System.

There are another 10–15 million acres of de facto wilderness that have never been officially included in the Forest Service's roadless area inventories. Because the Forest Service limited their roadless area survey to units larger than 5000 acres, thousands of ecologically important smaller areas 1000–5000 acres in size have never been formally recognized for their roadless characteristics. In December 1997, 169 scientists from across the US wrote to President Clinton advocating protection for remaining roadless areas larger than 1000 acres in the National Forest System. The letter reflects the growing scientific consensus that roadless areas play a vital role in conserving biological diversity and providing high quality water:

> *Roadless areas are critical because they represent the least human-disturbed habitats in an almost universally disturbed landscape. As such they act as de facto refugia for numerous sensitive plant and animal species, reservoirs of genetic material, and benchmarks for experimental restoration efforts in intensively managed landscapes. Streams flowing out of roadless areas typically provide supplies of the purest water untainted by chemical pollutants and within the cool temperature range required by many native fish species.*

Finally, the policy fails to provide the level of protection necessary to prevent further degradation of important ecological values even in National Forest roadless areas that *are* included in the interim policy: it allows continued logging through helicopter timber sales and ground-based techniques that do not require roads. Moreover, the interim policy does not protect roadless areas from oil and gas development or motorized recreation.

Clearly, a disconnection developed between the President's lofty statement and the interim policy adopted by the Forest

illustration by Patrick Dengate

Service. Although Clinton announced a sweeping roadless area protection initiative, Forest Service Chief Mike Dombeck, under direction from Vice President Gore, developed a watered-down, loophole-ridden policy that affects only some Heritage Forests. If the result of this 18-month process is a mealy-mouthed policy that allows "environmentally sensitive" roads into the last of our unprotected forest wilderness, it will be viewed by the public as a dismal failure. Conversely, if the Clinton administration adopts a strong policy that protects wilderness values, it will leave an enduring legacy for future generations.

The Alignment of the Stars

Perhaps at no other time in the Forest Service's history have the stars been better aligned for a visionary roadless area protection policy. Mike Dombeck is certainly the most forward thinking Forest Service Chief in decades. In a July 1, 1998 memo to his employees, he said:

> *...our proposed suspension of road construction in roadless areas will help us develop not only a science-based long-term road policy but one that also reflects the values that society places on wild places, old growth, wilderness, and on intact and unfragmented landscapes....Our wilderness portfolio must embody a broader array of lands—from prairie to old growth. As world leaders in wilderness management, we should be looking to the future to better manage existing, and identify potential new, wilderness and other wild lands.*

In his former capacity as acting Director of the Bureau of Land Management (after Interior Secretary Bruce Babbitt ousted Jim Baca from that position), Mike Dombeck was the first BLM chief ever granted management of a National Monument. At BLM, Dombeck did nothing to demonstrate leadership in the agency's wayward management of the Grand Staircase National Monument. As Forest Service Chief, Dombeck can stake his claim to a chapter in the conservation history books; the roadless policy is his first test.

Another relevant factor in this policy debate is the release language from the post-RARE II (Roadless Area Review and Evaluation) statewide Wilderness bills of the 1980s. (These bills designated some token Wilderness in mainly rock-and-ice alpine terrain, but left most of the forests with merchantable timber wide open to logging.) Under this language, the agency is already embarking on new forest-by-forest Wilderness inventories and developing recommendations to Congress for additions to the nation's Wilderness System as part of its planning process.

Dombeck should seize the opportunity to unite the forest plan revision process (the rules for which are currently being revised by a "Committee of Scientists") with the roadless policy initiative. A reasonable outcome would be the protection of all remaining undesignated wilderness on Forest Service lands. Politically, there is growing support for saving our remaining wild forests. Members of Congress from the Pacific Northwest and the southeastern states wrote letters to the administration asking them to move forward with a comprehensive policy to protect municipal drinking water supplies and large roadless areas from the degradation of road-building and logging.

The public strongly believes our remaining wild forest areas deserve protection. A nationwide voter survey conducted by the polling firm Lake, Snell and Perry found that 65% of voters support a proposal to "stop all timber cutting in roadless wild forest areas," according to The Wilderness Society, which commissioned the survey. In the poll, 68% of Democrats, 60% of Independents, and 64% of Republicans supported a logging ban in these areas. A geographic breakdown showed the logging moratorium was favored by 69% of respondents in the Northeast, 61% in the Midwest, 64% in the South, and 66% in the West.

On November 18 of this year, 460 environmental organizations, 230 scientists, and 35 religious leaders sent a letter to Vice President Gore asking that he take advantage of this "unprecedented opportunity to leave a legacy of Heritage Forests for future generations...[and] adopt a final policy of the termination of the 18-month moratorium that forever protects America's Heritage Forests."

Conclusion

The Clinton administration should adopt a final policy that protects roadless areas 1000 acres and larger (or smaller where ecologically significant) on all National Forests—with no regional exemptions from logging, road-building, off-road vehicles, mining, and other commodity development activities. With most of our wild forests already destroyed, we can ill-afford to lose any more of these Heritage Forests, period. This is the least we can do for the wildlife that calls these forests home, and for future generations of Americans who may seek the solitude and freedom of wild country.

With this roadless areas policy, Mike Dombeck and Vice President Gore will help define their legacy. President Clinton set the high bar—will Dombeck and Gore jump over or limbo under it? ▮

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Size Does Matter

A Big Wilderness Legislative Strategy by Jim Jontz

And so we feel compelled to act on President Clinton's wise observation that these last remaining wild areas are precious to millions of Americans and critical to protecting clean water and abundant wildlife habitat, and providing recreational opportunities for thousands of persuadable voters in key electoral states. For those reasons, we are today embracing the "Wilderness for Our Future" Act, and pledge that in our administration the enactment of this legislation of truly millennial proportions will be of the highest priority.

—Joint Earth Day Statement, April 22, 2000, Presidential candidates
Al Gore, Richard Gephardt, Paul Wellstone, and...?

illustration by Cynthia Armstrong

Recognizing that bold action is needed to provide permanent protection for our nation's last remaining wildlands, activists across the country are mapping roadless areas and developing Wilderness proposals: a group in Washington state has been meeting regularly under the leadership of the Kettle Range Conservation Group; the Oregon Natural Resources Council is undertaking a statewide roadless area survey; over 50 activists met a year ago in Davis to kick off a California state Wilderness campaign; Friends of Nevada Wilderness hired staff last January to begin work on maps for an estimated 16 million acres of potential Wilderness in that state. The New Mexico Wilderness Alliance is revitalized; Forest Watch and other Vermont conservation groups have begun work on a new Wilderness proposal for the Green Mountain National Forest; the Colorado Environmental Coalition is preparing Bureau of Land Management (BLM) Wilderness legislation for introduction early in 1999; the Wild Utah Forest Campaign is surveying the state's 188 Forest Service roadless areas with an eye to complementing the BLM Wilderness proposal developed by the Utah Wilderness Coalition.

Surveying, mapping, preparing proposals, and recruiting on-the-ground advocates are the undisputed first steps toward ultimate designation of new Wilderness by Act of Congress. There is much groundwork to do. But is it too early to start thinking about how such legislation can be passed in a Congress that hasn't been very "wilderness friendly" recently?

Are state-by-state bills, painfully negotiated with each state's congressional delegation, the only (or best) option? Obviously, this method works better when a state has lawmakers to negotiate with who are favorable toward Wilderness. California and Nevada each have a pair of pro-wilderness senators, although House members in both states pose some problems. There are at least individual members of Congress in some other western states (Oregon, Washington, Colorado) who would support reasonably strong Wilderness legislation.

A different approach is to elevate protection of a state's wildlands into such a compelling national issue that the White House and Congress are willing to "roll" the state's congressional delegation. Alaska and Utah are two states where this strategy is now being pursued. Making Utah's redrock country into a national environmental shrine has been admirably accomplished by the Southern Utah Wilderness Alliance (SUWA). The Northern Rockies Ecosystem Protection Act (NREPA) is another effort to go around the congressional delegations of the affected states with nationally supported legislation.

There are obvious limits to these approaches. Some states may never have a favorable congressional delegation (Idaho, for instance). And how many places can we raise to the level of visibility of Utah's canyonlands, or the Arctic National Wildlife Refuge? Simultaneous national campaigns for five or six different statewide Wilderness bills, if even possible, would seem a misuse of resources.

Solution: Big Wilderness

A Big Wilderness strategy (hereafter "Big W") could be an alternative route to congressional designation of the new generation of protected wildlands. The Big W bill would gather not only representative areas from multiple states: two from Oregon, two from Colorado, etc.; rather, it would be an amalgamated bill wrapping comprehensive Wilderness proposals from all western (and some eastern!) states into a package totaling tens or even hundreds of millions of acres. Such legislation could double or triple the size of the Wilderness System, a measure truly of millennial proportions.

Big W would be an amalgamated bill wrapping comprehensive Wilderness proposals from all western (and some eastern!) states into a package totaling tens or even hundreds of millions of acres.

Big W would not supplant, but be dependent on, carefully crafted state Wilderness proposals. Cobbling together a national Wilderness bill that isn't based on a thorough process within each state and seeks substantial agreement (if not consensus) among the state's wilderness leaders would be a recipe for legislative disaster. Similarly, Big W is not proposed as a short-cut around the meticulous cultivation of grassroots support for protecting individual areas; past experience suggests this is a prerequisite for successful Wilderness legislation.

How big would Big W be? Could it embrace the range of federal ownership including Forest Service, BLM, National Park, and National Wildlife Refuge lands? Could it include creation of National Parks, as well as designation of Wilderness? And would Big W just include lands that meet traditional Wilderness criteria, or might it include other land designations (all protected to Wilderness standards) such as Wilderness Recovery Areas for disturbed lands, Biological Reserves to pro-

tect areas based on their ecological significance, areas of cultural importance such as Native American sacred sites, or other designations to provide protection for deserving lands that might not be "Wilderness" by the historic legislative definition?

Regardless of how these questions are resolved, the fundamental concept of Big W legislation is to create an initiative of such magnitude that it can't be sidestepped or ignored by the media, decision-makers, and opinion leaders. Alaska lands and acid rain control are two issues that have at different times achieved this degree of attention, becoming touchstones by which political candidates prove their credentials and test the clout of the entire environmental community.

What are the advantages of Big W as a legislative strategy?

Effective Use of Limited Resources

Won't the same senators and representatives who vote to protect Alaska wilderness be the ones who will vote to protect wildlands in Utah and Idaho? So why not implement one national campaign to convince the requisite 60 senators and 218 representatives to support the entire package? Under any circumstances we're not going to depend on the votes of western GOP senators (at least the ones we have now), but there are only 16 Republican senators from states west of the 100th meridian (23 if one includes Texas, Oklahoma, Kansas, and Nebraska, states with relatively little public land).

So why not use our resources to conduct strong campaigns in the states where we *can* win the votes? And why expend the energy on ten or twelve campaigns for ten or twelve Wilderness bills, when one good campaign could get the entire package passed? Instead of going into Tennessee with multiple appeals to editorial boards, multiple road shows, and multiple requests to Senators Thompson and Frist—why not just one?

Effective Marketing

By combining bills into one proposal of millennial proportions, it will be much easier to market wildlands protection to the public, the media, and opinion leaders as truly an opportunity too important to pass up. "This is our generation's chance to save what is left, to protect the wildlands we want to leave for our grandchildren," we will be able to argue. "America's wildlands

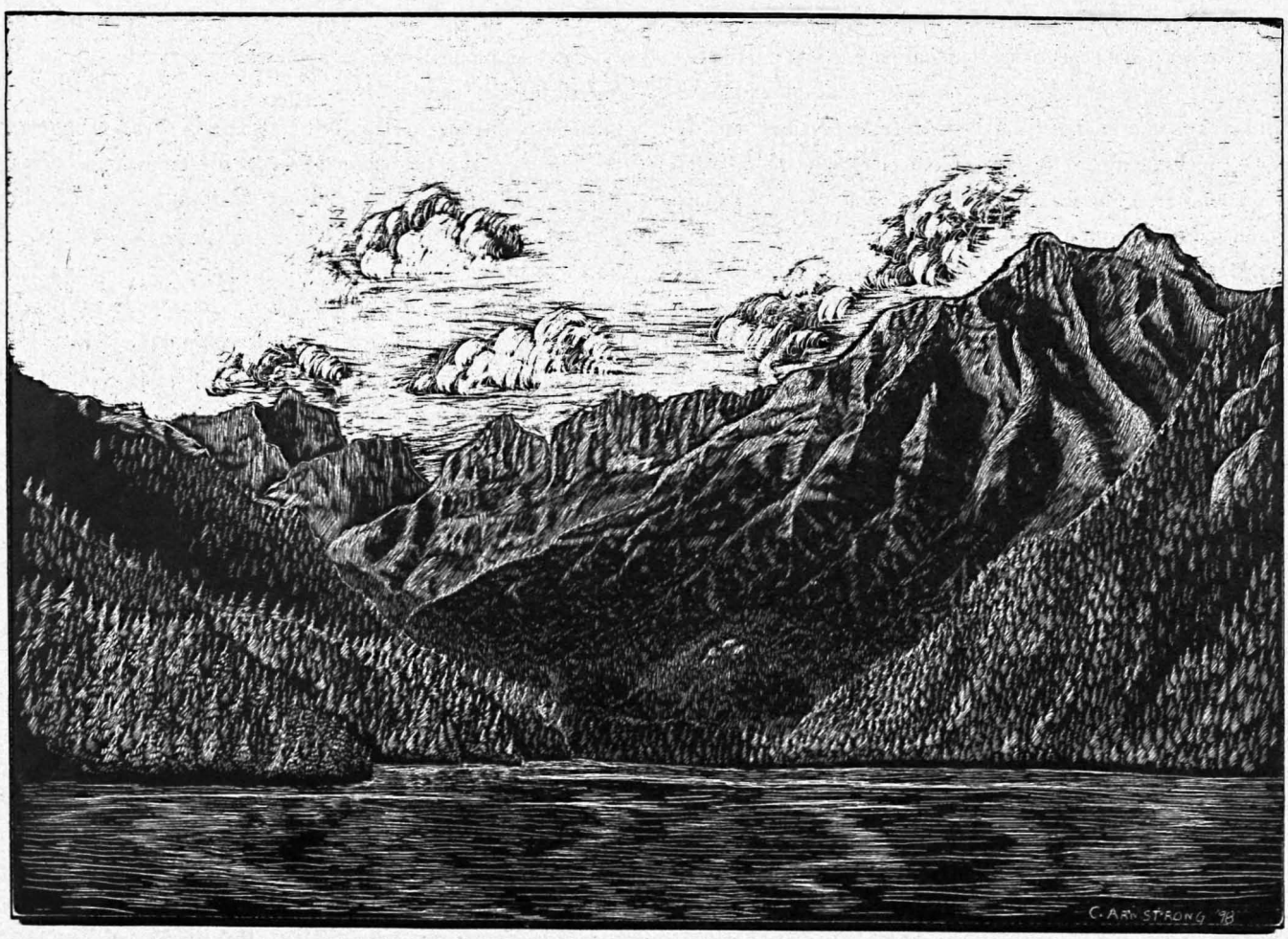


illustration by Cynthia Armstrong

are at risk from mining, logging, motorized recreation, and other development, and now is the time to make sure that future generations can enjoy them as we do."

The concept of saving the remaining wild places is powerful, as is the idea of our *national heritage* and our responsibility for its stewardship. We may not want to describe Big W as our "last" opportunity to protect America's wildlands, but clearly the sense of urgency that is so critical to a successful campaign can be more effectively communicated when the stakes are higher.

Achieving Critical Mass

Perhaps the key advantage of Big W is its size; when lawmakers or the White House perceive that an environmental issue is of such magnitude that they can't walk away from it, we usually do better.

■ Big W would be such an important proposal that the conservation community would have to put it on the front burner. Protecting an individual state's wildlands might be a priority for The Wilderness Society or the Sierra Club, but a national Big W proposal would be more likely to be embraced as a priority by the entire community.

■ Big W could not be ignored by the media. Wilderness advocates have had some success in gaining coverage of the threat timber roads pose to our National Forests and the danger of mining to the redrock country, but are the multiple threats to wildlands nationwide receiving the media attention they should? Big W would be a powerful vehicle to focus the media on what is happening to America's wildlands, much more so than individual state Wilderness proposals.

■ Big W would be an issue of such size that political candidates (and elected officials) would have trouble sidestepping it. Presidential primaries in the year 2000 would be a timely opportunity to shine the spotlight on Big Wilderness. Presidential candidates who want to be regarded as pro-environment will feel obligated to make a commitment. Big W will be a touchstone to define the degree of congressional candidates' commitment to conservation as well. Politicians want to know what our priorities are; Big W will tell them.

What's Inside

Dave Foreman suggests another advantage of Big W: a multi-state bill increases the influence that wildlands advocates have on what is actually included in the legislation. Is negotiating with state congressional delegations the best way to shape the contents of Wilderness? No. Of course Congress is going to have the final say about what is and isn't in a Wilderness bill, but single state Wilderness bills allow the state's congressional delegation virtually complete control in shaping its contents; the congressional rule of deference to a state's legislators is harder to get around when the measure only involves their state. How a congressional delegation sees the provisions of Big W affecting their state will influence their votes, but they won't have a veto. Wilderness advocates will hold more of the cards; more areas will be protected.

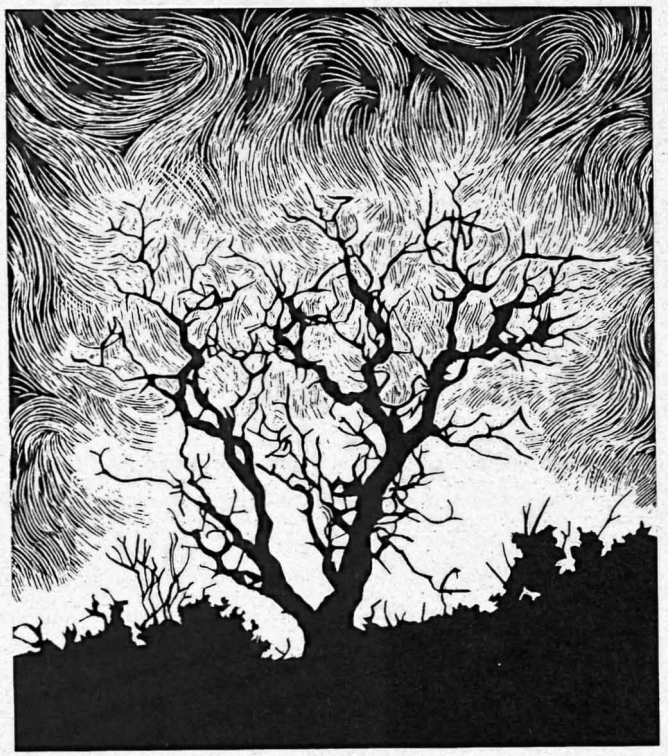
Big Wilderness will happen if the activists who are working hard to protect the wild places they love think it makes sense. It will be a strategy only when (or if) wilderness advocates have discussed it, debated it, considered the alternatives, and reached the conclusion that it will work for them. Under the best of circumstances, it would be the year 2000 before Big W legislation could be written, maybe 2001 before it would actually be filed. So there's plenty of time to mull it over, think it through—sleep on it if you will.

For the coming year, American Lands is not emphasizing this or any other specific Wilderness legislative strategy, but will focus on building the foundation upon which proposed Wilderness—in whatever form—can eventually be brought to Congress. We hope to hire a wilderness "circuit rider" to serve our non-profit member organizations and other grassroots groups interested in wilderness advocacy; to promote multi-state Wilderness proposals where appropriate; to continue informal meetings of the state wilderness leaders who convened to share thoughts last spring in Reno, NV; and to begin the job of outreach to build support at the national level for wilderness protection.

Even if widespread enthusiasm develops within the wildlands community for Big W, there will be many challenges inherent in such a strategy. Leaders in one state may want to include one kind of area, activists in another may go a different direction. Can adequate trust be built within our community to resolve such issues? To what extent must Big W be internally consistent? How far can the proposal bend to reflect needs in individual states, yet remain a coherent enough package to market effectively?

The task ahead is enormous, but is Big W any tougher an assignment than passing the original Wilderness Act? For all of us who love wild places, the most important task ahead is to advance our most thoughtful strategy—if not Big Wilderness, then some other—to ensure their protection, not just for the upcoming millennium, but forever. ▮

Jim Jontz is executive director of American Lands (formerly Western Ancient Forest Campaign; contact the metamorphosed organization at 726 7th St. SE, Washington, DC 20003; 202-547-9400; wafcdc@americanlands.org) and a former Democratic congressman from Indiana.



A Dark and Stormy Night

A Political Forecast for Wilderness Legislation

by Debbie Sease and Melanie Griffin

While the long-term forecast for increased wildlands protection is sunny, the outlook for passing Wilderness legislation in the near term is grim. The House and Senate committees through which all such bills must pass are chaired by Representative Don Young and Senator Frank Murkowski, both Republicans from Alaska. Need one say more? These guys think that the only good wilderness is one with a road through it. They have used their committee chairmanships not to expand the National Wilderness Preservation System, but to attack the very core principles of wilderness protection. Passing Wilderness legislation in the best of times is a struggle; inevitably, it entails fighting off special interests that would erode full protection for the public lands in question. But any Wilderness bill endorsed by today's committees would likely convey less protection than your average shopping mall.

Our public lands are in trouble: The Alaska delegation controls natural resource policy in Congress. A small but vocal faction of our legislators want to sell or give away our public lands. And while President Clinton will sometimes stand up to the worst of the attacks, Wilderness does not seem to be at the top of his priority list.

Maybe the Democrats will take back the House in the year 2000, and then the most blatant and direct attacks on parks and wilderness would drop off precipitously. But as far as a proactive wildlands agenda goes, would a Democratic Congress be the solution? Not likely. The solution lies in fundamentally changing the political landscape. Conservation activists must create such a demand for wildlands protection that Republicans and Democrats will be tripping over themselves to pass strong Wilderness bills.

illustration by Evan Cantor

Conservation activists must create such a demand for wildlands protection that Republicans and Democrats will be tripping over themselves to pass strong Wilderness bills.

Wilderness will endure through this dark political time. The concept of wilderness protection is a profoundly good idea that has garnered tremendous public support over the years. It can, and must, gain still broader and deeper support from the American people.

As long-time veterans of the inside-the-beltway wilderness wars, we offer here seven suggestions for wilderness lovers working to secure a rosy future for wilderness, wildlife, and wild public lands in America.

Don't despair.

When the 104th Congress took over, despair seemed an appropriate response. We thought we had lost the Arctic National Wildlife Refuge in Alaska. But thanks to the hard work of activists across the US and Canada, President Clinton vetoed the bill that opened the refuge coastal plain to oil drilling.

We thought we had lost Utah's wildlands, but thanks again to grassroots pressure, we not only beat back the pro-development bill, but President Clinton designated the Grand Staircase Escalante National Monument.

Yes, many abuses were committed on our National Forests under the infamous clearcut salvage rider, but even that debacle had a silver lining. Our opponents overreached so much that they fully exposed their extremist agenda, and the environmental community did a stellar job of holding politicians accountable for their votes—in the media and in their home states. Anyone from DC can tell you that politicians still cringe when we say, "You don't want another salvage rider, do you?"

Develop an organizing culture.

We need to focus our campaigns on building the grassroots conservation movement. Whether we are trying to stop bad bills from becoming law, push federal agencies to take action, or gather cosponsors for good legislation, we must always consider long-term community involvement and activism. Everything we do on each of our campaigns can either help us or hurt us on all of our other campaigns. We must increase our support base by talking not just to the already converted, but by reaching out to the convertible.

Don't get distracted by packaging.

As the climate for passing good public lands legislation has become worse and worse over the past several years, activists have devoted an ever increasing amount of time to debating the perfect way to package their Wilderness bills.

Should they be stand-alone bills starting with high-profile, well-recognized areas—or regional, statewide, or ecosystem packages? These are not unimportant decisions, but we would do well to invest less time agonizing over packaging and more time organizing support for wild places.

Introducing a Wilderness bill in Congress is all but irrelevant right now. Sure, we can introduce all the bills we want, and that's a fine thing. They can be a useful tool for organizing and educating the public and help us to explain real places to people. But the real action is in the streets. We need to spend these dark times investing our energy and our resources outside the beltway, organizing and educating Americans about wilderness—its ecological, aesthetic, spiritual, and economic values—and the specific imperiled places we want to protect.

Use defense as offense and vice versa.

Let's face facts: We will be fighting in the trenches for the next several years. The assaults on public land and wilderness will continue, and we will need to expend resources to repel them. If we want to emerge from this period strong and ready to move a positive agenda, we need to use every defensive skirmish to build our movement and to educate the public about the values of the places we are defending. When legislators bury attacks on the Wilderness Act in massive spending bills, we need to turn the fight into an opportunity to remind our fellow citizens that we

have a world class system of Wilderness and public lands in America—and that it's worth protecting.

This synergy between defense and offense can work in the inverse as well. The year 1998 provides a classic example: After years of conservationists working to cut taxpayer subsidies for logging road construction in National Forests, the US Forest Service was dragged to the point of proposing a moratorium on road-building in many of our last unspoiled wild roadless forests. (The moratorium is not perfect by a long stretch, but merely its concept would have been unthinkable in that agency only a few years ago.) This proposal kicked off months of intensive organizing, turned out hundreds of citizens at public forums across the country, and generated over 60,000 public comments on the roadless moratorium—over 85% of which supported roadless area protection.

It just so happened that timber industry allies in Congress chose that same time, in late March, to bring up their newest sham "forest health" bill to increase public lands logging. But we beat it, fair and square, even winning a specific floor vote on roadless area protection—the first National Forest vote we have won in many a year! It wasn't the DC lobbyists playing defense that won that vote, however; it was the people in the streets playing offense in support of wild forest protection.

Have patience.

We're in this for the long haul. The 1964 Wilderness Act was many years in the making. Since its passage, we've gained 30 years of experience and over 100 million acres of Wilderness. The California Desert Protection Act, passed in 1994, protected almost eight million acres as Wilderness, but it took over ten years of painstaking, on-the-ground organizing, lobbying, and media education. The grassroots movement to protect the coastal plain of the Arctic Refuge has been building since the Reagan administration recommended oil drilling there in 1987.

The public wants wild places protected for future generations. It's our job to help the politicians catch up with the American people. As the old adage says, "If the people lead, eventually the leaders will follow." Eventually.

Be cautious but take risks.

Every Wilderness bill ever enacted has been a compromise between the ideal and the achievable, which means that someone (or some ones) has had the responsibility of making that difficult call. Is enough acreage being designated? Could one get more by waiting? Could wilderness be lost by waiting? Are there provisions in the bill that would compromise future or existing Wilderness? In being a part of such decisions one risks the judgment of future generations, who in hindsight may say that an opportunity to protect a threatened place was squandered, or, conversely, that too little was protected at too great a cost. One way out of this difficult situation is to "make no compromise in defense of wilderness"—no one will ever be able to accuse you of selling out, but you are not likely to protect any wilderness either. So, be cautious, don't underestimate what is achievable, but be ready to risk future judgments to save wilderness.

Be nice to each other.

It is going to take a very long time and a very large number of people working together to protect all of the wilderness that needs to be protected. We will be jubilant with occasional victories, but more often disappointed, depressed, and dismayed with the slow progress and the setbacks along the way. We must share the moments of victory with all our kin and comfort each other during the times of frustration and disappointment. We cannot afford, as a movement, to turn our frustration on each other. We must learn to listen to one another and to respect our differences. Unless we treat each other well, we will not survive, nor will we attract others to join us in our efforts.

WORKING CONSISTENTLY AND CREATIVELY, AND KEEPING in mind the aforementioned informal rules, we can build a wilderness movement that will champion the value of wild places across America. Ultimately, this movement will lead Congress to create a Wilderness System that will "make the mountains glad" and will make our children proud. ❙

Debbie Sease and Melanie Griffin are veteran Washington insiders who negotiate the urban wilderness while lobbying to protect the Big Outside as legislative director and public lands director, respectively, for the Sierra Club (408 C St. NE, Washington, DC 20002).

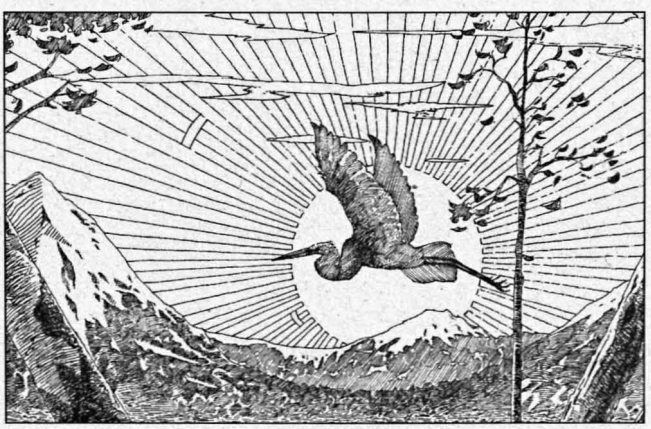


illustration by Peter Lucchetti

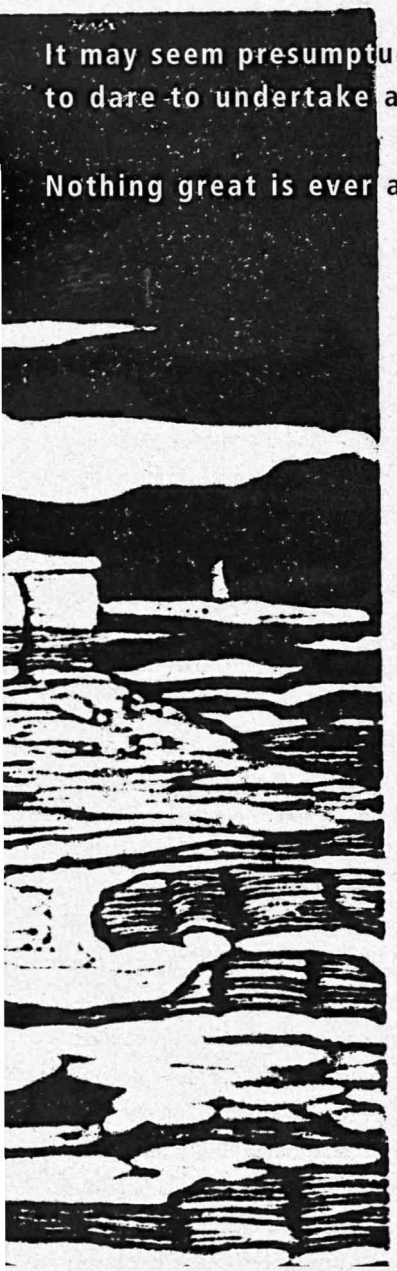
Abstract

The golden age of designating wilderness as part of the National Wilderness Preservation System has apparently come to a close and the very concept of wilderness has come under increasing attack from external and internal forces. American conservation history suggests that a renewed focus is needed—or wilderness is doomed to be eradicated. If the conservation community unites behind a positive program for designating new wilderness, the wilderness concept can be rejuvenated. The best place to start is with wilderness designations for lands administered on behalf of the public by the Bureau of Land Management (BLM). BLM has forwarded to Congress recommendations for wilderness designations in various states. In many of these states, citizens' proposals are on the table and could soon be embodied in legislation, one after another, passing into law like a domino procession if the conservation community collaborates to put sufficient emphasis behind them.

Chocolate Drops, Utah by Amy Grogan

It may seem presumptuous for men and women, who live only 40, 50, 60, 70, or 80 years, to dare to undertake a program for perpetuity, but that surely is our challenge. —Howard Zahniser

Nothing great is ever accomplished without enthusiasm. —Ralph Waldo Emerson



The Domino Theory

Rejuvenating the Concept of Wilderness in Today's Political Dark Ages

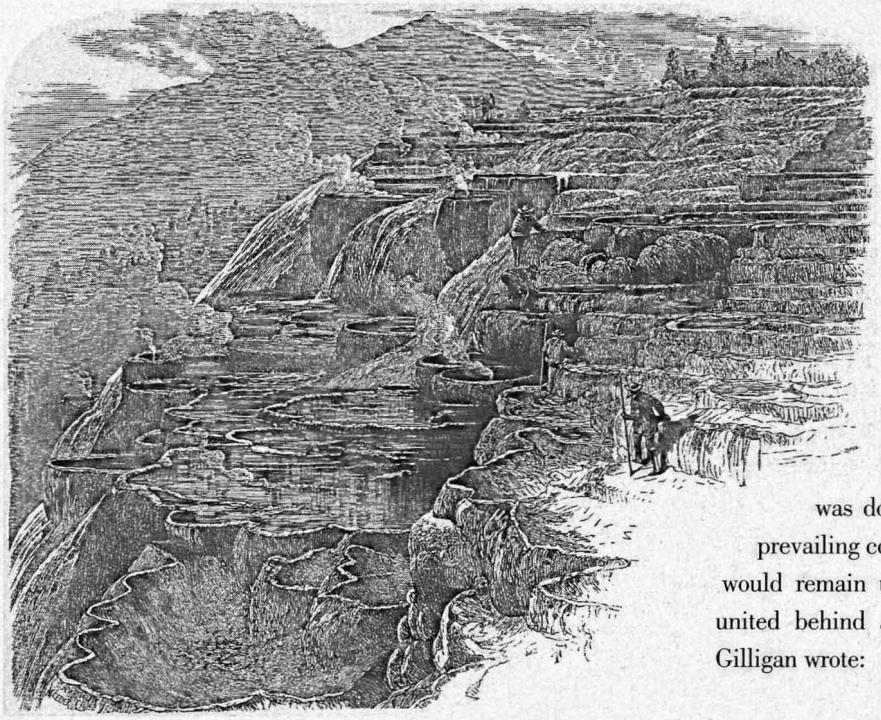
by Mike Matz

The Eastern Wilderness Act in 1975 and the Endangered American Wilderness Act of 1978 kicked off a golden period for wilderness designation. In the middle 1980s more than twenty statewide bills passed in one year alone. President Ronald Reagan signed into law additions of more than eight million acres to the National Wilderness Preservation System.[1] But the last statewide bill to be enacted, for Colorado, was in 1993. No wilderness has been added to the national system since the California Desert Protection Act passed four years ago. The halcyon days of wilderness designation may be over unless conservationists seize the initiative again.

The troubling current situation is due in part to an inimical political climate in the 104th and 105th Congresses, the first two completely controlled by Republicans in over four decades. Members long hostile to wilderness preservation (particularly from the West) have now been catapulted into positions of power as heads of committees with jurisdiction over wilderness designation. As a consequence, the conservation community is embroiled in a series of defensive battles to ensure that the integrity of the wilderness concept isn't whittled down to nothing.

The Boundary Waters Canoe Area—the first wilderness included in the National Wilderness Preservation System—has been compromised by a provision attached to transportation legislation signed by President Clinton that permits increased motorized use within a designated wilderness.

Editor's note: It is *Wild Earth*'s style to capitalize Wilderness when referring to officially designated Wilderness Areas—both to differentiate from de facto wilderness and to emphasize the importance of our National Wilderness Preservation System. In this article, both types of wilderness have a small w, as per the wishes of the author.



Legislative riders tacked onto an omnibus spending package at the end of the last session would have allowed helicopter landings in wilderness on the Tongass National Forest and road construction across wilderness in Izembek National Wildlife Refuge; both were only narrowly turned back. A wilderness elimination bill for a portion of Utah (offered as provision in a sweeping parks bill) was more thoroughly trounced, but only with concerted grassroots effort, and in an election year when environmental issues typically fare better.

Learning from our Wilderness Forebears

In 1951 at the Second Biennial Wilderness Conference sponsored by the Sierra Club, Howard Zahniser gave a talk entitled, "How Much Wilderness Can We Afford to Lose?" Part of his premise centered on threats to what remained of identified and administratively protected wilderness—threats which he noted were so widespread that citizen conservationists were always on the defensive and had little time or energy to push a positive program.[2] We face very similar circumstances today.

Beyond defensive struggles put before us—and conservationists always have had and always will have to contend with them—are internal divisions over the concept of wilderness. Some wildlife advocates knowledgeable of conservation biology and island biogeography contend that wilderness designation forms an incomplete backdrop for preserving biological diversity. Those who subscribe to this view have clamored for a new process law, such as an Endangered Ecosystem Act, to study and prescribe how to protect representative samples of ecological systems.[3] Other critics write that the problem with wilderness stems from the concept itself, suggesting that wilderness is merely a construct of our own mind in which we have declared it to be places "where man himself is a visitor who does not remain."[4] These individuals argue that a new construct is needed which envelops a more humanistic approach to wilderness, where humans (and their works) are not apart from but a part of wilderness.[5]

In a 1954 doctoral dissertation, James Gilligan expressed the opinion that wilderness was doomed to be eradicated in America under the prevailing conditions of the times, and that those conditions would remain unchanged until the conservation community united behind a positive program of wilderness protection. Gilligan wrote:

> *Those who understand the problems of wilderness preservation on Federal lands are convinced that Congressional action is necessary to retain wilderness areas for future generations. It is improbable, however, that Congressional action or tighter administration to retain important wilderness regions can be effected with only the support of uncertain and divided wilderness proponents.*[6]

Today's internal strife and philosophical bickering over the efficacy and meaning of wilderness are reminiscent of those pre-Wilderness Act days. A bleak outlook for the future of protected wildlands is likely unless the currently dissolute American conservation movement recommits itself to wilderness protection.

The time is at hand to affirm again the validity and relevance of wilderness as a *place* that protects core areas of habitat, and as an *idea* important to the human psyche even if we rarely or never visit the places "affected primarily by the forces of nature."[7] We need to stand on the shoulders of those who have been through the battles of the 70s and 80s, people like Harry Crandell, Chuck Clusen, Ernie Dickerman (may God rest his soul and we do well to honor his memory), Dave Foreman, Dottie Fox, Celia Hunter, Tim Mahoney, Doug Scott, Ed and Peggy Wayburn, and Ginny Wood—as they stood on the shoulders of Arthur Carhart, Aldo Leopold, Bob Marshall, Olaus and Mardy Murie, Sigurd Olson, and Howard Zahniser. We need to carry the torch or the wilderness idea will be extinguished and with it the ability either to add to or protect what is already in the system.

A renewed emphasis by the conservation community could well lead to a rejuvenation of the wilderness concept and a spurt in growth for the National Wilderness Preservation System. But

hot springs, Yellowstone National Park, Wyoming (ca.1870s)

only by developing novel and creative strategies and tactics, only by thinking and acting *offensively*, and only by working together, will this occur. History is again our guide.

The expositions by Zahniser and Gilligan forty years ago provided the impetus for introduction of the first draft of the Wilderness Act on June 7, 1956, by Sen. Hubert Humphrey and nine of his colleagues.[8] Republicans including Rep. John Saylor of Pennsylvania and western Senators Wayne Morse of Oregon, James Murray of Montana, and Clinton Anderson of New Mexico closely collaborated with more than a dozen conservation organizations to battle against entrenched mining, timber, and water interests and their champions—notably Rep. Wayne Aspinall of Colorado. Vital to the effort was the support of the Kennedy administration. With the US Senate taking the initiative in successive Congresses, President Johnson eventually signed the Wilderness Act in 1964, eight years after its initial introduction.

The Wilderness Act set in motion the process by which the Forest Service, Fish and Wildlife Service, and National Park Service undertook to identify roadless areas under each agency's administration. Only recalcitrantly, and not without serious legal wrangling, did the Forest Service conduct RARE I and RARE II (Roadless Area Review and Evaluation), two inventories to catalog wilderness for recommendation to Congress. The real intent behind this agency's evaluations, as many conservationists all too fully recognize, was to limit wilderness to mainly rock and ice and to release forested land back into the timber base.

Proponents of the wilderness system once had lamented that the process by which wilderness came to be included in the National Wilderness Preservation System was not, as originally envisioned, by action of the land managing agency itself, with Congress only in a role of voting to override agency decisions. The requirement that Congress be vested with the authority to add areas, interpreted as a huge setback by Zahniser (who, sadly, died four months before the act was signed into law), came as an unforeseen godsend. Citizen conservationists using the political process effectively were able to gain inclusion for far more acreage than non-elected personnel within the federal bureaucracy could have been persuaded to include.

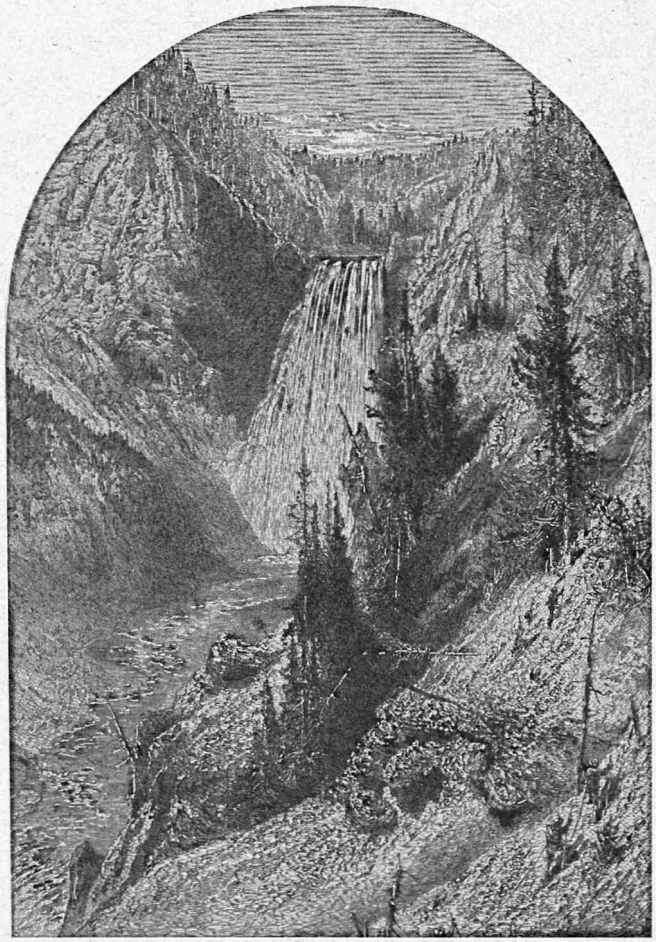
Still, in the legislative arena, wilderness opponents advocated a multi-state wilderness proposal covering significantly less than agency recommendations. They hoped to cap in one fell swoop the amount of acreage making its way into the system. Conservationists, however, succeeded in concentrating legislative action on state-by-state wilderness proposals that exceeded agency recommendations, and thus far have protected as designated wilderness five million acres of BLM land, 21 million acres in our National Wildlife Refuges, 35 million acres in National Forests, and another 44 million acres in National Parks. The grand total currently preserved in the National Wilderness Preservation System for this and future generations is 104 million acres (57 million of it in Alaska).

Not until 1976 was public land overseen by the BLM put on the same playing field as other land managing agencies. Section 603 of the Federal Land Policy Management Act (FLPMA) required BLM to determine wilderness suitability of public lands under its jurisdiction and to recommend to Congress areas that should be designated.

Though the inventory and recommendation process has been completed, little has been done in Congress to enact the recommendations. After 22 years only one state has passed a statewide BLM wilderness bill: in 1990 Congress designated 1.08 million acres of BLM Wilderness in Arizona. Trivial parcels of BLM land have sometimes been designated as part of legislation enacted for adjacent National Forest wilderness designations. Arizona's 1984 wilderness bill, for instance, focused on National Forest lands but did include some BLM units; thus the current Arizona BLM wilderness total is roughly 1.4 million acres. Utah has 60,000 acres of BLM wilderness as spillover from the Arizona BLM bill. The 1994 California Desert Protection Act signed by President Clinton designated 3.5 million acres of BLM wilderness, in addition to establishing Mojave National Preserve and Death Valley National Park out of BLM holdings.

Clearly, the most potential for significant additions to the National Wilderness Preservation System is on lands held in trust for the American people by the Bureau of Land Management. BLM manages approximately 264 million acres of public land.[9] After 1976, BLM undertook an inventory of 174 million acres in 14 western states and by 1980 determined that 24 million acres were suitable for wilderness designation.[10] At the time BLM was required to conduct these inventories, the Council on Environmental Quality estimated roughly 90–120 million acres of BLM land held wilderness attributes.[11] Some lands without question have lost their wilderness character in the intervening years. But to give these numbers perspective, the Alaska Lands Act added 57 million acres to the National Wilderness Preservation System, doubling its size. The potential for BLM wilderness rivals this figure.

Seeking wilderness designation for BLM lands in Colorado, Nevada, Oregon, Utah, and Wyoming (and elsewhere with large tracts of BLM holdings) is a positive program the conservation community can and should rally behind. One by one the dominoes will fall. The task before conservationists: Line up the



dominoes so they fall in sequence. What follows are specific suggestions for steps we might take to revive the hibernating American wilderness movement—and again tally some wilderness victories.

An American Wilderness Coalition

The various conservation organizations working on wilderness preservation today need to collaborate fully to topple the dominoes. As a coalition effort, a campaign must be assembled to accomplish three objectives:

1) Focus collectively on enacting citizens' wilderness proposals farthest along in the legislative process.
2) Concurrently assess the status of various states' citizens' proposals for BLM (and other) public lands and prepare these proposals in a credible fashion.
3) Line up these wilderness proposals for introduction and build support for passage.

The American Wilderness Coalition should be composed of the usual suspects—national and local wilderness advocacy groups, as well as labor unions, Native organizations, and civic groups. It is not enough to be a part of the coalition's campaign in name only; these key players need to commit a major contribution of resources and personnel. Regional organizations or coalitions of local groups and national organization chapters in each of the various states should assume the lead in documenting citizens' proposals.

The Wilderness Support Project*

An integral element of the American Wilderness Coalition's campaign would be to facilitate formulation of various states' citizens' proposals, ensuring coordinated completion; the Wilderness Support Project would take on this job. The BLM has identified Wilderness Study Areas under Section 603 of FLPMA, and the agency is required to manage these WSAs to leave their wilderness character unimpaired. In western states, the amount of acreage identified for study areas is considerably less than what qualifies, and the amount recommended to Congress for designation as wilderness represents an even smaller proportion.

Some of these states—Colorado, Utah, Wyoming—have citizens' proposals in various stages; in others, BLM land needs to be inventoried to examine the thoroughness of the original BLM work, and proposals then prepared to counterbalance or augment the agency's recommendation as necessary. After assessing the status of citizens' proposals, the Wilderness Support Project would identify what additional resources or expertise are needed to complete the proposals. The American Wilderness Coalition would find and provide those resources or expertise, with a goal of providing the best scientific and political underpinning for each completed citizens' proposal. To bolster public education and grassroots organizing, each proposal should be introduced as legislation, either by someone from the respective state's congressional delegation, or in the cases where the delegation isn't a possibility, by some other member of Congress.

Changing the Political Landscape and Spreading the Message

No one can deny, though everyone can lament, the dearth of champions for public lands protection in the halls of Congress. Even with (currently) a (somewhat) sympathetic administration, the hostile atmosphere in Congress stymies our best laid plans, whether wilderness protection for the Arctic Refuge coastal

* This specific step is off the ground. Brian O'Donnell (formerly executive director of the Alaska Wilderness League) is leading such an effort with two-years' funding from the Rockefeller Family Fund. As of this writing, the incipient project was establishing an office in Colorado (251 Pine Ridge Loop, Durango, CO 81301; 970-385-0399; bodonnell@frontier.net).

The Lower Falls, Yellowstone National Park, Wyoming (ca.1870s)

plain or America's redrock canyons. The conservation community must place greater emphasis on forcing wilderness into the electoral arena. We will always face opponents, particularly in the West, but we need to do a better job of cultivating friends, especially in the West. First and foremost, conservationists should be wilderness advocates, conveying the intensity of our interest to candidates. If we don't, no one will.

Certainly the existing political action committees, the Sierra Club, and the League of Conservation Voters could be entreated to focus more intently on wilderness in their endorsement of candidates. But in order to foster support where the greatest gains can be made, a Western Wilderness Political Action Committee, or a WILD PAC, should be incorporated. Obviously, we would welcome a Congress overall more favorable to wilderness protection. But especially useful would be new public lands champions from the West equivalent to yesterday's Senators Clinton Anderson and James Murray, and Representatives Morris Udall and John Sieberling. A political action committee devoted exclusively to wilderness issues can fill the need to recruit, elect, and cultivate a new generation of dedicated advocates in Congress.

Mounting a sophisticated national media effort, entailing both paid and earned media, will be critical. The message: Wilderness is finite, we're running out of it, and we should protect what's left. The media campaign would dovetail with comprehensive grassroots organizing that incorporates tried-and-true methods including slide shows, canvassing, field trips, lobby training, and other strategies to channel increased public awareness to productive use. The loss of wilderness and wildlife resonates powerfully; if we can communicate this tragedy well, people will act.

Summary

All the elements of a national campaign under the direction of an American Wilderness Coalition can create a climate in which our opponents recognize that the wilderness issue will not go away until it is dealt with legislatively. The campaign should lead to a sense of inevitability on the part of our adversaries, so that rather than blocking further wilderness designations they simply will not be able to ignore the issue.

The conservation community will face pitfalls as opponents try to find wiggle room. As in the 70s, wilderness naysayers will raise the issue of purity and contend that specific parcels of wilderness don't conform to the legal definition or meet the legal criteria. They will again proffer substitute categories in place of wilderness, such as "primitive areas" or "conservation areas" or "heritage areas" that are less protective and smaller in size. They will draft language on water rights or grazing management in their legislation to undermine the definition of wilderness, or seek to minimize designations and to release more land permanently to a myriad of abuses. Conservationists have faced these challenges before and succeeded both in maintaining the integrity of the wilderness concept, by and large, and in adding more acreage to the National Wilderness Preservation System than professionals in the agencies have recommended. We will prevail again.

Wilderness designation is the best tool we have to protect America's last, best, wildest places—and for reasons that now extend beyond their importance for primitive recreation and their contribution to our sense of who we are as a people. Certainly those are still key reasons that motivate us to act on behalf of wild places. But the new imperative is to protect habitat and to conserve biological diversity. The health of the land and its ability to sustain us is the basis for the humanistic philosophy of wilderness. ▮

Mike Matz is a wilderness advocate who has worked for conservation organizations both inside the beltway (with the Sierra Club) and out, in Alaska and Utah. He currently serves as executive director of the Southern Utah Wilderness Alliance (1471 South 1100 East, Salt Lake City, UT 84105; 801-486-3161; suwa@suwa.org).

NOTES

1. Frome, Michael, *Battle for the Wilderness*, revised edition, University of Utah Press, 1997, appendices B and C.
2. Frome, p. 138.
3. Personal correspondence, Koehler, Jontz, and Willcox, Aug. 12, 1993, invitation to participate in a workshop at B-Bar Ranch in Tom Miner Basin, MT, Oct. 9, 1993, to discuss interest in an Endangered Ecosystem Act. Subsequent participation at various gatherings and conferences in the past few years has introduced variant ideas to the author, such as a proposal for "Big Wild," a multi-state wilderness proposal, and (under the rubric of a "White Cloud" series of gatherings) a mega-proposal for something as yet undefined to take advantage of the coming new millennium. All of these discussions grapple with the nebulous concept of ecosystem management to greater or lesser extent. See also writings of Noss, Newmark, Grumbine, and a host of conservation biologists.
4. The Wilderness Act, Public Law 88-577, Sept. 3, 1964, Sec. 2(c).
5. Cronon, William, "The Trouble with Wilderness," *New York Times Magazine*, Aug. 13, 1995; Callicott, J. Baird, "The Wilderness Idea: A Critique and an Alternative," *Inner Voice*, newsletter of the Association of Forest Service Employees for Environmental Ethics, July/August, 1994; and, Nelson, Michael, "Beyond Wilderness," *Horizons*, newsletter of the Sigurd Olson Environmental Institute, Spring, 1998.
6. Allin, Craig W., *The Politics of Wilderness Preservation*, Greenwood Press, Westport, CT, 1982, p. 104.
7. The Wilderness Act, Sec. 2(c)(1).
8. Allin, p. 105.
9. Bureau of Land Management web page, www.blm.gov, under BLM Facts.
10. Allin, p. 271.
11. Allin, p. 195.

Oregon Forest Wilderness Revival

map by N.P. Shear

by Ken Rait

The majestic Three Sisters, picturesque Mt. Jefferson, rugged Eagle Cap, and symbolic Mt. Hood are part of Oregonians' identity. The grandeur of each of these spectacular places captures our imagination and enlivens our human spirit; their watersheds feed our downstream communities with clean drinking water, as their forests harbor intact habitat for increasingly imperiled salmon and other wildlife.

Oregon forest wilderness has come to us in bits and pieces. About 627,000 acres were set aside with the passage of the Wilderness Act in 1964. Four years later, an additional 100,000 acres were designated in the Mt. Jefferson region. The 1970s brought protection to about 275,000 acres in the Eagle Cap and Hells Canyon areas. The enactment of the Endangered American Wilderness Act brought protection to more than 285,000 acres in various Westside forests. The 1984 Oregon Wilderness Act designated 23 areas totaling about 850,000 acres, followed most recently by the protection of about 30,000 acres at Opal Creek. Just 2.1 million acres of the state's 16 million acres of federal forests have been accorded Wilderness protection. We've done reasonably well at protecting ecologically less productive rocks and ice (devoid of commercial timber value), but have largely failed to protect the richer forested flanks.

The consequences of permanently protecting just 13% of our federally owned forests in Oregon have been disastrous. Municipal drinking watersheds such as the Clackamas Lake Oswego (West Linn) and North Santiam (Salem) have been sullied by high turbidity levels in recent months from clearcut and road-induced siltation. Hundreds of miles of salmon streams have been devastated, driving almost every stock of the species that define our region to near extinction. Protection and recovery efforts have cost taxpayers millions of dollars, while the perpetrating timber corporations have laughed all the way to the bank. In the past two years, about 95% of the landslides that occurred in the Coast Range initiated in clearcuts and along associated roads.

Few coordinated efforts to permanently protect sensitive areas in Oregon have been mounted successfully during the last decade and a half. Instead, much of the debate has been subsumed by administrative process and fighting the onslaught of legislative attacks. The Clinton Forest Plan has been hailed by some as the definitive solution to Westside forest management. Replete with its onslaught of acronyms (FEMAT, ACS, AMAs, LSOGs, and LSRs), the plan brought an end to the 1980s-era logjam of litigation over the declining ecological health of

Westside forests. However, the Forest Plan allows for timber harvesting in both late-successional old-growth reserves and riparian reserves, and provided no defense against the savage salvage rider. In fact, only congressionally designated Wilderness was protected when the salvage rider struck its fury in our Northwest forests.

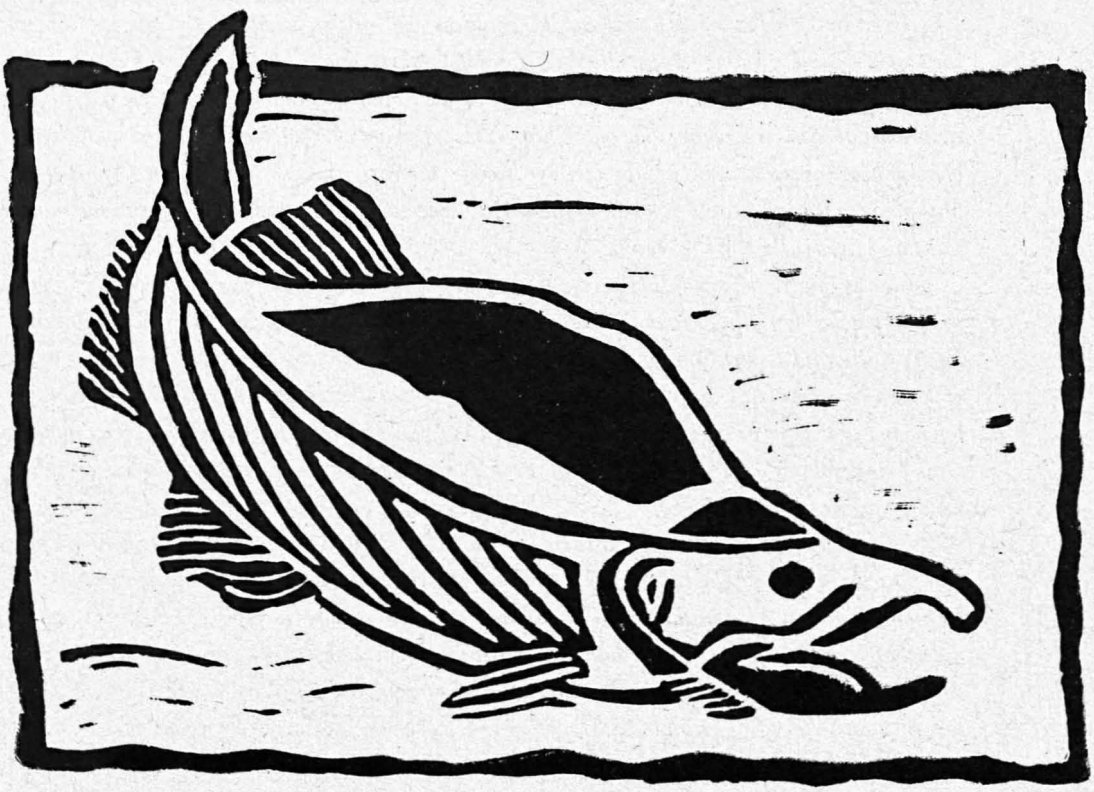
Administratively created reserves are not adequate to protect remaining wild areas in our public forests. The net effect of the Clinton Forest Plan was to delude the public into believing the "problem has been solved" and to enmesh the debate in an array of hopelessly confusing bureaucratese. Reducing our ancient forests to a complex series of acronyms was a brilliant ploy by the Clinton administration and timber industry to deflate the public's emotional energy—which has proven over and over again to be the foundation upon which wild places have been successfully protected in the past. This "acronymization" has driven a wedge between people and place.

Wilderness can remove this wedge. Conservationists will fight to defend wilderness because they understand it as an effective means of preserving clean drinking water and ancient forest habitat that nurtures our salmon and other forest-dependent species. Conservation biologists tell us that wilderness provides intact core areas that are the basis for long-term sustainability of ecosystem function. Wilderness is the best means to insulate our forest heritage from the corporate-sponsored politicians who value the public lands only for what can be cut from them and hauled out on a truck.

The Oregon Natural Resources Council (ONRC) has launched the Oregon Wild Campaign to protect as Wilderness all of the remaining public forest that has not already been chewed up and spit out by the timber industry. When the roadless forest lands were last inventoried in the early 1980s, there remained about five million acres which, unfortunately, were not subsequently set aside as Wilderness. Almost two decades and probably hundreds of thousands of log trucks later, this acreage has probably shrunk to about four million acres.

Aldo Leopold once said that the first rule in intelligent tinkering is to save all the pieces. ONRC, in partnership with the Pacific Biodiversity Institute, is nearing completion of an inventory of the remaining roadless forest lands for the purpose of creating a citizens' Wilderness proposal. Once identified, we will staunchly defend these remaining wild forests as we build a winnable campaign to achieve their permanent protection. Recent polling in our region demonstrates extremely strong support for additional forest Wilderness.

Wilderness: It is the tool which gave rise to public lands advocacy in Oregon. It is the tool around which the Oregon public lands advocacy network has most effectively organized. And it is the time-proven tool that accords us the opportunity to save wild places, where wild places can still be saved. ❙



salmon by Brian B. Beard

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Wildlands 2000

New California Wilderness for the New Millennium

By Celia Barotz and Paul Spitler

HUNDREDS OF THOUSANDS OF MOSTLY PURE, UNTRAMMELED ACRES IN THE OWLSHEAD, *Kingston, Avawatz, South Avawatz, and Soda Mountains Wilderness Study Areas in the California Desert—many of them prime habitat for the Threatened desert tortoise—may be added to the US Army's National Training Center at Fort Irwin. The plan to expand Fort Irwin would mean more heavy tanks, armor, and up to 12,000 troops wreaking havoc on pristine desert ecosystems. Historic and Native American sites, native Mojave Desert vegetation, and Joshua tree woodlands would be damaged, public access for recreation in the area banned, and access to Death Valley National Park impaired.*

The Klamath National Forest, which contains the largest population of spring Chinook salmon in California and "critical habitat" for the Northern Spotted Owl, is proposing to cut old-growth Douglas-fir and ponderosa pine in the Orleans Mountain Roadless Area. The remarkably rich Klamath-Siskiyou region, one of the Earth's most threatened ecoregions, is home to 30 species of cone-bearing trees including the coast redwoods, the rare Brewer's spruce, Port-Orford-cedar, McNab cypress, and foxtail pine. More than 3500 species of plants naturally occur in the mountains and river valleys of the region.

Glamis Imperial Corporation is proposing to build a massive open-pit, cyanide leaching gold mine in potential additions to the Pichaco Peak Wilderness Area in the Bureau of Land Management's California Desert Conservation Area. The mine would destroy lands that are sacred to the Quechan (pronounced ëkwit-zan') Indian Nation, that provide critical habitat for the desert tortoise, and that serve as a popular destination for backpackers and other wilderness recreationists. Over 100 acres of mature woodlands that provide prime habitat for mule deer and other wildlife would be destroyed as well.

Calpine, an energy development company, may clearcut and run power lines (which are part of a massive energy development project for eastern Siskiyou County) through the heart of the Mt. Hoffman Roadless Area in the Modoc National Forest. A geothermal project is proposed for 1.5 miles east of Medicine Lake and would lie within the volcanic caldera. The pristine Medicine Lake area is not only a popular recreation spot for campers and fishers; it is also home to abundant wildlife, including Bald Eagles and Osprey that nest along the shore. The project would destroy Native American ceremonial sites for several tribes, including the Pit, Klamath, Shasta, and Modoc.

Month after month, year after year, the California Wilderness Coalition (CWC) and other conservation organizations have worked to stop misguided proposals like these from destroying what is still wild in California. Recently we asked ourselves, "Why, more than thirty years after passage of the landmark Wilderness Act and with mounting scientific evidence indicating the tremendous ecological and social value of wildlands, are so many of California's wild places still not protected as Wilderness?"

Quickly realizing that there was no satisfactory answer to this question, and noting that public sentiment has shifted in favor of preserving our natural heritage, we concluded that it was time to shift gears. Instead of spending all of our time fighting ecologically destructive proposals, we would take the initiative and launch a new effort to pass a federal Wilderness bill in California.

Of California's 100 million acres, currently 14% is protected as Wilderness—but it's not enough. Countless species of wildlife are imperiled because development and resource extraction are chipping away at their habitat. Some argue that California is experiencing more severe flooding, mudslides and erosion, and the destruction of the rivers and streams that serve as the spawning ground for salmon because of widespread logging and road construction in our National Forests.

Clearly, before we completely lose our heritage of wildness, we must protect as Wilderness California's remaining roadless areas, including lower-lying forests, deserts, grasslands, and coastal areas coveted by developers and exploiters.

Highlights of California's Protected Wilderness Areas

California has more Wilderness—nearly 14 million acres—than any state other than Alaska. Wilderness Areas lie on all four borders of the Golden State, including the Red Buttes Wilderness which touches the Oregon border, the Phillip Burton Wilderness along the California coast, the Jacumba Wilderness along the Mexican border, and Death Valley Wilderness along the Nevada border. Additionally:

- Wilderness Areas are found within six National Parks (Death Valley, Joshua Tree, Sequoia, Kings Canyon, Yosemite, and Lassen Volcanic), two National Monuments (Pinnacles and Lava Beds), and the Mojave National Preserve and Point Reyes National Seashore.
- Wilderness is found within the Farallon, Havasu, and Imperial Wildlife Refuges.
- The 850,000-acre John Muir Wilderness Area is the state's largest single Wilderness outside a National Park. The Farallon Wilderness, a 141-acre island 26 miles off the coast of San Francisco, is California's smallest Wilderness.
- Mt. Whitney, perched between the John Muir Wilderness on the Inyo National Forest and designated Wilderness within Sequoia Kings Canyon National Park, is the highest point in the continental United States, towering to 14,494 feet. Close by in the Death Valley Wilderness is Badwater, which at 282 feet below sea level is the lowest point in the United States.

A California Wilderness Chronology

1964 — Congress passes the Wilderness Act, which designates well over one million acres of Wilderness in California, including the John Muir, Marble Mountain, and Minarets (now part of the Ansel Adams) Wilderness Areas.

1968 — In March, Congress designates the 150,000-acre San Rafael Wilderness Area. In May, the San Gabriel Wilderness is designated.

1969 — In separate acts, Congress creates the 98,000-acre Ventana Wilderness and the 63,000-acre Desolation Wilderness.

1971 — US Forest Service initiates its first roadless area inventory: RARE I (Roadless Area Review and Evaluation) identifies only 3.3 million acres of roadless lands in California. Because the Sierra Club files a lawsuit challenging the survey, it is later ruled inadequate.

1972 — Congress designates Wilderness in Lava Beds National Monument (28,000 acres) and Lassen Volcanic National Park (79,000 acres).

1974 — The 141-acre Farallon Wilderness is protected.

What We've Protected

In 1964 Congress passed the Wilderness Act "to secure for the American people of present and future generations the benefits of an enduring resource of wilderness." In its definition of wilderness, the law emphasizes an area's natural character and lack of human influence. Wilderness Areas are protected from development—from the construction of roads, dams, or other permanent structures, from logging and the operation of motorized vehicles, and, since 1984, from new mining claims and mineral leasing.

In addition to providing critical habitat for Threatened and Endangered species, Wilderness Areas maintain gene pools to provide diversity of plant and animal life, and protect watersheds that cities and rural communities depend on for pure water. Wilderness Areas also serve as places where we can escape the noise and bustle of our increasingly industrialized society.

The Wilderness Act established the National Wilderness Preservation System to permanently protect federally owned lands designated by Congress. Since its 1964 passage, nearly a dozen bills have been passed that have added acreage in California to the National Wilderness Preservation System (see California Wilderness Chronology).

The California Wilderness Act of 1984 designated 1.8 million acres of Wilderness. Most recently, the 1994 California Desert Protection Act designated 69 new Wilderness Areas and protected over seven million acres of public land, creating the largest single expanse of parkland and protected Wilderness in the 48 states. The Desert Act nearly doubled California's Wilderness to 13.8 million acres. After it passed, many thought that the struggle to protect wilderness in California was over, but unfortunately, they were wrong.

And What We Haven't

Many wildlands still remain at risk. Both the US Forest Service and the Bureau of Land Management (BLM), which together manage over one-third of California, have completed comprehensive inventories of potential Wilderness. In total, the agencies identified nearly 600 potential Wilderness Areas comprising almost 13.5 million acres. While some of the areas identified in the inventories have since been protected, many remain at risk.

Some of these areas are little-known jewels such as Duncan Canyon in the Tahoe National Forest or Eden Valley in the Ukiah BLM District. Others, such as the King Range Conservation Area in the heart of northern California's Lost Coast, which is popular with backpackers, or the majestic White Mountains east of the Sierra Nevada, which contain the largest single block of unprotected wilderness in the state, are better known. These are some of the most pristine wildlands in the Golden State.

Wildlands 2000: Our Chance to Continue the Legacy of Wilderness

The goal of the Wildlands 2000 campaign is ambitious—to protect California's remaining wildlands by including them in the National Wilderness Preservation System. Our final proposal will include literally hundreds of areas throughout the state encompassing between three and five million of acres of public land.

Many of the places Wildlands 2000 will propose for Wilderness are obscure roadless lands, such as the No Name Roadless Area in the Cleveland National Forest and the Skedaddle Wilderness Study Area in the BLM's Eagle Lake Resource Area. But Wildlands 2000 will also include many "flagship" areas that wilderness wanderers are fiercely dedicated to protecting.

1975 Congress designates the 15,933-acre Agua Tibia Wilderness and the 112,191-acre Emigrant Wilderness.

1976 The Federal Land Management Policy Act directs the BLM to conduct an inventory of its roadless lands and assess their Wilderness potential. In California, the BLM meets its deadline and completes the inventory in fifteen years. Joshua Tree, Kaiser, Phillip Burton (Point Reyes), and Pinnacles Wilderness Areas are designated.

1978 The Endangered American Wilderness Act designates the Golden Trout and Santa Lucia Wildernesses and adds to the existing Ventana Wilderness.

1979 US Forest Service releases the final draft of its second roadless area review. RARE II identifies 6.3 million acres of potential Wilderness in California, yet the agency recommends that only a small portion be designated Wilderness and that the majority be open to road construction, logging, and other forms of development.

1984 The California Wilderness Act creates 25 new Wilderness Areas, including Mt. Shasta, Granite Chief, Trinity-Alps, and Siskiyou, and adds to 14 existing Wilderness Areas.

For the Wildlands 2000 campaign the word "wilderness" does not conjure up images only of alpine peaks and glacial lakes. Today, it is widely accepted that oak woodlands, chaparral, grasslands, wetlands, ancient forest, and sagebrush deserve Wilderness protection just as much as high peaks and glacial tarns. While some of the areas we hope to permanently protect are in fact alpine, most are not.

The abundance of life that characterizes California's wildlands depends on a diversity of habitats to thrive. Wilderness Areas representing the full array of those diverse habitats offer the best chance for maintaining and restoring healthy ecosystems, bountiful wildlife populations, clean water, and recreation opportunities.

The first step in this multi-year campaign is completing an inventory of California's remaining roadless areas on public lands. With over 400 potential Forest Service and BLM Wilderness Areas and many smaller parcels that could qualify for Wilderness designation, this is a challenging task.

The California Wilderness Coalition and Sierra Club, working with volunteers throughout the state, have drawn preliminary boundaries for many of the potential Forest Service and BLM Wilderness Areas. Many of these boundaries will be surveyed to ensure that no degradation has occurred that would disqualify these lands for Wilderness designation. Once we have analyzed the information gathered in the field, we will draft a Wilderness proposal to serve as the basis for federal legislation.

Join Us

The Wildlands 2000 campaign welcomes anyone with an interest to join the effort. The California Wilderness Coalition is holding training workshops to teach volunteers how to survey the preliminary boundaries of a potential Wilderness Area, the current focus of the campaign. Protecting California's remaining wilderness is a formidable task—but it's rewarding and necessary work. Please join us! ▮

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Resources

The California Wilderness Coalition is developing tools to help volunteers draft Wilderness proposals. The following guides are available:

How to Write a Wilderness Proposal contains information on how to write a description of a potential Wilderness Area and where to find some of the information that should be included in the proposal.

How to Map a Proposed Wilderness Area explains how to draw Wilderness boundaries on topo maps and includes a discussion of what makes a good Wilderness boundary, where to place boundaries, what should be included (and excluded) from a potential Wilderness Area, and how to draft and label Wilderness proposal maps.

How to Field-check Preliminary Boundaries of a Wilderness Area explains how to field-check the accuracy of preliminary Wilderness Area boundaries and includes a discussion of what to look for when you're out in the field, how to refine a preliminary Wilderness Area boundary, and how to document preliminary boundaries with photographs.

1991 — BLM releases its Wilderness Study Report analyzing Wilderness potential of 7.1 million acres of BLM roadless lands. The report recommends only 62 areas totaling 2.3 million acres for Wilderness, leaving 147 areas totaling 4.8 million acres vulnerable to exploitation.

1992 — The Condor Range and Rivers Act designates five new Wilderness Areas—the Sespe, Chumash, Matilija, Garcia, and Silver Peak—and adds to several existing areas.

1994 — The California Desert Protection Act designates two new National Parks (Joshua Tree and Death Valley), the Mojave National Preserve, and 69 new Wilderness Areas. The new Wildernesses total 7.2 million acres, nearly doubling California's acreage in the National Wilderness Preservation System to 13.8 million acres.

1997 — California Wilderness Coalition, along with other conservation organizations, launches the Wildlands 2000 campaign, which will inventory many of the remaining roadless areas in the Golden State and draft federal wilderness legislation to protect them.

1998 — US Forest Service proposes a policy banning road construction in many roadless areas. The policy will temporarily protect millions of acres of California roadless land.

2001? — Congress passes the Wildlands 2000 proposal, creating hundreds of new California Wilderness Areas, totaling millions of acres.

Nevada Wilderness

The West's Best Kept Secret

by Lois Snedden

For most people, Nevada conjures up visions of empty spaces, lonely roads, neon and slots, the Cold War's Nevada Test Site, the 21st century's nuclear dump. Even John Muir didn't get it right when he described Nevada as "a singularly barren aspect."

But to those who venture off high-speed freeways and seek her nooks and crannies, Nevada offers extraordinary wildness. With an average elevation over 5000 feet and more than 300 separate mountain ranges, Nevada is the most mountainous state in the nation. Most of Nevada falls into the Basin and Range topography—fault-block mountains separated by broad valleys, or basins, with no outlet to the sea. The state's higher mountain ranges (above 10,000 ft.) sit mostly in the Humboldt-Toiyabe National Forest, the nation's second largest National Forest, exceeded only by Alaska's Tongass.

Some of her treasures? Snow-covered peaks, deep canyons, red rock walls, volcanic escarpments, hot springs, Pleistocene lakes, and expansive playas. Gnarled ancient bristlecone pine forests, massive groves of spruce, fir, and aspen, lush thickets of riparian greenery, and clear mountain streams filled with trout. Cougar, bighorn sheep, pronghorn and mule deer herds, and mountain goats. One of the most important raptor flyways in the country. Numerous species of flora and fauna found nowhere else.

The federal government owns more than 80% of Nevada's 70 million acres, the largest proportion of any state, including Alaska. The Bureau of Land Management (BLM) manages about 47 million acres, and the Forest Service 6.4 million acres. National Wildlife Refuges and two National Park units—Great Basin National Park and Lake Mead Recreation Area—comprise the rest. Of this wealth of federal public land, only 850,000 National Forest acres receive formal protection as Wilderness.

Background

In the 1976 Federal Lands Policy and Management Act, Congress directed the BLM to prepare a national inventory of roadless areas greater than 5000 acres, to be placed in Wilderness Study Area (WSA) status. Congress further instructed the BLM to study the inventoried lands and make recommendations to Congress as to which should be designated Wilderness. In Nevada,

the BLM's inventory fell far short of fulfilling its congressional mandate and of protecting wilderness values: only five million acres of roadless lands were given interim protection as WSAs, and the agency recommended only about two million acres of these lands for inclusion in the National Wilderness Preservation System. Unfortunately, BLM excluded the majority of roadless areas because of their mineral development potential. On the plus side, almost none of the recommended acreages involve state lands or inholdings, and a number of them abut lands already protected or recommended for protection.

A LOOK AT A COUPLE OF THE WSAS DEMONSTRATES THEIR diversity and wilderness values:

■ The Mount Grafton WSA (73,216 acres; 30,115 acres recommended for Wilderness designation), about thirty miles south of Ely, includes Mount Grafton (10,990 ft.) the tallest peak on BLM-administered land in Nevada. Part of the Schell Creek Range, these craggy mountains host stands of quaking aspen, fir, and limber and bristlecone pine in the high country. Pinyon and juniper predominate on the lower slopes, and cottonwoods grow in the drainages. Rocky Mountain bighorn sheep, mule deer, elk, and mountain lions favor this habitat of large open areas interspersed with trees.

■ Only 45 miles west of Las Vegas, the Mount Stirling WSA (69,650 acres; 50,682 acres recommended for Wilderness) contains a rugged complex of canyons and ridges offering a variety of loop trips for hikers and secluded locales for campsites. Numerous peaks, especially Wheeler Peak and Mt. Stirling, offer challenging climbs and scenic views of the Spring Mountain Range and other vistas. This WSA provides part of the habitat for the only elk herd in Clark County. Ponderosa pine and white fir grow at the higher elevations. Two large petroglyph sites and a cultural site are located within the proposed Wilderness.

■ As one might expect, Nevada WSAs include many notable desert lands as well. Located about three hours northeast of Reno, the Black Rock Desert WSA (319,594 acres; 213,000 acres recommended for Wilderness) is one of the largest, virtually undeveloped desert floors in the western United States and one of the few with an intermittent river flowing through its center. It is probably the largest undisturbed example of such an ecosystem in the contiguous United States. Recent discoveries here include the remains of a woolly mammoth, a saber-toothed tiger, and other Pleistocene animals believed to have been entombed in the marshes along ancient Lake Lahontan. Paleontological sites often correspond to major archeological finds.

Current Efforts

Wilderness advocates feel that some worthy areas (and portions of others) throughout the state were entirely missed in the

illustrations by Valerie Cohen

agency's list of WSAs. Not satisfied with the BLM's minimal recommendations, Friends of Nevada Wilderness (supported by the Toiyabe Chapter of the Sierra Club, the Sierra Club Regional Wilderness Committee, Patagonia, The Wilderness Society, Desert Survivors, and others) has been exploring, studying, photographing, and surveying the state's extensive BLM roadless lands to prepare a comprehensive independent inventory and Wilderness recommendations. The resulting citizens' proposal is expected to recommend about four million acres of additional Wilderness beyond the five million acres of WSA lands. Obviously, with so much ground to cover, the mapping efforts are formidable.

While the present wilderness effort involves primarily BLM lands, Nevada's Forest Service lands need protection too. With the passage of the Nevada Forest Service Protection Act in 1989, 14 areas, encompassing nearly 800,000 acres, were added to the National Wilderness Preservation System in Nevada—which up to that point had claimed only one Wilderness Area, the Jarbidge Wilderness in the northeastern part of the state. That bill, however, was a political compromise; wilderness activists had sought protection for 21 areas covering roughly twice the acreage. That goal still remains possible as the Friends of Nevada Wilderness and the Sierra Club will recommend about 1.5 million National Forest acres be added to the Wilderness System.

Moreover, there are exciting possibilities for expanded Wilderness on Nevada public lands managed by the US Fish and Wildlife Service (over two million roadless acres in the Sheldon National Wildlife Refuge and the Desert National Wildlife Refuge) and National Park Service (60,000 acres in the Lake Mead Recreation Area).

Regional conservationists intend to present responsible Wilderness recommendations and to wage a vigorous outreach campaign to make the Nevada wilderness issue more visible to the national conservation community. In the spirit of John Muir, Sierra Club and Friends of Nevada Wilderness outings are introducing people to the WSAs and other areas with Wilderness potential. A multi-media slide show on BLM wilderness is currently being shown to many groups in the Reno and Las Vegas areas and in California. A recent message from Elden Hughes, a long-time California desert activist, reads: "To call it a slide show is akin to calling my brother's purebred Arabian a horse. I do slide shows. This is slides and music and voices and caring and love and it comes together beautifully." In a separate effort, a Forest Service slide show from the late 1980s will be revised to reflect the current status of those lands and to show the recommendations. A 32-page color brochure is being prepared on all potential Nevada Wilderness and should be ready for distribution in early 1999.

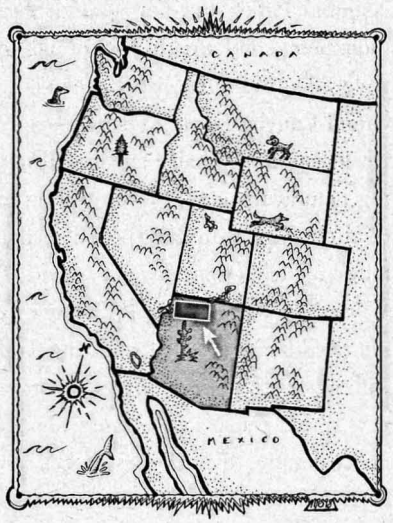
Nevada's wilderness proponents, waiting for a propitious moment to introduce legislation, do not wait idly. They know that only by revealing to the country and the world the secrets of these awesome but little-known lands will permanent protection for Nevada's hidden wilderness be achieved. ❙

Lois Snedden serves as vice president for conservation for the Sierra Club. A long-time wilderness advocate, she is a former chair of the Toiyabe Chapter of the Sierra Club.

To host the Nevada Wilderness slide show, volunteer to help with mapping, or for further information about Nevada Wilderness Areas, contact: Tom Myers, Conservation Director, Friends of Nevada Wilderness (775-348-1759; tom@black-rock.reno.nv.us); Marge Sill, Secretary, Sierra Club Wilderness Committee (775-322-2867; msill@juno.com); Hermie Hiatt, Membership Chair, Friends of Nevada Wilderness (702-361-1171; hhiatt@vhepo.com); or Mark Saylor, Chair, Friends of Nevada Wilderness (702-385-1551; msaylor@earthlink.net).

illustration by Valerie Cohen

Restoring Wilderness at Grand Canyon



by
Kim Crumbo
and
Bethanie Walder

For many the words "Grand Canyon" evoke images of a thundering river surrounded by the great abyss. While the Canyon includes 300 miles of river and pristine tributary streams, it is also extraordinarily diverse: Grand Canyon National Park contains natural communities as disparate as those representative of the Mojave Desert to boreal forest ecosystems.

The passage of the 1964 Wilderness Act (Public Law 88-577, Section 3[c]) instructed the Secretary of the Interior to inventory Park Service lands for Wilderness suitability and report these findings to Congress. Wilderness designation precludes development, and National Parks seemed predestined for buildings and pavement—precisely the reason Congress insisted on Wilderness consideration for our parks. In 1980, after a lengthy, contentious public review process, the National Park Service (NPS) recommended 1.1 million acres (approximately 94%) of Grand Canyon National Park be added to the National Wilderness Preservation System.

NPS policies allow restoration to qualify lands for Wilderness (USDI 1988). One of the Grand Canyon proposal's key elements required the Park Service to eliminate 150 miles of primitive, "two-track" dirt roads. Since that time the Park Service has restored to forest and meadow about 20 miles of road. In its recently released Draft Wilderness Management Plan, the Park Service plans to remove over 130 miles of primitive roads to restore Wilderness suitability, including actively restoring to a natural condition over 50 miles of primitive roads, and converting another 80 miles to hiking or horse trails. Not only will the proposed road removal and restoration qualify the land for Wilderness designation, it also will benefit the region's wildlife and watershed. Grand Canyon National Park provides an example of how innovative efforts to remove roads can lead to the restoration and protection of an ecologically important and beloved place.

Grand Canyon National Park is a significant but ecologically isolated island of natural habitat. The Park simply is not big enough to sustain viable populations of all its native wildlife while the vast surrounding plateaus lack adequate protection from development and resource extraction. An emerging habitat conservation vision, promoted by the Grand Canyon Wildlands Council and other groups, addresses the issue of long-term viability of all native species in the southern Colorado Plateau. This incipient plan includes, as critical core areas, the region's

National Parks, the new Grand Staircase-Escalante National Monument, and existing or proposed Wilderness. Ecological restoration of the Kaibab Plateau—the 600,000-acre so-called Grand Canyon Game Preserve—is a key element of the plan. Restoring the Kaibab Plateau will require (at the least) returning natural fire regimes, protecting habitat for native species, reintroducing extirpated species, and removing hundreds of miles of deleterious logging roads. This vision looks beyond Wilderness designation of existing roadless areas and advocates the rewilding of lands connecting Grand Canyon National Park with other critical core protected areas.

Roads cause a wide range of significant resource impacts. For example, disturbed surfaces provide ideal habitat and avenues for exotic plants to spread, a serious problem in the Grand Canyon region (Amor and Stevens 1976). The additional vehicular access provided by primitive roads facilitates illegal excavation and collection of archeological resources (Huffman 1993). Poorly located or unmaintained roads often result in major erosion problems adversely impacting watersheds (Moll 1996). Wildlife biologists recognize that open roads often expose large mammals such as deer, cougar, and bighorn sheep to heavy hunting pressure, poaching, and harassment. Open-road density has been found to be a good predictor of habitat suitability for large mammals, with habitat effectiveness and population viability declining as road density increases (Noss and Cooperrider 1994, Lyon et al. 1985). Studies have indicated that in order to protect species sensitive to legal or illegal hunting and persecution, habitat must have low road density (Thiel 1985, Mech et al. 1988).

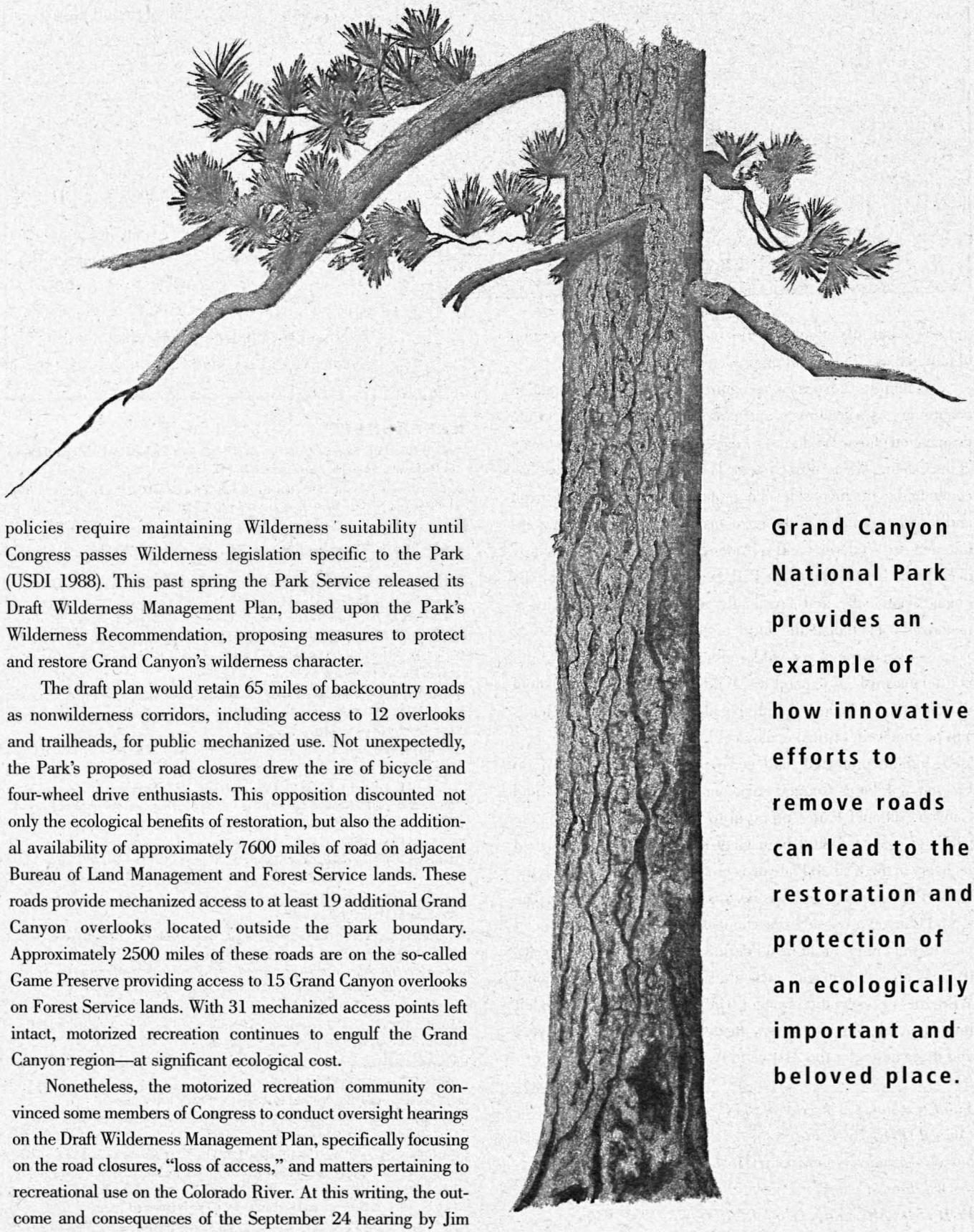
THE KAIBAB PLATEAU, THE MOUNTAIN THROUGH WHICH the Colorado River carves the Grand Canyon, rises over 6000 feet above that river. Stately, ancient conifer forest once covered much of its three-quarters of a million acres. Periodic fire (both anthropogenic and natural wildfire) in lower elevations created open stands of giant ponderosa pine trees and a diverse mosaic of forest and grasslands supporting abundant wildlife. The higher elevations contained pristine meadows and dense forests of spruce and fir. Wildlife, both predator and prey, flourished.

Clarence Dutton, a seasoned explorer and geologist, described the Kaibab Plateau in 1880 as "the most enchanting region it has ever been our privilege to visit." In 1906, Theodore Roosevelt, equally impressed, designated the entire plateau the "Grand Canyon Game Preserve" and laid the foundation for establishing the adjacent Grand Canyon National Park. As late as 1941, the renowned biologist Irvin Rasmussen described the plateau's ponderosa pine as "one of the nation's finest and largest undisturbed stands."

In 1919, the law creating Grand Canyon National Park incorporated the plateau's southern portion, while the Forest Service continued to manage the remaining Game Preserve lands. Lacking insights into the ecological role of predators, the government hired hunters to protect "harmless" game animals, such as deer and bighorn sheep, from predators such as cougars and wolves. Between 1906 and 1923, government hunters and others reportedly killed hundreds of cougars and bobcats, thousands of coyotes, and 30 wolves. The slaughter of most of the region's predators—including every wolf—contributed to the explosive increase of deer on the Kaibab Plateau. The deer population peaked in 1924 at somewhere between 30,000 and 100,000 animals. Overgrazing by deer and cattle, combined with a severe drought, brought disease and starvation. Thousands of deer perished. Incredibly, predator extermination continued.

One hundred years of logging activities on the Kaibab Plateau outside Grand Canyon National Park have dramatically changed the landscape: the ancient forest is virtually gone from the Game Preserve, and a diverse old-growth ecosystem has been converted into a marginal, species-impoverished tree farm. The once vast but now rapidly disappearing southwestern old-growth ponderosa forests are classified as "endangered ecosystems" (Noss et al. 1995, Noss and Peters 1995). Extensive logging dramatically changed the structure (e.g., patch size, canopy closure, vertical layering) of forest stands to a point unsuitable for unique, rare, or endangered species including Spotted Owls, Goshawks, and endemic Kaibab squirrels (Ward, Ward, and Tibbits 1992, Patton 1985, Willey 1984, Rasmussen 1941). In addition, a 2500-mile spider web of logging roads crisscrossing the Game Preserve causes habitat fragmentation and frequent wildlife disturbance. At least 57 mammals and 128 bird species occur here, although one-quarter of the bird populations are declining (Reynolds et al. 1993). Gone is much of the natural diversity of vegetation and the abundant wildlife it supported. Gone is the sanctuary for big game, predators, and other sensitive species.

RESTORING WILDNESS REQUIRES THE BEST SCIENCE, practical applications, and conviction. The task can be politically formidable and exasperating. Grand Canyon National Park's wilderness planning process offers an interesting perspective on restoration. The Park's North Rim represents the last wilderness remnant (approximately 20%) of the Kaibab Plateau's ancient forest (USDI 1993). Although most of Grand Canyon National Park remains a "proposed" Wilderness, NPS



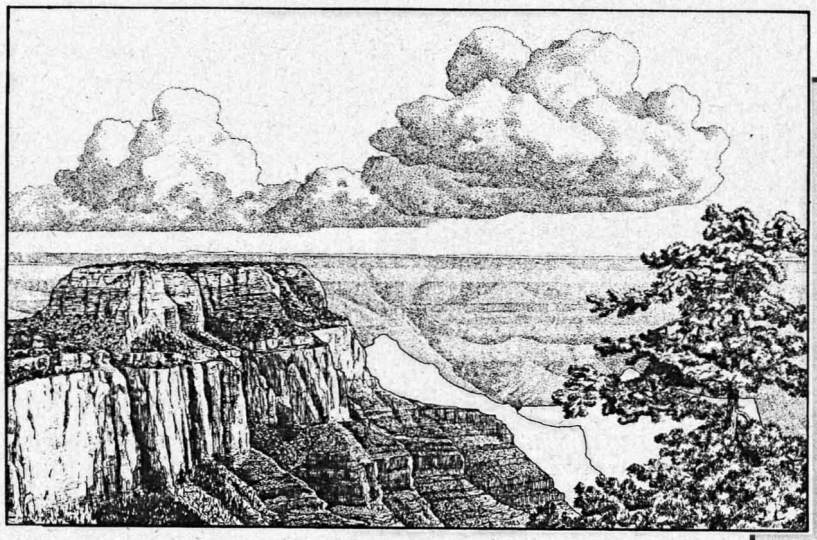
policies require maintaining Wilderness suitability until Congress passes Wilderness legislation specific to the Park (USDI 1988). This past spring the Park Service released its Draft Wilderness Management Plan, based upon the Park's Wilderness Recommendation, proposing measures to protect and restore Grand Canyon's wilderness character.

The draft plan would retain 65 miles of backcountry roads as nonwilderness corridors, including access to 12 overlooks and trailheads, for public mechanized use. Not unexpectedly, the Park's proposed road closures drew the ire of bicycle and four-wheel drive enthusiasts. This opposition discounted not only the ecological benefits of restoration, but also the additional availability of approximately 7600 miles of road on adjacent Bureau of Land Management and Forest Service lands. These roads provide mechanized access to at least 19 additional Grand Canyon overlooks located outside the park boundary. Approximately 2500 miles of these roads are on the so-called Game Preserve providing access to 15 Grand Canyon overlooks on Forest Service lands. With 31 mechanized access points left intact, motorized recreation continues to engulf the Grand Canyon region—at significant ecological cost.

Nonetheless, the motorized recreation community convinced some members of Congress to conduct oversight hearings on the Draft Wilderness Management Plan, specifically focusing on the road closures, "loss of access," and matters pertaining to recreational use on the Colorado River. At this writing, the outcome and consequences of the September 24 hearing by Jim Hansen's (R-UT) subcommittee on Parks and Public Lands are

Grand Canyon National Park provides an example of how innovative efforts to remove roads can lead to the restoration and protection of an ecologically important and beloved place.

ponderosa pine by Nancy Roy



Although the official comment period has expired, you can still write to the Park Service to share your viewpoint, as the final Environmental Impact Statement is currently on hold (pending an analysis of public comment and legal questions). The mechanized groups continue to send petitions, so wilderness-friendly letters would be helpful. For more information, view the Grand Canyon National Park Draft Wilderness Management Plan on the web (www.nps.gov/grca/wilderness) or contact (and send letters to) the Grand Canyon National Park Wilderness Coordinator (Science Center, POB 129, Grand Canyon, AZ 86023).

unknown, but this attack on wilderness has drawn the attention of national environmental groups.

Wilderness advocates recognize the motorized recreation community as a legitimate and powerful threat, not only to the designation of new Wilderness Areas, but also to the maintenance of the existing Wilderness System. The National Park Service has committed to the highest level of protection for the Grand Canyon and for what remains of the once vast Kaibab forest. That commitment is Wilderness. The American people must similarly decide whether to support the Park Service in this effort—or to let a loud, politically and financially well-connected minority of motorized users dictate the future of the Grand Canyon.

As decision-makers, wilderness advocates, the public, and politicians push to expand the Wilderness System, we cannot discount the ecological potential of already roaded lands. Roads can be removed, critical ecological linkages maintained or created, habitat protected, and ecosystems restored. The Grand Canyon Wildlands Council envisions just such a future. Grand Canyon National Park's proposal to remove roads and restore wildland systems could be a giant step toward the ecological recovery of the Kaibab Plateau as creatures find sanctuary in the Game Preserve and wildness returns to the Grand Canyon. The Grand Canyon proposal brings hope that ecological integrity can play as important a role in Wilderness designation as the beauty, majesty, and magic that already embody the National Wilderness Preservation System. The Grand Canyon proposal, if implemented, provides a new model for Wilderness recovery and designation for the 21st century. ▮

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Grand Canyon by Gus diZerega

Allied for Wild New Mexico

by Jean Crawford

New Mexico is a land of subtlety. Other western states have spectacular alpine scenery with dramatic peaks and jewel-like glacial lakes. New Mexico has raw arroyos, convoluted canyons, and brilliant sunsets; its beauty emerges in flowing lines and changing colors. This stark and compelling landscape has inspired literature and art renowned worldwide: Georgia O'Keefe, D.H. Lawrence, Ed Abbey, Willa Cather, and many others found their muse here. New Mexico has inspired pioneering conservation efforts in addition to great art. The wild Gila country shaped the young Aldo Leopold into the sage conservationist who spoke so eloquently for a land ethic.

At Leopold's urging, the nation's first Wilderness was designated in 1924: the Gila Wilderness will be 75 years old in 1999—an excellent time to honor this legacy of land and literature by protecting the last remnants of wild New Mexico as Wilderness.

These remnants are especially precious because New Mexico has less potential Wilderness and fewer large roadless areas than other western states. Three hundred years of European settlement in a place where the climate and landscape are not quite discouraging enough to prevent year-round livestock grazing have caused extensive ecological damage. Most of the state's current Wilderness Areas (at 2.1% of the land total) are in the high mountains managed by the National Forest Service. Yet much of our federal land is managed by the Bureau of Land Management (BLM), and except for places in northwestern New Mexico, qualifying BLM lands have not yet been designated as Wilderness by Congress. (However, the first Wilderness Area created from BLM lands, the Bisti, is in New Mexico.) Thus neither a significant portion of our landscape—nor the full spectrum of our biodiversity—is fully protected.

Efforts to rectify this grievous lack began when the New Mexico BLM Wilderness Coalition published its 2.3-million-acre Wilderness proposal in 1987, countering the BLM's paltry recommendation of less than 500,000 acres. Unfortunately, no federal legislation was introduced due to a lack of solid support from the New Mexico congressional delegation.

Wilderness advocacy in New Mexico burned less brightly during the last decade, but the New Mexico Wilderness Coalition kept the flame alive. Today that flame is being stoked into a bonfire by the newly formed New Mexico Wilderness Alliance (NMWA), which is reinventorying the original BLM Wilderness Coalition proposals, writing a new bill, and organizing citizen support.

Michael Berman

The Lower Gila Box, in the southern part of the Greater Gila, includes rolling upland desert, and rugged rimrock and canyons. Some of the largest riparian trees in the state grow in this region. The Lower Box is habitat for wildlife such as the Gila Woodpecker, Bell's Vireo, the Zone-tailed Hawk, Gila monsters, the narrow-headed garter snake, and the spikedace and loachminnow.

The revitalized New Mexico wilderness movement is addressing not just roadless acreage but also ecological values, and is allied with The Wildlands Project and the Sky Island Alliance in the vision to rewild North America. Our chosen ground—to stand on and for—is BLM land. The NMWA proposal currently endorses the designation of approximately 2.5 million acres of federal land, which would raise the state's Wilderness percentage from 2.1% to 5.3%. We anticipate that the reinventory process may find new qualifying acres, and we are also looking at additional National Forest Wilderness.

Outdoor recreation opportunities rate high among amenities valued by New Mexico residents and support for wilderness is strong, but we face opposition from mining and ranching interests (even though livestock grazing is still permitted in Wilderness Areas). The current New Mexico congressional delegation is certainly not wilderness-friendly (although Senator Domenici has been supportive of all previous Wilderness designations in the state). Wilderness designation was an issue in the District 1 congressional race in 1998; both the Democrat and Green candidates endorsed our proposal, and Democratic candidate Phil Maloof even promised to make it the first legislation he would introduce if elected. Unfortunately, neither the Democrat nor the Green won the race. The victor, Republican Heather Wilson, is reluctant to endorse the citizens' Wilderness bill because most of the areas are outside her district. Tom Udall, the new Representative from northern New Mexico, has expressed some interest in the bill.

We must utilize our will, experience, and energy to push a new BLM Wilderness bill to passage. If no one in the New Mexico delegation is committed to introducing this legislation, we will find a more long-sighted politician from another state—after all, the public lands belong to everyone, and Wilderness preservation is a national issue. Time is critical: oil and gas leases threaten the Big Hatchets (a wild and rugged mountain range in the New Mexico boot-heel), and certain counties controlled by "wise use" factions are bulldozing roads for motorized recreationists eager for new offroad experiences. (Why is it called offroading when this form of recreation *makes* roads? Perhaps we should call it *newroading*.) The New Mexico Wilderness Alliance does not intend to let our last wild places be destroyed. We will work to ensure that New Mexico's remaining wilderness is protected as such, so that natural processes can maintain—and heal—the ecological integrity of this unique landscape. ▮

Jean Crawford is the wilderness adopters coordinator for the New Mexico Wilderness Alliance (POB 13116, Albuquerque, NM 87192; NMWA@earthlink.net; www.sdc.org/nmwa).

Protecting Colorado's Forgotten Canyon Country

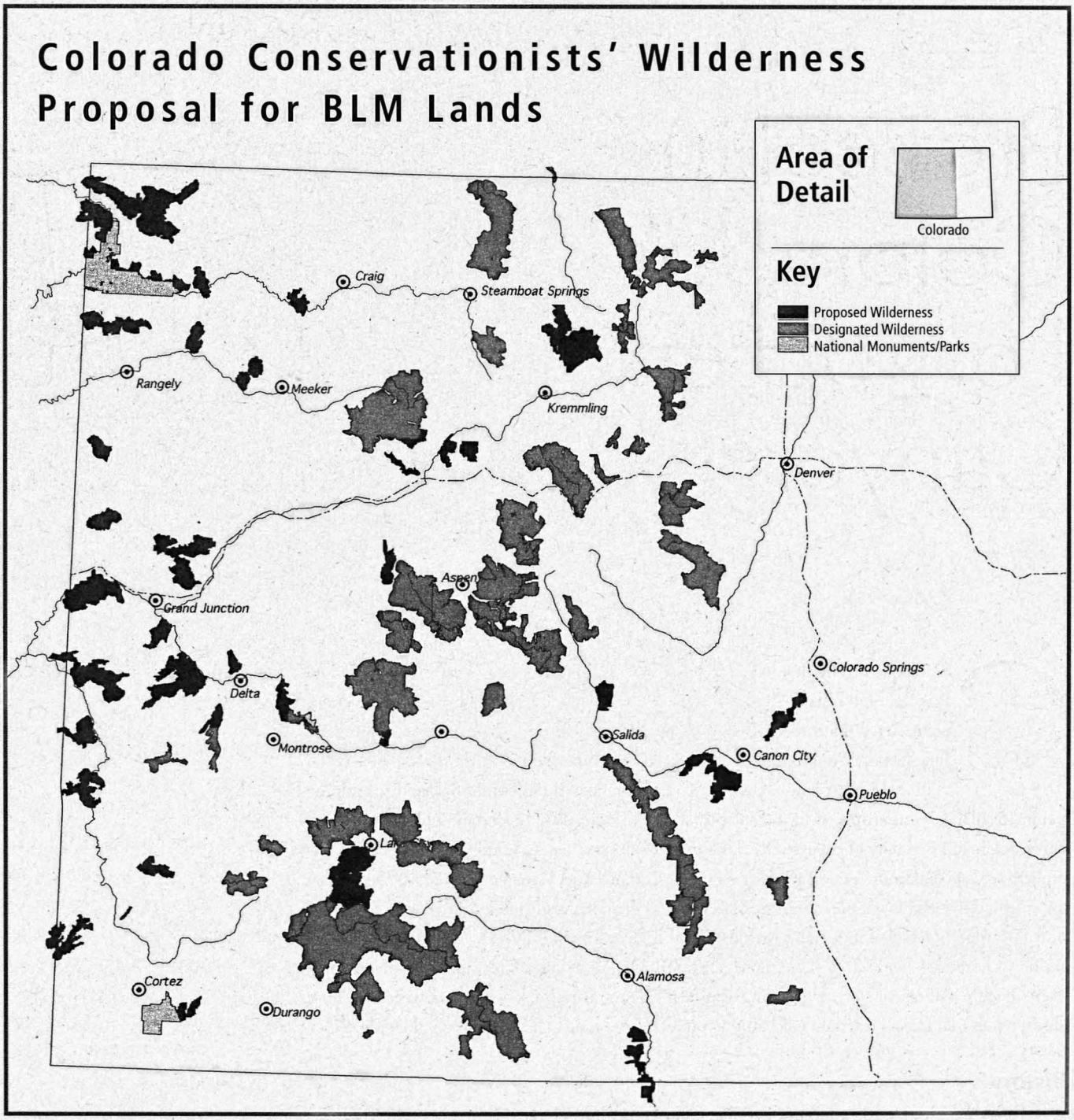
by Suzanne Jones

Colorado is no stranger to Wilderness. In the past 35 years, Congress has passed no less than ten bills designating some 3.2 million acres of Wilderness in this grand state. Yet Wilderness Areas actually make up less than five percent of Colorado's landscape. What has been protected is primarily the high peaks, mostly on National Forest lands. Over 90% of Colorado Wilderness is rock and ice, alpine tundra, or high-elevation spruce-fir forest: spectacular wilderness to be certain, but not representative of our full diversity of ecosystems. Like most western states, Colorado has passed no comprehensive legislation protecting wilderness on Bureau of Land Management (BLM) lands. Left unprotected are the lower-elevation meadows, river corridors, and ponderosa pine, aspen, and pinyon-juniper forests—lands that provide critical habitat for wildlife and connect our high-elevation wilderness islands. In a state known for the Rocky Mountains, Colorado's canyon country, even though reminiscent of neighboring Utah's high-profile redrock wildlands, receives short shrift, a fact that makes the political battle to protect these lands all the more challenging.

History

As in most western states, when the Federal Land Policy and Management Act of 1976 directed the BLM to review its lands for Wilderness potential, the agency did a less than adequate job. Of its eight million acres in Colorado, BLM's original inventory found only 1.2 million acres to be roadless, and designated only 800,000 acres as Wilderness Study Areas (WSAs). After further review and considering alternative uses such as oil and gas leasing, in 1991 BLM recommended only 400,00 acres (or five percent of its lands) for Wilderness designation. The agency concluded that, while a third of BLM roadless areas could provide solitude and primitive recreation, those opportunities were not *outstanding*, as required by the 1964 Wilderness Act.

Frustrated by the BLM's inadequate inventory, conservationists undertook their own field review. In 1994, 47 conservation organizations published the *Conservationists' Wilderness Proposal for Colorado BLM Lands* recommending roughly 1.1 million acres of BLM lands for Wilderness designation (including all WSA lands), along with over 250,000 acres of adjacent Forest Service lands.



Since that time, Colorado conservationists have been fighting for interim protection of these citizen-proposed areas. (While the law requires interim protection for WSAs until Congress decides their fate, no such protection is required for citizen-proposed areas.) At the request of Rep. David Skaggs (D-CO), the BLM State Director agreed in 1996 to extend interim protection to these lands. In response, Marathon Oil filed suit against BLM, claiming the agency did not have the discretion to withhold oil and gas leasing in areas where existing management plans allow it. The US District Court, however, ruled in favor of BLM, although the case is still under appeal.

Administrative Reviews

To address management of citizen-proposed areas, BLM decided to review areas where specific conflicts emerged. Thus, last year BLM began reviewing six citizen-proposed areas (Vermillion Basin, Yampa River, South Shale Ridge, Pinyon Ridge, Castle Peak, and Bangs Canyon), totaling roughly 188,000 acres. With input from the public, BLM determined that 167,000 acres, or 89%, were roadless. (To be legally considered a road, a route must have been mechanically constructed, and regularly maintained and used.) Next, the BLM asked the public whether wilderness and other resource values were

adequately being protected under existing management plans. (Currently, all or most of the six areas are available to oil and gas drilling, mining, off-road vehicle use, and road-building.) Much to the BLM's surprise, the agency received over 1900 comments, of which 64% supported amending the management plans to protect wilderness values.

The BLM decision to reconsider wilderness values touched a raw nerve in some quarters. Senator Wayne Allard (R-CO) called for a congressional field hearing this past June to berate the BLM for its audacity. Instead, he was greeted by crowds of wilderness supporters that outnumbered anti-wilderness interests by estimates of two to one.

Conservationists are still awaiting BLM's final decision about whether to initiate management plan amendments to protect the wilderness values of these six areas. Though existing uses may continue, any new developments are theoretically being suspended during this review process.

Legislative Efforts

Meanwhile, the Colorado conservation community has been gearing up to go on the offensive in the legislative arena. Rep. Diana DeGette, a Democrat representing Denver, has taken up the wilderness torch from retiring Rep. Skaggs and publicly stated her intention to introduce a Colorado BLM Wilderness bill early in the 106th Congress.

In preparation, conservation groups recently dusted off the organizational moniker of Colorado Wilderness Network (last used to pass the 1993 Colorado Wilderness Act) to serve as an ad hoc organizing structure. The network is governed by a Coordinating Committee composed of representatives from the four major participating groups: The Wilderness Society, Sierra Club, Colorado Environmental Coalition, and Western Colorado Congress. A Steering Committee made up of additional groups meets biweekly to make policy decisions.

Preparatory work is being pursued on at least three major fronts. A first step is to finish packaging our Wilderness proposal with the latest GIS technologies, and to ensure that our boundaries are defensible and no suitable areas have been left out. The unprecedented citizens' reinventory in neighboring Utah has spurred debate over whether we should likewise do a comprehensive reinventory. But for now, time and winter weather preclude it, except for reviewing two significant areas acquired by the BLM since our original proposal. Secondly, we have initiated a good old-fashioned, full-blown grassroots organizing effort to build a broad and vocal foundation of support for BLM Wilderness. Our goal is to transcend the geographical fault lines in Colorado of urban versus rural communities, and to

Sage Grouse by Amy Grogan

encompass the diversity of allied interests, from sympathetic county commissioners, hunters and anglers, and recreation businesses, to scientific groups and religious associations. Demonstrating statewide and rural support is especially crucial with a legislative champion from Denver.

Finally, we are arming ourselves with a complete artillery of scientific and economic information in order to better argue for Wilderness to our entire range of public constituencies. In particular, realizing that water rights in these lower-elevation BLM areas (relative to the headwaters issues of most National Forest bills) will be gasoline on the fire of this wilderness debate, we are undertaking a comprehensive legal analysis of water rights issues and solutions. In progress also are the usual array of fact sheets on the ecological and economic benefits of designated Wilderness.

Conclusion

Wilderness in Colorado enjoys widespread support: a League of Conservation Voters poll conducted last year found that 79% of Coloradans, regardless of location or political affiliation, support protecting 1.4 million acres of BLM Wilderness. Wilderness is also recognized as contributing to a state economy based on tourism and a high quality of life that is attracting new businesses daily. While the details of designation generally spark long and heated debate, Colorado history shows that bipartisan support for additional Wilderness has eventually and repeatedly prevailed. Given congressional politics, there is perhaps never a perfect time to launch a new Wilderness legislative effort. But the time is now ripe to begin the unfinished business of protecting Colorado's forgotten, but spectacular, canyon country. ▮

Suzanne Jones is the assistant regional director for the Four Corners Office of The Wilderness Society (7475 Dakin St., Suite 410, Denver, CO 80221; 303-650-5818; co@tws.org).

Utah Wilderness Inventory

Stalking and Walking the Wild Lands

by Tom Price, Kevin Walker, and Jim Catlin

For the last three years, the debate over how much wilderness remains on the Bureau of Land Management (BLM) lands in Utah has raged from the canyons of the Colorado Plateau to the halls of Congress. Much of this debate has focused on whether or not the 12-year-old citizens' Wilderness proposal, known as America's Red Rock Wilderness Act (H.R. 1500 and S. 773), contains areas that do not meet the criteria for designated Wilderness. So, in 1996, the Utah Wilderness Coalition (UWC) decided to revise and document our boundaries on an unprecedented scale, to settle the debate once and for all. The effort was staggering: over a period of two years, some 500 volunteers spent 50,000 hours and took more than 40,000 photographs to compile what is the most comprehensive inventory of public lands ever conducted in America.

The goals of the reinventory were to: 1) remove from our proposal areas that had been scarred by development in the ten years since we had originally drawn our boundaries; 2) compile documentation so thorough and complete that no credible person could claim that the lands within the new boundaries were unqualified for Wilderness designation; and 3) add areas that were omitted the first time around, in order to make the inventory more completely represent the spectacular geographic and biological diversity of Utah.

For those who have not been immersed in the Utah wilderness debate for the last few years, some background on the above goals might be helpful.

Goal 1 reflects the fact that most of Utah's de facto, undesignated wilderness lacks official protection. In the late 1970s, the BLM was given a mandate to protect all de facto wilderness until Congress had a chance to a pass a Utah Wilderness bill, but the pro-development BLM of that era gave official recognition (and hence interim protection) only to a small portion of what was actually there. (The BLM now admits that its wilderness inventory had serious flaws. BLM is trying to rectify its earlier work with a new inventory, but litigation by the state, Utah Association of Counties, and School Institutional Trust Lands administration has delayed BLM's completion of its reinventory.)

Much of the Utah conservation community's energy is spent trying to ensure that the remaining unprotected wilderness stays wild until Congress passes a comprehensive Utah

Wilderness bill. We've done a fairly good job of this, but we've lost a few battles, and as a result some areas no longer qualify as Wilderness. We set out to find those areas and remove them from our proposal.

Goal 2 is a response to our critics, who have attacked the credibility of the citizens' proposal by claiming that we have included roads, power lines, mines—even towns—and other human developments inside our proposal. The critics could never give any examples, but we decided to re-evaluate every inch of our proposal to make sure that no such impacts are within our boundaries.

Goal 3 relates to some shortcomings of the old (5.7-million-acre) proposal which we tended not to advertise, and so tended to get overlooked, even by Utah wilderness insiders. In the late 1970s and early 1980s, Utah conservationists had far fewer resources than we do today. There were less dollars and bodies available to do inventory work, and we were unwilling to include any area in our proposal that we had not thoroughly investigated. The result was a Wilderness proposal that lightly sampled certain parts of the state, while doing a very thorough job in other regions. The canyon country of southern and eastern Utah received the most attention, whereas the western and northeastern parts of the state received no such hard look. The old inventory was incomplete in this sense.

Additionally, the importance of conservation biology is more appreciated today than it was ten or fifteen years ago. The old proposal emphasized scenery and recreational potential over biological values. The new proposal should better protect the ecological diversity of Utah's wildlands.

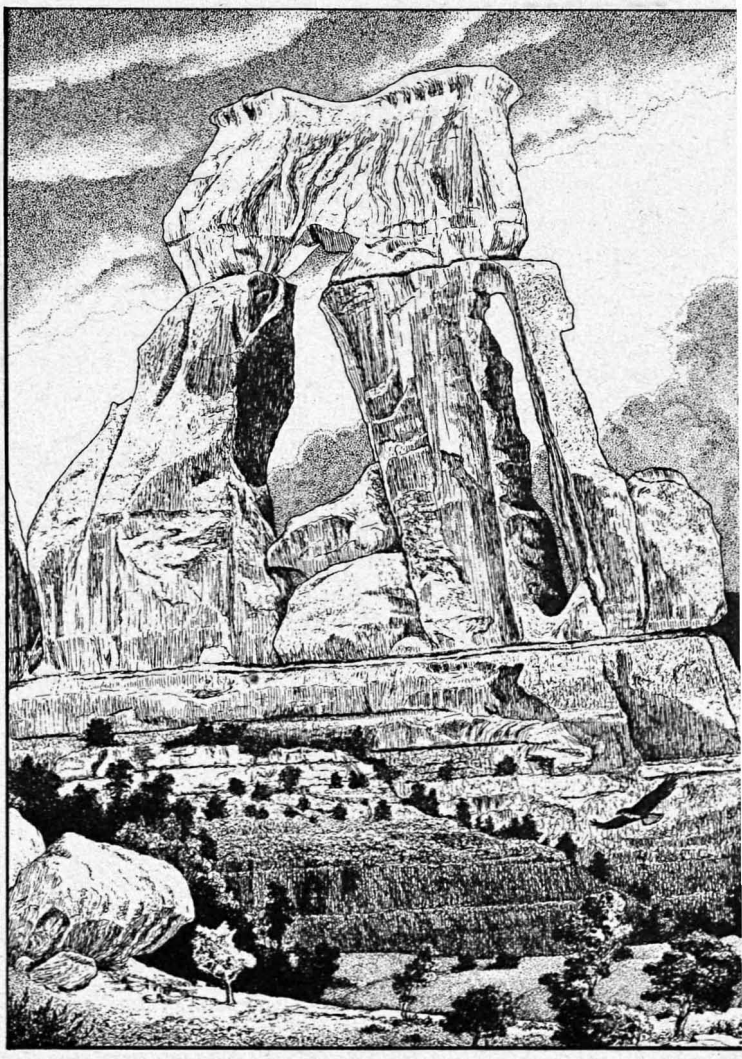
Two years later, the results are in and the above goals have been met:

1) We've dropped about one percent of the land included in the old proposal that has been scarred by development; 99% remains in a relatively natural state, which is a testament to the quality of the original inventory and to years of hard work defending unprotected wilderness.

2) The mountain of documentation we've assembled—probably the most thorough wilderness inventory ever completed, all of it closely reviewed for consistency by a technical review committee—should convince all skeptics that these lands undoubtedly qualify for Wilderness designation.

3) Our inventory now identifies the full, diverse range of Utah's few remaining wilderness lands. We've added units throughout the state, particularly in the Great Basin (western Utah) and Dinosaur (northeastern Utah) areas, as well as biologically rich areas and key connecting linkages.

The mountain of documentation we've assembled—probably the most thorough wilderness inventory ever completed—should convince all skeptics that these lands undoubtedly qualify for Wilderness designation.



Druid Arch, Utah by Gus diZerega

The Tally: Bigger, Better, Wilder

While subject to ongoing analysis and refinement, it appears that the reinventory process (despite our rigorous methods and high standards for inclusion) has identified roughly 8.9 million acres of Utah BLM lands that qualify for Wilderness designation.

Although initially a bit apprehensive about adding new areas, we decided to stick with our long-established policy of letting our boundaries be guided by facts on the ground, rather than shifting political winds; it is the merits of particular places that are important, not abstract acreage figures.

Even Utah Governor Mike Leavitt has said that the wilderness debate should not be a "numbers game." It would be silly for conservationists to surrender millions of acres of Wilderness-quality lands to extractive industries because "X.X" acres sounds like too large a number. Our position has always been that since so much wilderness has already been lost to development—two-thirds of the state in a mere 50 years—the remaining areas (whatever the acreage numbers) should be preserved.

The additions to the inventory are some of the wilder and more obscure parts of the state. (That's why they went uncataloged for so long.) Like Glen Canyon, they are the "places no one knew." And Glen Canyon teaches us that we should be extremely cautious about writing off places just because most of us haven't been there or heard about them. For the last few years, we have had nightmares about a hostile Congress passing a Utah Wilderness bill that would fall millions of acres short of protecting Utah's remaining wildlands. For us to unilaterally write off a couple million newly found wilderness acres would be equally tragic.

Reinventory Process: Nuts and Bolts

The process for inventorying Utah BLM wilderness had several stages. Prior to the actual field work, we gathered as much information as possible about a unit. USGS topographic maps of 7.5 minute scale were annotated with property designations (BLM, Forest Service, private, state, etc.), and changes or acquisitions of property were verified by cross-checking to BLM land status plats.

We then consulted recent aerial photographs of the area in order to locate impacts not already on the topo maps. Aerial photographs are an extremely useful tool, since they tend to exaggerate the noticeability of impacts. It is very rare for impacts to appear significant on the ground and yet be hard to spot on aerial photos. (The converse is quite common: abandoned jeep trails and seismic lines which show up clearly on aerials are often difficult to find on the ground.) After consulting the aerial photographs and marking what we find on topo maps, we have a nearly complete catalog of human impacts, both major and minor, within the unit.

Next came the fieldwork, which was done by a combination of volunteers, interns, and staff. Carefully screened and briefed field workers traveled the outer boundary of each potential roadless area, taking frequent photographs of the boundary itself. Each intrusion entering into the area, and any branches off of these intrusions—also within the proposed area—were traveled to their end. Each impact was photographed: 40,000 to 50,000 photos in all. Jeep trails and old seismic lines are the most common type of impact, followed by stock ponds, abandoned mining sites, and chainings (where a large chain stretched between bulldozers has been pulled along the ground, stripping away all native vegetation). Jeep trails were photographed several times: at the beginning and the end, and at any place in the middle where the condition or appearance of the trail changed. (Typical distance between photo points was about a mile, though denser coverage was quite common.)

Each photograph received a unique ID number and its location was marked carefully on a topo map. Written notes, keyed to photos, were taken on disturbances not adequately conveyed by the photos. The completed fieldwork was then reviewed in detail by an experienced Utah Wilderness Coalition (UWC) staffer. If there were gaps in the initial fieldwork, we would revisit an area a second or even third time to complete the field check.

Additional information was gathered, including that on popular off-road vehicle routes, mineral deposits and activity, and grazing impacts, before a preliminary boundary recommendation was made. (BLM staff were gracious and open about offering information, and the results of this inventory are stronger because of their help.) This preliminary recommendation was then reviewed and fine-tuned by the "technical review team" (TRT), a group of four orange-marker-wielding, wilderness-boundary-criteria nerds who met on a regular basis and ensured the consistency and integrity of the final product.

After hours of lively discussion within the TRT (sometimes meeting with the full UWC executive committee), thresholds for when an impact would be considered "substantially unnoticeable" (as required by the Wilderness Act) were developed. The goal was to be stricter than BLM guidelines require, so that the resulting boundaries would be above reproach.

At various points in the process we consulted with biologists, since one of the goals of the improved wilderness proposal is to help preserve biodiversity in Utah. In general, these consultations resulted in us giving priority to a) areas containing large elevational gradients, b) large complexes of contiguous roadless areas, and c) riparian areas.

The final steps, still ongoing, are to digitize the boundaries into a GIS (Geographic Information System) computer database, and write a detailed description of the boundary, together with the rationales for any tough decisions involved. One of the most complicated and time-consuming tasks is precisely calculating acreages (to the nearest 100,000 acres, for example). (Contact the Southern Utah Wilderness Alliance for details on the elaborate method of calculation.)

What's Next?

Readers may have noticed that we have characterized the wilderness boundaries described herein as an "inventory," rather than as a proposal or legislation. Why the distinction?

One can differentiate between 1) an inventory of all Wilderness-suitable lands in Utah, 2) the Utah Wilderness Coalition's proposal for Wilderness designation, and 3) congressional legislation to designate Wilderness. For the past several years, all three have coincided. That is, the UWC's Wilderness proposal consisted of all Wilderness-suitable lands we had inventoried up to that point, and the congressional bills (H.R. 1500 in the House and S. 773 in the Senate) were identical to the UWC's Wilderness proposal.

We now have an updated inventory of what wilderness remains. We are still gathering information, polishing off the fieldwork, and putting everything into a GIS computer database. Working with the Southern Utah Wilderness Alliance's partners in the Utah Wilderness Coalition—notably the Sierra Club, Wasatch Mountain Club, and Wilderness Society—we'll take all this information, refine our inventory, and likely adopt it as the new and improved citizens' proposal. Meanwhile, we will closely monitor BLM management activities to make certain that all these wildlands stay wild until Congress gets around to designating them Wilderness. Decisions about whether the improved citizens' proposal will become legislation must be made in consultation with our allies in Congress. We look forward to sharing our proposal with our political allies in those upcoming consultations, and to working with Utah wilderness lovers across the nation who wish to see a new and improved Utah Wilderness proposal become reality. ▮

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illustration by Rebecca Merrilees

A Hope of Wilderness

During that mindbending 1930s drought
and as far as we could see, unending,
when the bleaching sun thinned fenceline shelter
left meadows bare and fences useless,
where coyotes, panthers, beavers, cougars
could not live, and even robins went away,
my Dad created wilderness.
On moonless nights he made us listen
adding thrill and mystery to the song of whippoorwill,
unseen by human eyes he said.
What dense jungle places then we wondered
could shelter such a primal call?
Was it wild enough beneath the distant railroad trestle
where we were not allowed to go?
He brought us honey wrestled from a hollow tree
where bees had made it just the way they always had
though now they'd borrowed water
from the deep-fed circulating tanks of oil wells.
Mighty cats who lived in oldtime river bottoms
came to life as stalking panthers
when dry leaves rustled or shadows moved
or the dog turned to growl at unseen eyes.
He called us from snug winter beds
grabbing coats and gloves and rushing out
because the stars were falling, or the geese were flying
in powerful feather waves across the moon
linking us to frigid north and tropic, coastal waters,
to something out there, deeper, wilder, stronger,
where a miracle like rain and life
could burst upon us once again.

—NORMA L. THOMAS

NREPA:

Ecology Meets Politics in the Northern Rockies

By Mike Bader

The Northern Rockies region of the US—a land of great beauty and diversity—contains virtually the entire native biota that existed at the time of the Lewis and Clark Expedition. Free-roaming populations of grizzly bear, wolf, caribou, lynx, wolverine, and the last of the wild bison enrich the landscape. Native salmon, bull trout, cutthroat and steelhead grace the waters. Yet many of these natives, and the wild landscapes on which they depend, continue to dwindle under the onslaught of modern civilization.

The Northern Rockies Ecosystem Protection Act (NREPA) is the first legislation to frame wilderness protection in a bioregional context and contains an array of designations that would work in concert to effect ecosystem protection in the US Northern Rockies. In the 105th Congress, NREPA reached a new high in congressional sponsorship with 72 sponsors.

The product of numerous grassroots organizations and conservation scientists, the NREPA concept emerged in the midst of the wilderness wars of the 1980s, an era dominated by the state by state Wilderness bill process. This parochial approach usually relegated formally protected Wilderness Areas to the highest, most rugged landscapes, largely exclusive of the prime forest habitat at the mid and lower elevations. These bills were an exercise in "local control," whereby the timber, mining, and grazing industries maximized their influence over the outcome while entirely dismissing the national public trust at stake in the future of these federal lands.

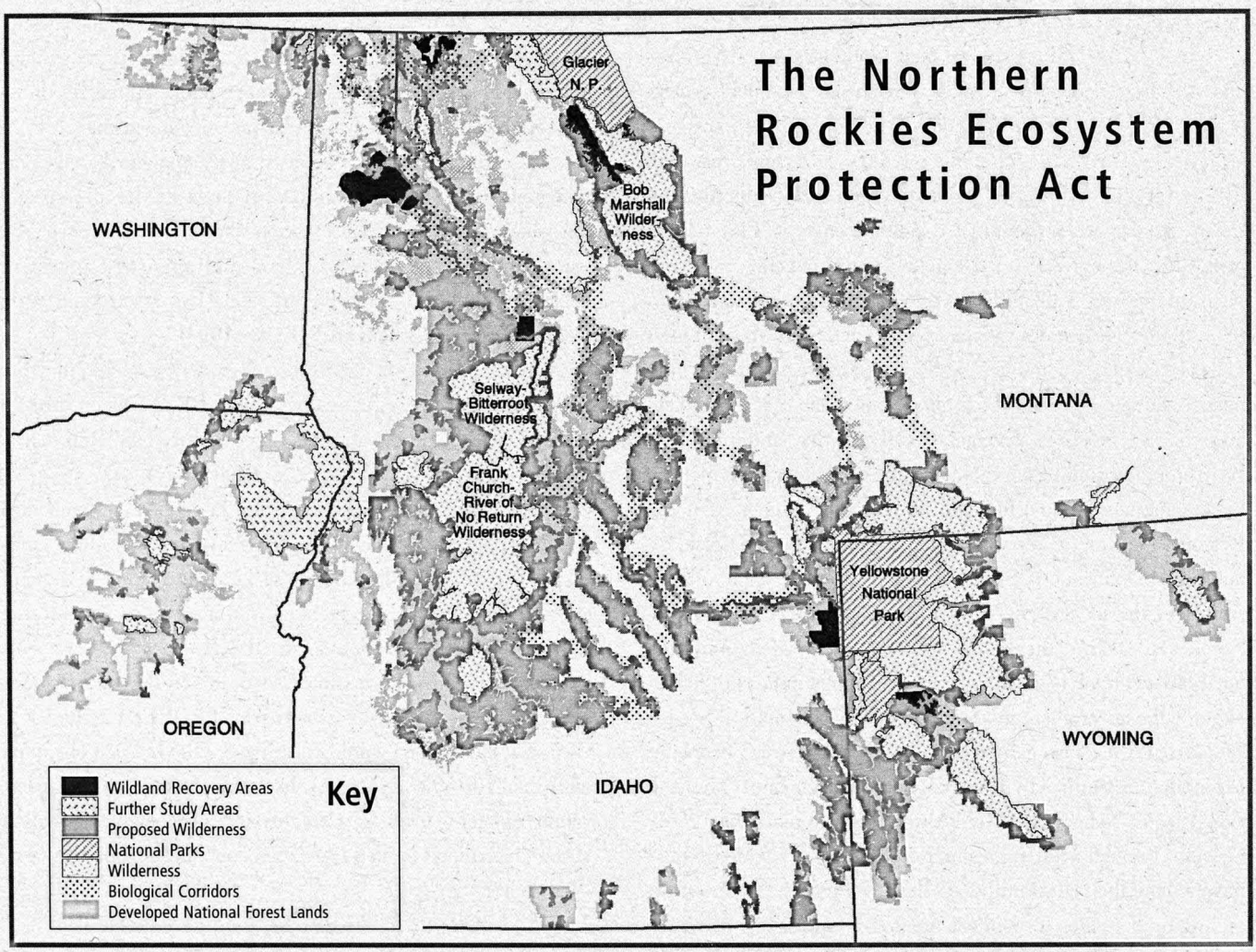
NREPA changes the focus: rather than viewing the land as a pie to be divided up by the extractive industries, it is considered as a functioning ecological entity. NREPA de-emphasizes arbitrary political lines to encompass ecological systems.

The different land management strategies contained within NREPA are designed to maintain functioning ecosystems in the US Northern Rockies:

■ Extensive new designated Wilderness would protect roadless areas, the foundation of effective ecosystem protection. (The Wilderness Act remains the only law that specifically protects roadless areas.)

■ Wild and Scenic Rivers designation would protect more than 1800 miles of free-flowing streams—prohibiting dam-building and thus maintaining the ability of these waters to support migratory native fish.

■ A system of habitat linkage corridors are designated to connect increasingly isolated core areas.



■ A pilot system of Wildland Recovery Areas are designated to recover damaged areas and restore their role in supporting ecosystem health.

■ Two areas are proposed for study as possible additions to the National Park System.

In all, more than 20 million acres (>140,000 sq. km.) of federal public lands would be affected, greatly expanding the network of protected natural areas in this bioregion.

Originally described as "an important first step in an overall conservation strategy" (Bader 1991), NREPA is a federal public lands protection bill, not a comprehensive reserve system design based on all lands, regardless of ownership or management. As such, there are limits to what it can do. Congressional legislation must be limited to the area over which Congress has jurisdiction. Thus, NREPA stops at the US/Canadian border; other advocacy efforts span the international line. We are blessed with a wealth of public lands in the Northern Rockies. NREPA will allow us to build a foundation for ecosystem protection while we gain additional information and develop strategies for enhancing protection of habitat on private lands.

Biodiversity conservation at the landscape level encompasses thousands of species, many of which we know little or nothing about. For practical reasons, we focus our conservation plans on a few species that serve as indicators of ecosystem health and integrity. Within the wild Rockies, the grizzly bear and the bull trout, indicators of healthy terrestrial and aquatic ecosystems, respectively, are target species. Protecting habitat for these umbrella species, which are both wide-ranging, slow-breeding species highly sensitive to habitat degradation, should lead to protection for hundreds of other less-sensitive species.

A vast body of knowledge gained through scientific research provides a sound basis for NREPA. Many of these findings have been summarized by Bader and Bechtold (1996, 1997) and at official congressional testimony on behalf of NREPA by Dr. John Craighead and Dr. Lee Metzgar (1994). For example, the management language pertaining to the biological corridors is informed by the work of numerous scientists who have studied the impacts of roads on grizzly bears and other wildlife (Mattson 1993, Craighead, Sumner, and Mitchell 1995).

Work by regional NREPA supporters has shown that the minimum area requirements for a regional metapopulation of grizzly bears is 50,000 square miles or more (Metzgar and Bader 1992). Since none of the core areas are large enough to provide this habitat area, linkage corridors are proposed in

order to support a regional metapopulation.

Research on bull trout, our aquatic umbrella species, has documented the importance of roadless watersheds, high quality water, and connectivity between populations to the survival of the species.

While NREPA is continually refined to add more areas and incorporate new findings prior to each reintroduction in Congress, supporting scientific research is ongoing. Fine-tuning of the bill is necessary to adequately represent all ecosystem types; to this end, Title VI of NREPA establishes an interagency scientific team, including private sector scientists, who will create a Geographic Information System to define further protection needs, conduct research to monitor implementation of the act, and detect landscape changes—both positive and negative. Based on their findings, a report will be made available including recommendations for additional protection measures. Region-wide, fine-detail studies are beyond the scope of most non-profit organizations. Such studies are already a legal responsibility of the federal government pursuant to the Endangered Species Act (ESA), the National Forest Management Act, and other laws. Our job is not to assume government duties but rather to guide the government in appropriate management.

NREPA has also gained support due to its strong economic foundation. Studies by University of Utah economist Michael Garrity (1997) show that NREPA would create more than 2000 new jobs through wildland restoration work while saving US taxpayers more than $100 million dollars over a ten year period by ending timber sales in roadless areas. An earlier report by Dr. Thomas Power (1992), chair of the University of Montana economics department, shows that enactment of NREPA would have a minimal effect on regional timber industry employment.

It is important to stress that NREPA is not a stand-alone effort. NREPA works in unison with other conservation strategies. The Alliance for the Wild Rockies conservation network actively works all three branches of the public process and the fourth estate to gain support for a broad range of wildlife protection. Working through the judicial branch, we were recently successful in obtaining an Endangered Species Act listing for the bull trout, covering parts of five states from the Pacific Ocean to the Continental Divide. We are also pursuing litigation on behalf of grizzly bear habitat and to challenge the exploitation of thermal features in Yellowstone National Park. Through the administrative branch we have applied many of NREPA's concepts to the Conservation Biology Alternative for grizzly bear reintroduction in the greater Salmon-Selway ecosystem. This plan has been included as Alternative 4 in the US Fish and Wildlife Service draft Environmental Impact Statement and received more public support at seven public hearings than any other alternative. Another effort through the administrative process includes petitioning for species listings under the ESA. We have also been actively involved in encouraging the proposed road-building moratorium on National Forest roadless areas. NREPA, of course, works through the legislative branch. The fourth branch, the general public and media, are addressed through public outreach, educational publications, the news media, and advertisements.

It is crucial to have a broad strategy to achieve conservation goals. Expecting one bill to carry the water for all issues is unrealistic and strategically counterproductive. Moreover, by using several existing federal laws and approaches, we can achieve what legal scholar Robert Keiter has described as a de facto body of "ecosystem law" (Keiter 1994).

As important as having a broad strategy is de-politicizing the process to whatever extent possible. NREPA is sponsored by a bi-partisan coalition of House members led by Rep. Chris Shays (R-CT) and Rep. Carolyn Maloney (D-NY).

The Northern Rockies Ecosystem Protection Act embodies the major goal of the conservation movement—healthy landscapes for humans and wildlife. It's a blueprint for where we want to see federal land management go, and it serves as a measuring stick that the public can use to judge the adequacy of government-sponsored initiatives. Grassroots advocates in the wild Rockies bioregion are gearing up for a major push for NREPA in the 106th Congress, focusing on gaining hearings for the bill and obtaining more than 100 official sponsors. In an era of extreme anti-conservation leadership in the US Congress, it is a testament to NREPA's vision that support for this legislation continues to grow. ❙

Mike Bader is the executive director of Alliance for the Wild Rockies (POB 8731, Missoula, MT 59807; 406-721-5420; awr@wildrockies.org). Contact AWR to receive a free, full-color brochure on NREPA, including a map.

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Using Focal Species in the Design of Nature Reserve Networks

Brian Miller, Richard Reading, Jim Strittholt, Carlos Carroll, Reed Noss, Michael Soulé, Oscar Sánchez, John Terborgh, Donald Brightsmith, Ted Cheeseman, and Dave Foreman

THE ESTABLISHMENT AND MANAGEMENT OF NATURE RESERVES is one of a variety of methods promoted to help conserve biological diversity. Over the past couple of decades, the number of protected natural areas has increased dramatically worldwide, and the theory and practice of reserve design has developed into a sub-discipline of conservation biology.

In designing a reserve or reserve network (a regional system of connected reserves), conservationists generally use some combination of three tactics. Those approaches are: 1) mapping special elements (i.e., sites of high value such as Wilderness Areas, roadless areas, location of rare species, etc.), 2) seeking representation (i.e., including all habitat types in a region as a "coarse filter" approach to protecting biodiversity), and 3) evaluating the requirements of selected focal species (Noss 1996).

Relying on only one of these approaches will not provide sufficient protection, so understanding the strengths and weaknesses of the three will aid decisions about integrating them into a more comprehensive reserve plan. Obviously, ecological, political, and socio-economic conditions will change from region to region, and consequently the goals and purposes of various reserves will differ. Because much of present reserve theory has not been tested empirically, individuals will differ in their opinions over the weight that should be granted to each tactic in a given plan. These discussions should enhance—not detract from—the overall goal of establishing protected areas.

In this paper, we present *some* ideas for using focal species in conservation actions (we stress that the list is not comprehensive and that local biologists should be consulted in any reserve planning that uses this approach). We focus primarily on biological considerations; the socio-economic considerations in reserve planning and implementation deserve attention as the prime topic of another paper and are beyond the scope of this manuscript. The focus of the techniques we present is terrestrial and largely drawn from experience in North America (north of the Yucatan Peninsula).

Focal Species and Reserve Design

Focal species are organisms used in planning and managing nature reserves because their requirements for survival represent factors important to maintaining ecologically healthy conditions. Ultimately, questions about ecological patterns and processes cannot be answered without reference to the species that live in a landscape (Lambeck 1997). Representation and special elements themes point to which areas should be included in reserves, but focal species analysis identifies additional high-value habitats and addresses the questions:

- What is the quality of habitat?
- How much area is needed?
- In what configuration should we design components of a reserve network?

One of the first steps in using focal species as a basis for planning a reserve network is a clear description of the process. What species are chosen and why? How will the particular focal species contribute to the general goals and objectives of the reserve network? What assumptions are made in the selection of those species and in the models that are developed from their data? What are the potential weaknesses of the assumptions? What type and quality of data from each species are available? It is essential to be honest about what is known, what is assumed, and what is uncertain.

All of the terms used should be carefully defined to prevent misinterpretation. Many popular terms remain disturbingly ambiguous; "ecosystem management" and "sustainable development," for example, are used casually and can promote a wide range of political agendas. Terms germane to focal species are *keystone species*, *umbrella species*, *flagship species*, and *indicator species*. It is important not to confuse the purposes of these different categories when selecting focal species. In this paper, we follow the definitions of various focal species recently popularized by Noss and Cooperrider (1994), Lambeck (1997), and Meffe and Carroll (1997). We also add some of our own.

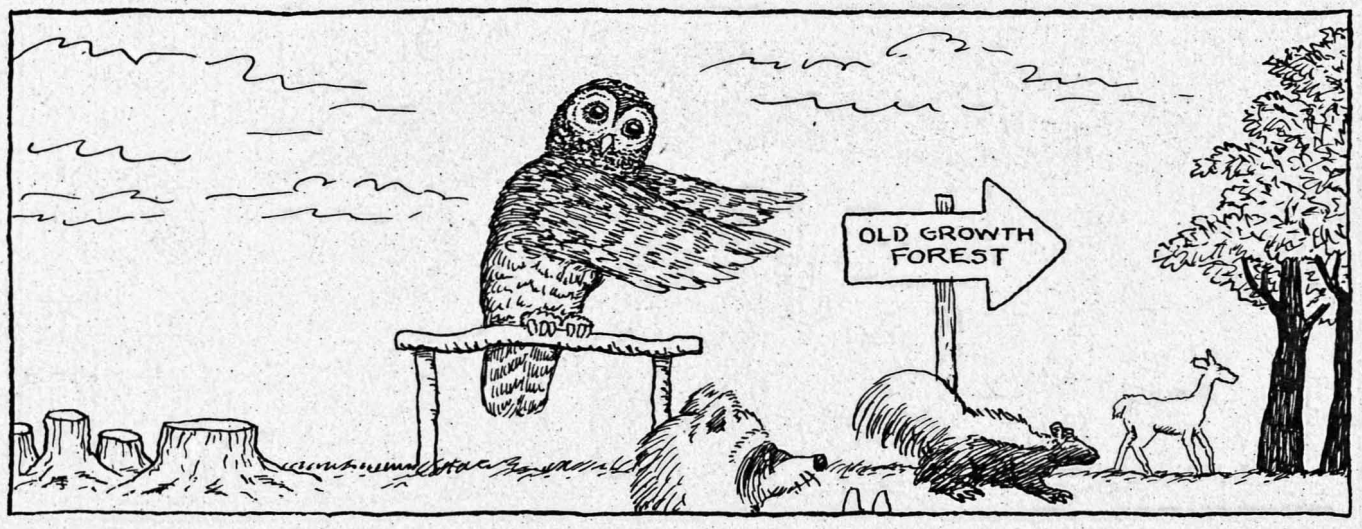
Keystone species enrich ecosystem function in a unique and significant manner through their activities, and the effect is disproportionate to their numerical abundance (Paine 1980, Terborgh 1988, Mills et al. 1993). Their removal initiates changes in ecosystem structure and often a loss of diversity. Examples of animals that significantly regulate ecosystem processes include beaver (*Castor canadensis*) (Naiman et al. 1988), large carnivores (Terborgh 1988), and prairie dogs (*Cynomys* spp.) (Miller et al. 1994). Because of the pronounced effect keystone species have on the integrity of an ecosystem, making them a target of management efforts provides an excellent opportunity to maintain or restore ecosystem processes through actions directed at a single species (Miller et al. 1994).

Umbrella species generally cover large areas in their daily or seasonal movements (Frankel and Soulé 1981). Protecting enough habitat to assure a viable population of these organisms benefits many other species more restricted in their range. Large mammalian carnivores are often proposed as umbrellas because they are wide-ranging and ecological generalists, but large herbivores and raptors can also fill this role (Noss and Cooperrider 1994, Noss et al. 1996, Meffe and Carroll 1997).

Flagship species are charismatic creatures—such as giant pandas (*Ailuropoda melanoleuca*) or sea turtles—that have wide appeal and thus draw attention to a conservation objective. They are the foundation of public relations and education campaigns, and the outreach built around flagships may be critical to building popular support for a protected area (Noss and Cooperrider 1994, Meffe and Carroll 1997).

Indicator species are tightly linked to specific biological elements, processes, or qualities; are sensitive to ecological changes; and are useful in monitoring habitat quality. Ideally, they would provide an early warning system and act as a surrogate for the integrity of the ecosystem they inhabit. Examples of indicator species include spotted owls (*Strix occidentalis*) for old-growth forests (Verner et al. 1992) and river otters (*Lutra* spp.) for rivers systems (Sánchez 1992). The choice of indicator species depends on the desired goals; they can represent an element as narrow as stream temperature or as broad as wilderness quality. When choosing indicator species it is important that the relationship between the species and the predicted effect is crystal clear.

To review, these four categories of focal species (keystone, umbrella, flagship, and indicator) can be briefly summarized by their functional context—the way they contribute to reserve planning. A keystone species is defined by



INDICATOR SPECIES

ecological value. An umbrella species is a basis for management decisions, particularly about size, shape, and spatial distribution of protected areas. A flagship species is charismatic and used in public relations and fundraising. Finally, an indicator species is useful in assessing and monitoring quality of habitat.

Despite functional differences, it is possible to choose species that occupy more than one category. Grizzly bears (*Ursus arctos*) and jaguars (*Panthera onca*) could represent (1) keystone species as top carnivores, (2) umbrella species because of their large area requirements, (3) indicators of wilderness quality, and (4) flagships. Wolves can represent categories 1, 2, and 4, but can also indicate a level of human persecution. The capacity of animals to represent more than one factor in reserve design demonstrates the need to be clear in terminology, objectives, and assumptions.

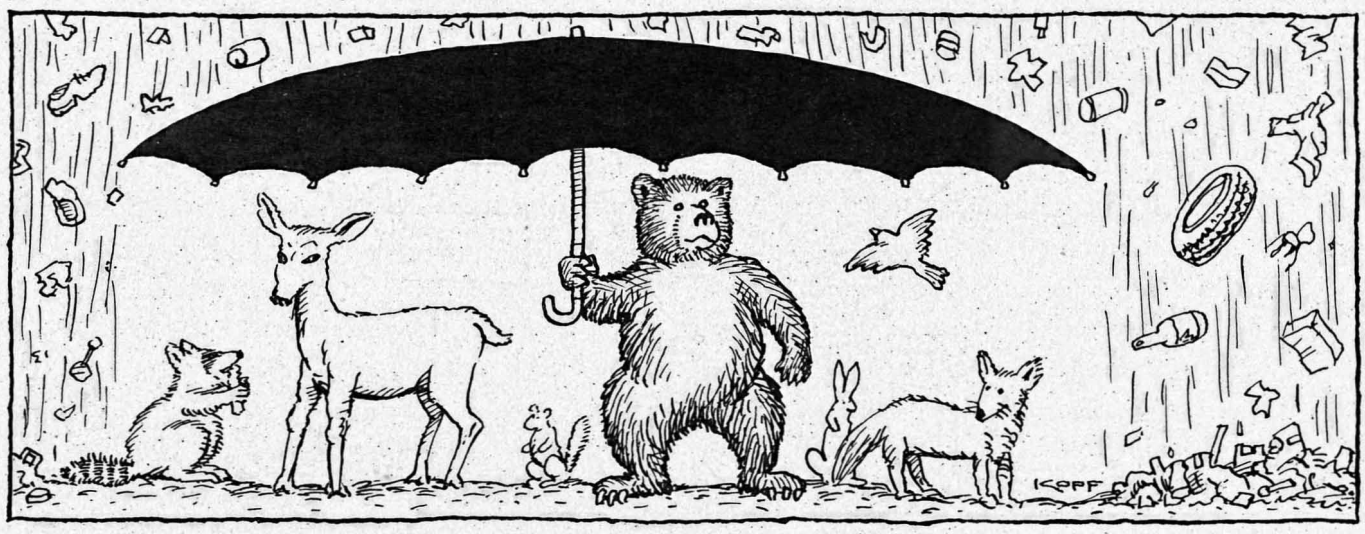
As a general guideline for selecting focal species, we suggest preparing a list of threatened, ecologically important, economically important, and endemic organisms for the target area. This may suggest likely candidates for indicator and flagship species. In addition, many of the carnivores—particularly large ones—can be excellent candidates for the umbrella category. We argue that any conservation plan that fails to include the needs of native carnivores is incomplete (Noss and Cooperrider 1994). Large carnivores are keystone species that make substantial contributions to ecosystem function; to exclude their presence may result in a protected area with highly altered and unstable systems (Terborgh 1988). If a local carnivore has been extirpated, after careful analysis it can still be included in reserve design under a future reintroduction plan. Large herbivores can also be good umbrella species, particularly if they require specialized habitat or make predictable seasonal movements.

From such lists, potential focal species can be placed in their respective categories. Some species will be nested under the needs of another species or simply duplicate those needs. Obviously, duplicative species should be eliminated from a category as it is important to keep the focal species list as short as possible (each species will require research and monitoring).

Using Indicator Species to Assess Quality of Habitat and Connections

Monitoring indicator species can be useful to assess degree of threat, and they provide an excellent means to gauge the success or failure of conservation actions. Although a hands-off approach to management would be preferable, there are simply too few natural regions in North America that are large enough to hold viable populations of all native species and exhibit naturally regulated patterns of disturbance and recovery. Indeed, many regions will require restoration programs to heal past wounds (e.g., regions where carnivores have been eliminated, fires have been suppressed, prairies overgrazed, riparian quality destroyed, exotics introduced, beaches removed, wetlands drained, etc.). Management will be essential to prevent further declines of native species and systems, and vigilant monitoring of carefully selected indicator species can provide information to help restore and protect natural processes.

illustrations by L.J. Kopf



UMBRELLA SPECIES

Focal species denoting wilderness quality could indicate such factors as vulnerability to human presence, roads, and hunting (both legal and illegal). Grizzly bears, jaguars, and quetzals (*Pharomachrus mocinno*) would be examples of animals that require the protection of a wilderness core area, as opposed to wolves (*Canis lupus*) which can exist in both a wilderness core and surrounding buffer zones (if tolerated by humans). Microendemic species are also good indicators of ecosystem quality. For example, there are areas in México where nearly each mountain holds distinct species of an arboreal lizard genus (*Abronia*), which are flawless indicators of habitat quality in mesophyll mountain humid forest (Good 1988, Sánchez pers. obs.).

Individuals of resource-limited species (nectarivorous birds, cavity-nesting birds) require certain relatively rare or patchy resources; those resources determine the carrying capacity at the time of lowest availability (Lambeck 1997). A process-limited species is sensitive to an ecological process such as fire, flood, or grazing, and it could be utilized to monitor such events (Lambeck 1997). Individuals of dispersal-limited species are restricted in their ability to move between patches of habitat; the linkages they require should be ranked according to the minimum width, length, and vegetation structure necessary for animals to use those biological connections successfully (Lambeck 1997). This implies definition by function and not just by the presence of a particular vegetation structure.

Biological connections should permit movement of animals, energy, and materials over long distances. For example, salmon returning to Idaho from the Pacific Ocean are important sources of protein that help improve productivity of grizzly bear populations (as well as other animals). Biological connections provide for natural dispersal of individuals within an area, seasonal migration of groups, genetic exchange between populations, and ability to shift natural ranges in response to climate change. Thus, issues of scale come into play in planning connections (and issues of scale can be among the most difficult to understand).

In general, biological connectivity is a convoluted topic. Different species can react to the same habitat corridor as a travel conduit, a permanent home, a sink with insufficient resources to maintain long-term persistence, an agent in disease transmission, a vehicle that promotes contact with an exotic competitor, or an avenue that provides increased contact with a predator. This panorama of effects has produced criticism of the corridor concept (Simberloff and Cox 1987, Simberloff et al. 1992), in particular around the negative effects of edges (Wilcove 1985, Simberloff and Cox 1987, Yahner 1988). Some species, such as songbirds, are more susceptible to the negative effects of edges than are other species, such as deer, which often benefit.

Despite those complicating factors, connectivity in some form is essential for many species, especially large animals, which cannot maintain viable populations in small, isolated areas (Frankel and Soulé 1981, Noss and Harris 1986, Beier 1993, Soulé 1991, Noss and Cooperrider 1994). We should remember, however, that whereas large animals may be excellent for estimating reserve size (as an umbrella), they should not be the sole choice for planning connections because they can move across gaps in habitat

that are inhospitable to smaller species. Corridor design and management should consider width requirements necessary for movement of the larger focal species, but planners should also consider the degree of connectivity that the least vagile focal species needs to maintain viability. For example, pine martens (*Martes americana*) do not cross treeless expanses much wider than 100 meters in winter (Koehler and Hornocker 1977), a distance easily traversed by most other carnivores.

If connections are designed for avenues of long-distance dispersal, we recommend that consideration be given to corridors wide enough to house residents of the focal species (Noss and Cooperrider 1994). Such corridors more closely resemble historical conditions of connectivity. Many species of vertebrates allow dispersing juveniles to pass through their territories. In addition, the typical dispersal pattern for many polygynous mammals is for females to remain fairly close to the area where they were raised, whereas males make the long-distance movements (Greenwood 1980, Dobson 1982). Areas wide enough to house residents would allow females to disperse, which could be important for natural restocking of extirpated colonies in a metapopulation. In addition, wide connections would diminish the ratio of edge to core, which could reduce the spread of those exotics that move via disturbed conditions.

The management complexity of connectivity becomes progressively more complicated as scale increases (Sánchez 1996). Whereas connections within a single protected area may be relatively simple, movement that crosses agency, state, and international boundaries increases the number of managing partners. Connecting two protected areas that are already separated by roads and human settlements increases the number of social, economic, and enforcement dimensions (Sánchez 1996). These considerations should not be taken lightly and must be addressed.

For practical purposes, preserving existing corridors is preferable to trying to reconstruct them. Natural habitat should not be changed to create artificial corridors, as that could produce deleterious effects in a highly heterogeneous landscape where two subspecies exist in close proximity geographically but still may be separated genetically by a million years or more (Sánchez 1996).

Alternatives to restoring biological connections have been presented (Simberloff and Cox 1987, Simberloff et al. 1992). For example, areas large enough to hold residents could be linked like stepping-stones between reserves. Stepping-stones, however, could easily become habitat sinks that increase mortality. Small populations that cannot move between habitat islands would have a higher probability of inbreeding depression or demographic problems than connected populations (Simberloff and Cox 1987). Those isolated habitat patches would also be more susceptible to poaching.

Another alternative suggests that managers capture and translocate animals between isolated populations. Although it may be physically possible to move animals between sites, there may or may not be a functional benefit. Homing behavior and excessive movement from the release site have been a major problem in carnivore translocations, resulting in drastically reduced survival (Linnel et al. 1997). Several pumas (*Felis concolor*) translocated over 400 kilometers returned to their original territories (Logan et al. 1996). A young male tiger (*Panthera tigris*) translocated to a new area was quickly killed by the resident male (Seidensticker 1976).

Most important, neither of these alternatives is a viable attempt to restore ecologically healthy expanses of land. Indeed, both tactics may perpetuate existing patterns of habitat fragmentation. Thus, large animals may persist in patches—at least over the short term—but their numbers may remain too small for natural selection to act, and they would have little impact on ecosystem processes. Additionally, processes such as fire, nutrient cycling, grazing, and flooding would remain altered by isolation and reduced scale. At our present level of knowledge, we believe protecting and restoring connections is a better step toward restoring ecological integrity.

Using Umbrella Species for Reserve Design

Some biologists have recommended using a suite of focal species because no single species can assess habitat quality or quantity necessary for all other organisms of the reserve network (Noss and Cooperrider 1994). For example, the percentage of species diversity protected under a single umbrella species will likely decline as one moves from a homogeneous to a heterogeneous landscape with high beta diver-

The Klamath-Siskiyou Ecoregion:

Case Study for Focal Species Analysis

by Carlos Carroll, Reed Noss, and Keith Slauson

When all the variables that go into evaluating potential focal species are considered, the complexity may seem overwhelming. Regional conservation activists may be tempted to fall back on selecting the most charismatic or well-known species. These issues are not merely academic. The choice of focal species has real consequences for reserve selection and design that translate into on-the-ground strategic decisions as to which areas to protect. An example from the Klamath-Siskiyou ecoregion of northern California and southern Oregon may help demonstrate the relevance of the focal species concept and the importance of selecting appropriate species.

The Klamath-Siskiyou Biodiversity Conservation Plan (KSBCP) is an ongoing effort to create the first scientifically defensible regional reserve design that integrates focal species analysis with other approaches, including special element mapping (e.g., rare species, old growth, roadless areas) and representation (GAP) analysis (Vance-Borland et al. 1995). Although special elements and representation approaches could tell us what kinds of habitats to protect, we recognized that only focal species analysis would provide information on the necessary size and arrangement of reserves, in addition to providing supplementary information for habitat protection.

The Klamath-Siskiyou region is one of the last refuges of the Pacific fisher (*Martes pennanti pacifica*), a threatened forest carnivore in the weasel family whose habitat needs are poorly understood. Based on the association of the fisher with this region, the concern about its status, and preliminary information linking it to older forest, we tentatively selected the fisher for further analysis as a potential focal species.

By combining data from regional forest carnivore surveys with habitat data derived from satellite imagery, we were able to predict with great accuracy the distribution of the fisher in the large portions of the region (especially on private lands) that have not been surveyed (Carroll et al. 1999). Critical core areas and landscape linkages were identified, which will be incorporated into the mapped conservation plan. Besides these maps, two more general conclusions emerged from our analysis. The most important fisher habitat lies outside existing protected areas, primarily in low- to mid-elevation biologically productive forests. Many of these areas have been degraded to some extent by logging and roading, and may not have previously attracted conservation interest for this reason. Our research found that such areas represent critical habitat for mesocarnivores and may need to be "re-wilded" to restore these species. Secondly, the presence of fishers in any particular watershed is determined by regional population processes operating at scales larger than those usually considered by agencies. A successful conservation plan requires a multi-ownership regional strategy to ensure that habitat areas will be large and connected.

An incidental benefit of this work was the rediscovery of a population of the Humboldt marten (*Martes americana humboldtensis*). This coastal marten subspecies had been thought extinct. It is similar to the fisher in that it needs low-elevation forest. Because of its exclusively coastal distribution, however, it has been harder hit by habitat reduction from logging on private lands. Its viability looks to become a major issue as logging of the last old-growth redwood groves on private lands accelerates.

Interest in the fate of these forest carnivores has not been limited to the Klamath-Siskiyou region. In the neighboring North Coast region of California, another Wildlands Project-inspired mapping effort has been initiated by a group called Legacy—The Landscape Connection. This organization is training volunteers from local watershed groups to survey their areas for the elusive fisher and marten. Information from these surveys will be integrated into the regional reserve mapping process. A carnivore Index of Biotic Integrity (IBI) is being developed that will rate the landscape integrity of an area based on the assemblage of carnivore species found there. Besides the benefits of involving local conservationists, this approach allows groups with more limited access to GIS and computers to still incorporate the needs of multiple focal species.

Although the mesocarnivore study has provided important insights into designing a conservation reserve network for the region, we have come to realize that a multi-umbrella species approach, such has proved useful in the northern Rockies (Craighead et al. 1997), is necessary in the Klamath-Siskiyou. For example, the fisher is a habitat specialist on older forest but appears relatively tolerant of roads. Therefore, it would not make a good umbrella for wilderness-dependent species such as the grizzly bear.

In order to incorporate the needs of species with the greatest sensitivity to human activities, we have recently begun a second phase of our focal species analysis. This project will evaluate the feasibility of reintroduction of large carnivores to the Klamath-Siskiyou region. The potential focal species are the gray wolf, grizzly bear, and wolverine. These species are either extirpated (wolf and grizzly) or believed extirpated or present at very low densities (wolverine). The grizzly's extreme sensitivity to roads and human disturbance makes it a valuable umbrella species for defining core reserves (Craighead et al. 1997). The gray wolf is a habitat generalist with relatively high fecundity whose survival is mainly limited by human persecution, often associated with roads (Mladenoff et al. 1995, Paquet et al. 1996). The wolf may prove useful to help define buffer zones and corridors, as it is more tolerant of human presence than is the grizzly (Fritts and Carbyn 1995, Craighead et al. 1997). The wolverine has an extremely large home range size (an average of 1500 square kilometers for males in Idaho; Copeland 1996), and may be a useful species for defining connectivity at coarse scales—that is, between regions. In the long term, all of these carnivore species will require inter-regional habitat linkages (for example, to the California and Oregon coastal ranges, Cascade Mountains, and Sierra Nevada) in order to maintain viable populations. Evaluation of these potential focal species will strengthen the overall KSBCP strategy, as well as help initiate a campaign to restore the ecological integrity of the region by bringing home its full complement of native predators. By integrating the habitat requirements of large carnivores and forest mesocarnivores, our plan should ensure the viability of a larger suite of species.

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FLAGSHIP SPECIES

sity (Sánchez 1996). The latter condition, typical of many tropical areas, often includes many locally adapted endemic species. An endemic plant requiring specific conditions may be restricted to a small area that is not necessarily included in the movements of a single umbrella species. A heterogeneous landscape may therefore require a larger suite of focal species than a more homogeneous system.

Umbrella species can be used to protect a substantial fraction of a region's species diversity. If the umbrella species is also sensitive to human disturbance, it might serve as both an umbrella and a wilderness indicator species. Considering the needs of a species that is both an umbrella and wilderness indicator could increase the chances of protecting enough high-quality land for an intact system.

A frequently cited problem is that umbrella species such as wolves, pumas, and black bears are not truly wilderness indicator species, as they can exist in human manipulated areas if hunting pressure is controlled. They can even survive a level of forest perturbation that will cause other, more specialized, species to decline. This points to the need for carefully defining the purpose of focal species. The wolf is an umbrella that provides an idea of how much land to include in a reserve system, and it is both a core and buffer species. It is an indicator of the level of human persecution, but it is not an indicator of wilderness quality per se. If the wolf is used as an umbrella, it may be necessary to choose indicator species to represent quality of the core (perhaps species such as lichens, songbirds, cavity-nesting birds, pine martens, wolverines, etc.) and to establish an acceptable level of compatible use in the buffer.

Umbrella species can also be flagship and keystone species, but whether or not there are multiple purposes, we suggest the umbrella species should exhibit at least several of the following qualities: (1) large area requirements, (2) a defined habitat association, (3) a known life history, preferably through an ongoing study or monitoring effort, and (4) potential for regional viability or reintroduction. When calculating area requirements of umbrella species, we should think in terms of what is necessary for viable populations, whether viability is measured at local or regional scales (Berger 1997).

If terrestrial carnivores are used as umbrella species, we recommend considering females. Male carnivore movements can be extensive, highly variable, and related mainly to social status, behavioral spacing mechanisms, and hormonal production (Ewer 1973, Powell 1979). For example, the male weasel's (*Mustela erminea*) territorial system breaks down during the breeding season, and a class of super males trespass far beyond their home areas to reproduce (Sandell 1986). Female carnivores, on the other hand, are the base of a wild population. They are more valuable demographically and will raise their young in areas where critical resources are concentrated and easiest to obtain (Lindzey 1982, King 1989, Miller et al. 1996). They need to satisfy elevated energy requirements with minimal time away from their young, so they are more restricted to optimal habitat and their home range sizes more accurately represent the quality of that habitat (King 1989, Lindstedt et al. 1986). For those reasons, it is probably more practical to rely heavily on female movements and spatial needs. It should be noted, however, that in highly fragment-

ed or disturbed habitat, considering only female needs can result in low mating success (Beier 1993). In addition, the system will vary depending on the natural history of the species chosen, and in some cases the males may protect the breeding territories (e.g., raptors).

A defined habitat association, at least at some level, is also important. Some species can survive in many different environments (including human-dominated ones), and they will not provide as good a definition for reserve boundaries. Indeed, some species are now abundant in areas where they did not previously exist (e.g., coyotes), or where they previously existed only in low numbers, because they have exploited edges created by fragmentation. Thus, species richness does not measure the quality of an area (Sampson and Knopf 1982, Van Horne 1983, Soulé 1991, Noss and Cooperrider 1994). The maintenance of native species usually requires large areas of undisturbed habitat (Kitchener 1980, Noss 1983).

Choosing an umbrella species that has already been well-studied is very helpful. Many investigations conducted in natural systems with unpredictable and inherent fluctuation take five to ten years to produce solid data, but land-use decisions often cannot wait this long. An umbrella species with an existing data bank, at least from the general geographic area, would provide a huge advantage in time saved.

It is also important, however, to pay attention to the type of data that have been collected. We recommend integrating geographically local (intensive) and regional (extensive) data. In some cases only presence/absence data are available, which can be problematic. This type of information often says nothing about habitat preference, persistence, or animal needs for reproduction. In presence/absence databases, a juvenile male sighting can carry as much weight as that of an adult female holding territory. Yet, the juvenile may be dispersing over a long distance or may be living in habitat that represents a population sink (i.e., a habitat with higher rates of mortality than natality and thus only sustained by immigration; Gilpin 1991, Hanski and Gilpin 1991) because the prime habitat is already occupied. So, even if there are enough sightings in an area to conclude that a population exists, sightings still could be misleading. Alternatively, intensive demographic studies can often separate low-quality habitats, which may deceptively contain high densities (e.g., of dispersing subordinates that are unlikely to survive and reproduce), from high-quality habitat that supports stable and dependable adult populations (Van Horne 1983, Pulliam 1988).

A caveat about intensive data is that different investigative methods can influence results (Laundré and Keller 1984). Hence, different home range sizes calculated in different studies may be attributed to habitat quality, method of data collection, method of analyzing data, or simply sample size. And, the limited spatial scale of intensive demographic studies may miss important regional-scale dynamics. This suggests the need for integrating extensive data with intensive demographic studies.

Presence/absence data may be all that is available for many lesser-known species, and several approaches have been developed to make use of this type of information. For example, presence of animals in sink habitats is expected to be more variable over time than in higher-quality source habitats (Wiens 1989, Howe et al. 1991). Long-term survey and monitoring data sets, which may be available from land management agencies, could be used to distinguish source from sink habitats for conservation planning purposes. Records of presence/absence over time also allow measurement of the rate at which vacant habitat is colonized, a critical attribute for dispersal-limited species (Karieva et al. 1996). In fragmented habitats, "incidence function" models that relate the presence of a species in a patch to patch isolation and area may be useful in detecting critical connectivity thresholds for a particular species (Hanski 1996, Hanski et al. 1996).

Choosing an umbrella species that has a large number of individuals in its population will increase the likelihood that data are representative of natural circumstances. The larger the population, the less likely data will reflect the variability and complexities suffered by a small population (Soulé 1987, 1988). Alternatively, an extirpated species could be an umbrella if a future reintroduction is planned. If species are being added to the area, the resulting interspecific interactions may influence the type and amount of habitat used by existing focal species. Very few data exist on ecological interactions between species, so the plan should reflect the capacity for future adjustments. As an example, it will be important to monitor the ecological changes that occur as wolves return to Yellowstone National Park.

Several authors have reported problems using certain species as umbrellas. Berger (1997) reported that the spatial needs of a small herd of 28 black rhinos (*Diceros bicornis*) did not assure healthy populations for six other herbivores. Rainfall was highly variable, and other herbivores changed their ranges in response to precipitation patterns, whereas the black rhinos did not (Berger 1997). When he modeled spatial needs for a black rhino population of 100, the population numbers of the other herbivore species included under the umbrella increased significantly (Berger 1997). This indicates the need to consider area based on a viable (or at least large) population of the umbrella species. Preferably the viable population already exists, but if not, the area should be calculated to foster the recovery of the umbrella.

Kerr (1997) found that only four regions in North America still had a complete set of carnivores; he used those places as centers for reserves. These particular locations, however, did not significantly protect North American diversity in the taxa *Lasiolossum* (bee genus), Plusiinae (a moth subfamily), and Papilionidae (a butterfly family). Kerr concluded that the use of carnivores as an umbrella was unreliable for invertebrate conservation. We see a problem with this interpretation, however. The present distribution of many large carnivores is largely limited to areas inhospitable to humans; these areas probably do not represent historically prime habitat for either carnivores or invertebrates. Furthermore, three groups of invertebrates do not encompass biodiversity.

Kerr's (1997) study demonstrates the need to define the goals of a reserve clearly. The remaining population of a rare carnivore is an excellent location for protection under a "special elements" strategy, both for wilderness quality and as a source for restoring that carnivore to other areas. But, if the goal is protecting three taxa of invertebrates, the location of reserves should not be based on the present distribution of carnivores. In general, an umbrella/wilderness indicator species is more suitable to the question of how much high-quality land is necessary.

Flagship species

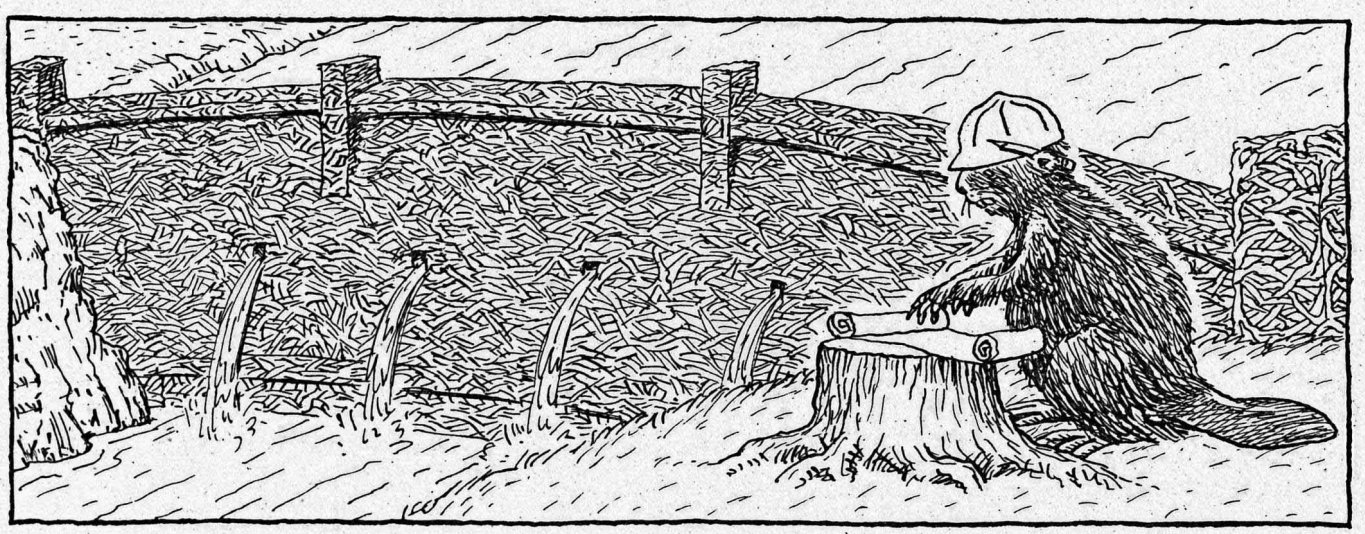
In addition to the biological considerations of selecting umbrella and indicator species, an array of important nonbiological variables should be examined. For example, what are the social, economic, and political ramifications of managing a focal species? What are the prevailing attitudes toward the focal species? Is the species commercially valuable? Is it prized by hunters or anglers? Which organizations are interested in the species or mandated to manage it? Are there any pertinent laws or regulations associated with the species (e.g., game species or species with special management status)? Which species can effectively educate the public about a conservation problem?

For example, using endangered species as flagships in reserve planning might stir our souls, but using *only* endangered species will make some members of the general public nervous or antagonistic. Including animals such as elk (*Cervus canadensis*), moose (*Alces alces*), pumas, black bears (*Ursus americanus*), and species of trout and salmon in the suite of flagship species will involve hunters and anglers, whose support can be critical to conservation efforts. Kellert (1990) found hunters supportive of wolf restoration in Michigan and recommended using this fact to counter antagonistic attitudes in the agricultural community. In many cases game and fish species also embody more than one category of focal species.

We are not recommending avoidance of endangered species in reserve design, but if employed, they should be used judiciously and not exclusively. Because of legal restrictions and small numbers, it can take longer to collect data on endangered species, and information may be influenced by artifacts of small population size. Still, many endangered species, such as sea turtles, inspire large sections of the public and help to educate people about conservation issues.

Keystone Species

Keystone species should be a pivotal part of reserve planning. Keystones contribute greatly to maintaining a biological system; their removal initiates changes in ecosystem structure, usually coupled with loss of diversity. Protection of keystone species gives managers an avenue to educate the public about the relationship between the various parts of an ecological system (a flagship role). Fiscally, it makes more sense to invest in management of a keystone species than to initiate individual management programs for all the species that depend on that keystone.



Managing keystone species therefore directs a gradual transition from traditional single-species management to management of ecosystems.

We must remember that keystone status is based on human perception of a species' role. All species contribute to ecosystem function in some way, and the charisma of some makes it easier to see their value. Yet, it is also clear that certain species contribute more than others to maintaining ecological health. Indeed, the same species may play different roles in different systems. For example, the activity of beavers in mountain-meadow streams plays a critical role in that ecosystem's structure, but beavers living in the banks of larger rivers have considerably less ecological impact (Naiman et al. 1994).

Conclusion

In this paper we have discussed the role of focal species in planning a reserve network. Focal species can contribute as keystones (ecological definition), umbrellas (management definition), flagships (public relations and fundraising), or indicators (monitoring quality). Although the categories are functionally different, a species may fall under more than one heading, which emphasizes the need to define the purpose of each focal species carefully. Focal species are an important component of reserve design, because protecting processes and patterns cannot be accomplished without a reference to the species that live in the area. Moreover, it will be difficult to assess the level of wilderness quality without reference to the species most sensitive to human presence. Our intention in this paper was to clarify some of the questions around using focal species in reserve design. We hope it contributes to a vision of how focal species can guide us closer to the goal of protecting and restoring wild areas.

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THE POLITICS OF Y2Y

PART 3

Protecting the Wild Heart of North America

by David Johns

A SINGLE ROCK CAN DETERMINE WHICH DIRECTION A STREAM FLOWS—SOMETIMES *giving rise to entirely different watersheds. Conservationists must identify and focus energy on such key places in the political world. The political realm, like the biological, is a series of nested hierarchies: decisions are made at many levels, often interconnected in complex and nuanced ways. Understanding and operating at all levels is important.*

In parts one and two of this article on developing a political strategy for the Yellowstone to Yukon Conservation Initiative (Y2Y), I've discussed organizing ourselves, working with allies, mobilizing the public, and some of the main tools for getting decisions made. In this concluding segment, I look at the specific places decisions are made.

The many decision-making bodies that shape public policy for the Y2Y region have widely varying jurisdiction over different aspects of public policy. The table (page 95) summarizes the different levels of governmental decisions for the region.

In the decision-making hierarchy, there are some differences between the United States and Canada, but more similarities. Both countries have counties, municipalities, or districts where local decisions important to conservation are made. Local authority is limited by the power granted by state and provincial governments. While local jurisdictions may make particular land use decisions—how to zone a particular piece of land, for example—the categories (residential, commercial, density) and standards for land use, procedural rules, and so on are set by provinces and states.

Both the US and Canada are federal systems in which power is shared between the central governments and the states or provinces. Canadian provinces play a larger role than US states, however, and provincial powers are not as easily supplanted by the central government. The US federal government can more easily regulate areas under state jurisdiction through the commerce power or by attaching conditions to spending programs. In Canada, the Yukon and Northwest Territories, as territories, have less autonomy than provinces. The provinces of Alberta and British Columbia, unlike Montana, Idaho, and Wyoming, own the largest share of public lands within their boundaries. In both countries there are many areas of law where federal and provincial/state governments share authority.

In Canada and the United States many First Nation or Native American groups exercise varying degrees of self-government. While all lack the full sovereignty of nation-states, they have the right to make many of the rules governing their lands. Some groups have powers akin to those of local governments, while others have powers approaching those of states or provinces. Like local, state, or provincial governments, these tribal entities are important decision-makers in the Y2Y region and no comprehensive conservation program can be implemented without favorable decisions from them.

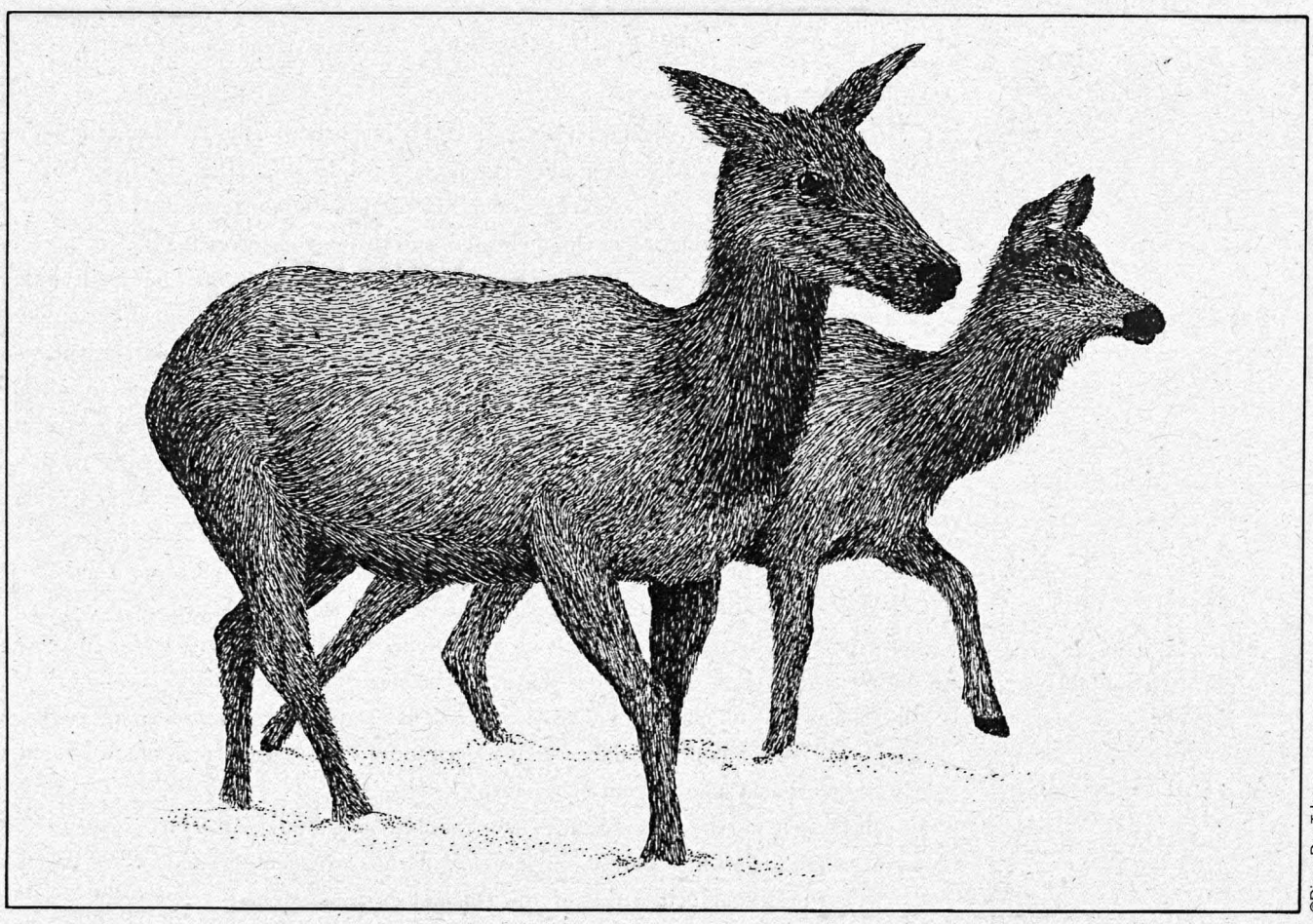
Hairy Woodpecker by Libby Davidson

In crafting a political strategy for Y2Y, we must remember that not all decisions affecting the public are made *in* public, by public bodies. Economic power is overwhelmingly in private hands, and few hands at that. The decisions of large economic actors can have an impact that dwarfs that of many political jurisdictions. Think of the decision to develop—or not develop—a mine. The largest corporations control more assets and employ more people than all but the biggest nation-states.[1]

Big business not only exercises power through direct economic decision-making that has a profound effect on the integrity of the natural world (production, pricing, investment, etc.), but the business elite also wields enormous influence over elected decision-makers. The public holds government accountable for economic performance, but remains largely unaware that government doesn't truly control the economy. Governments depend on the cooperation of business to secure the economic outcomes they think people want or expect. This means, in turn, that business can drive a hard bargain with government: "If you want jobs or investment," say the corporations, "we want this kind of development, and we want it here rather than there."

These problems are compounded by globalization and concentration of economic power. When the stores on Main Street are replaced by the multinational chain, prices may be lower, but decisions are made far away from the communities that are affected by them—there is no relationship with the community other than profits. Enterprises do not have to live with the economic or ecological consequences of their actions.

The ability of many businesses to move production centers to places with the lowest labor cost and the most minimal environmental laws means not only that people are ever more divorced from the consequences of their consumption, but that imposing responsible behavior locally becomes more difficult. Communities



1. In the United States about 4300 people, or 2/1000 of 1% of the population, control two-thirds of banking and insurance assets, half of industrial assets, and half of communication assets and utilities. There are 200,000 industrial corporations in the US. The top 100 control almost 75% of all of industrial assets; the top 5, 28%. In 1950 these top 100 companies controlled only 40%. Nearly half of all wealth and nearly 60% of all business interests are owned by one-half of 1% of the US population. Five hundred corporations account for 70% of world trade.

elk mother & fawn by D.D. Tyler

lose bargaining power, and campaigns against destructive behavior must be national or international. National public institutions, as unresponsive as they often are, become even weaker. Conservationists do not have a seat at the World Trade Organization and can only influence it indirectly through pressure on national governments. Yet such bodies may impose trade sanctions on countries that enforce laws protecting the natural world.

One of the biggest challenges for conservationists is operating effectively in the economic arena outside their region. Organizing market-based action directly aimed at specific enterprises may be necessary. The importance to Y2Y of decisions made in New York, Toronto, Tokyo, or London is inarguable; and if we ignore this fact or depend on government for relief, we will be disappointed.

Key decisions are also made by local and regional landowners who respond to incentives, subsidies, and the concerns of their neighbors. And of course the public continually makes important decisions affecting species and ecosystems—where people ski, their demand for roads and sprawling suburbs, and consumer demand for endless variety of products all have profound consequences for Nature.

Brock Evans once said that the key to winning conservation battles is "endless pressure endlessly applied." He is right. We must out-pressure our opponents. We must do it more intelligently because we have fewer resources to start with. We must apply that pressure on the right decision-makers. And we must enjoy what we are trying to protect—the wildlife and wildlands from Yellowstone to Yukon—for they will nurture us during the long campaign ahead. ❙

When not working to further the Y2Y Conservation Initiative, David Johns (POB 725, McMinnville, OR 97128), a founding board member and first executive director of The Wildlands Project, teaches political science.

ACKNOWLEDGMENTS

The economic work of Ray Rasker, Tom Powers, and others has done much to clarify the very high social and economic costs—we know all too well the biological costs—of an extractive economy run amok. They have also documented the decline in importance of these industries in the Y2Y region. See, e.g., Ray Rasker, A New Home on the Range *(Bozeman, MT: The Wilderness Society, 1995).*

I want to thank Bart Robinson, Louisa Willcox, Colleen McCrory, John Davis, Harvey Locke, and the Y2Y network for contributing to this paper in ways too numerous to mention. Any mistakes, wrong-headed assessments, or foolish recommendations are solely my responsibility.

Local Level Decisions

(Counties, Municipalities, or Districts)

- land use and zoning, including variances
- planning and growth management
- road-building
- education, including curriculum decisions
- economic development policies designed to keep or attract business

Provincial and State Decisions

- delegate general and specific authority to local government
- economic development policy (e.g., subsidies, taxation)
- incentives and disincentives for conservation and other land uses
- business regulation
- road-building; road standards, including location, type, and mitigation (if any); establish most rights-of-way
- other transportation policy and infrastructure—ports, airports (US only)
- establish and manage parks and other public lands, especially in Canada where most public (Crown) lands are provincial
- wildlife laws, especially hunting, fishing, and other game laws
- endangered species protection
- water projects and dams (Canada)
- general environmental protection
- balance property rights and responsibilities of landowners (US)
- water quality standards and water rights
- soil and water conservation
- air quality
- regulation of toxics
- forest practices
- mineral, oil, and gas extraction and transmission (except in Canadian territories)
- other energy transmission and use

Federal Decisions

- public lands management (especially US)
- taxation affecting land use, business practices, inheritance, energy use
- general economic policy and economic policy aimed at conservation
- balance property rights and responsibilities of landowners (US)
- forestry and rangeland practices (US)
- transportation policy, including roads (US only), rail, air, and shipping
- mineral, oil, and gas extraction (US and Canadian territories)
- other energy generation, licensing, transmission (US)
- establish and manage military reservations
- water projects and dams (US)
- general environmental protection
- endangered species protection (US)
- international treaties that address conservation directly (e.g., CITES) or trade agreements (e.g., NAFTA) that may have the same effects on the environment as any domestic economic policy; treaties may be bilateral or multilateral

A Turning Point *for Northeastern Wolf Recovery*

by Kristin DeBoer

It is not often when we realize that we are experiencing an historic moment. Some events in our personal histories are obvious—a marriage, a birth, a graduation. But once in a while, a particular day marks a turning point in the history of an ecosystem—those are times to remember. Such a day came on September 29, 1998, when a meeting was convened to discuss the future of the eastern timber wolf in the Northeast.

It was a brilliant autumn day in the White Mountains of New Hampshire. Representatives from state and federal wildlife agencies, conservation groups, and landowner associations had been invited from New Hampshire, Maine, Vermont, New York, Massachusetts, and even Minnesota. I left before dawn from Boston. While driving north on I-93, flipping through early morning radio programs, I soon realized that this would not be an ordinary meeting. According to the radio announcer, the Pulp and Paper Council had organized a protest. When I finally pulled into the parking lot at the foot of Mt. Washington, I saw the signs: NO WOLVES! NO WOLVES!

Perhaps the strident calls of the protesters had helped attract media interest, because as I walked inside the meeting, there was little pomp and circumstance. Informally, as if it were the most normal news in the world, the US Fish and Wildlife Service (USFWS) announced that it will begin designing an eastern timber wolf recovery plan for Maine, New Hampshire, Vermont, and New York during the winter of 1999.

To the conservationists in the room, this news sounded almost too good to be true—a recovery plan was exactly what we had been requesting for the last six years. Although the USFWS had been receiving a stream of letters, phone calls, and requests from the public to begin a wolf recovery program, they had hardly paid attention to the wolf in this region—until now. Thanks to this public support, the USFWS finally seemed to recognize that their obligation to the wolf would not be fulfilled until the species recovered in the Northeast.

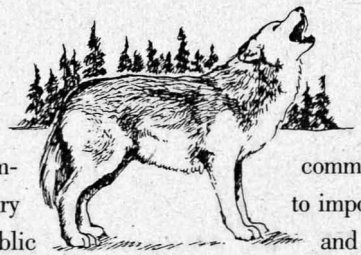
Progress or Compromise?

Like most environmental decisions in the 1990s, however, this good news does not come without some worrisome details. The USFWS also announced plans to downlist the wolf in the Northeast from "Endangered" to "Threatened," a less urgent status under the Endangered Species Act (ESA). Certainly there is no scientific or legal basis for this proposed action. Indeed, there are no self-sustaining wolf populations left in the Northeast to downlist.

This proposed downgrading is clearly a political move designed to lessen opposition to a wolf recovery program. Although "Threatened" status theoretically brings nearly the same level of protection for wolves, it also allows for more *flexibility* under the ESA, giving the state wildlife agencies and corporate landowners more control over whether and how wolf recovery proceeds.

The question before conservationists now is: Do we spend our time screaming and yelling about such a blatantly political compromise? Or do we make the most of it, and instead put our energies into developing an effective wolf recovery plan?

illustration by Nancy Roy



The reality is that wolf habitat in the Northeast consists almost entirely of industrial timberlands, which is in stark contrast to wolf recovery programs elsewhere. The large base of federal public lands in other regions, such as Yellowstone National Park in Wyoming and National Forests in Montana, central Idaho, New Mexico, Arizona, Michigan, Minnesota, Wisconsin, and North Carolina, enabled wolf recovery programs to proceed. This is not to say that private landowners have not been involved—they have. Many private entities, from family ranchers to large corporate logging operations, have been willing to allow wolves to live on their land. So far, however, wolf recovery programs have relied on public lands to protect core habitat.

The Northeast is different. The predominance of private land in this region makes it very difficult for federal agencies to implement any Endangered species programs without the consent of landowners and the state, which is exactly why wolf recovery has been so slow in coming. Now we are faced with a compromise that might break the gridlock. The USFWS expectation is that a Threatened status could bring just enough flexibility to induce the states and landowners to become positively involved; perhaps they are right. A recovery plan, with or without Endangered status, brings the opportunity to inform the public about wolves and generate widespread support (the only thing that will really make wolf recovery happen), to begin a scientific review of the wolf's habitat needs, and to develop an action plan for a successful recovery process.

Wolves in Working Forest or Wilderness?

But what about bringing wolves back to private industrial timberlands? The state of Maine has the most available wolf habitat in the Northeast—about ten million acres of industrial or "working" forest, land largely owned by a handful of multinational pulp and paper corporations. In the eyes of the timber industry, the prospect that wolves could survive on their land is "Mother Nature's seal of approval" for their clearcuts, monocultures, and herbicide spraying. If wolves return, the paper companies will likely use that line to boost their environmental image.

Like it or not, it is true that wolves do not absolutely require *wilderness* habitat to survive. It is also true that humans can *survive* in slums with atrocious housing conditions, but no sane person would choose such a home for their family. A reasonable assumption is that wilderness—where the species evolved and thrived across the northern hemisphere for millennia—is best for wolves. But perhaps we should not be afraid to accept the idea of wolves outside of wilderness, as well. Wolves are spreading far beyond Wilderness Areas in northern Minnesota, Wisconsin, and Michigan. In Europe, wolves live alongside rural communities. Maybe it doesn't serve wolves or humans to impose strict divisions between where wolves should and should not live.

Wolf opponents claim that some conservationists will use the wolf "as a tool to lock up the forest." For that reason, some wolf advocates avoid overtly connecting wolf restoration to forest protection. On the other end of the spectrum, some wilderness advocates argue that we must protect habitat first, before the wolf can return. Yet, perhaps it will be the very presence of wolves that will encourage people to restore and protect large contiguous areas of wilderness in the Northeast.

The point is that we should not argue over which should come first, the wolves or the wilderness. Instead, we should take opportunities as they come: to restore top level carnivores; to preserve large core reserves; to promote connectivity between protected areas; and to heal the land of its wounds. The wolf cannot and should not be used to force corporate landowners to change their forest practices. But, neither should conservationists hide the obvious truth that the reason to bring back wolves is not only to ensure the survival of the species, but also to begin restoring whole healthy ecosystems. Wolf recovery, by itself, cannot solve the problem of degraded, fragmented ecosystems, but it is one way to start restoring wildness to our forests. If we have to begin by returning Threatened wolves to the "working" forest, so be it—but let's not stop there.

Just six years ago, the idea of wolf recovery in the Northeast was deemed impossible. Now we have reached the point where it is not a question of *if* wolves will return, but *how* and *when*. Gaining the support of the USFWS to initiate a wolf recovery plan is an historic turning point. A recovery plan will set the stage for the wolf's comeback—if the public supports the idea. And if wolves are allowed to return, the forest will regain a bit of its wildness. And if some of the wild seeps back into the forest, it will start to seep back into our souls. This is ultimately what wolf recovery will take—courage from our deep-felt convictions to complete the job of rewilding the Northeast. ❙

Kristin DeBoer is wolf recovery coordinator for RESTORE: The North Woods (POB 1099, Concord, MA 01742; 978-287-0320; restore@restore.org).

Letters thanking the USFWS for agreeing to draft an eastern timber wolf recovery plan for the Northeast may be sent to Jamie Rappaport Clark, Director, US Fish & Wildlife Service, Washington, DC 20240.

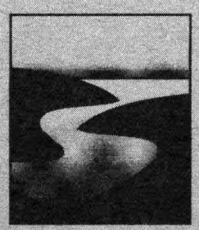
illustration by Ann Young

OUR NATIONAL PARK SYSTEM FACES A NEW THREAT: the burgeoning use of motorized recreational vehicles. On rivers, lakes, and coasts, personal watercraft (commonly known as jet skis) abound. The personal watercraft industry sells approximately 200,000 units per year and has sold a total of 1.2 million units in the US. In the winter, trails, meadows, and scenic byways are overtaken by snowmobiles. An estimated 30,000 snowmobilers visit Voyageurs National Park annually; in the 1993–94 winter, 87,000 roared into Yellowstone.

These machines, which can rapidly propel riders into wild areas, entice many people to visit public lands and National Parks. Motorized recreation, however—unlike lower-impact forms of recreation such as kayaking, hiking, birdwatching, and snowshoeing—pollutes the air and water, disturbs wildlife, and destroys the outdoor experience for others. Examining the impacts of motorized recreational vehicles prompted Bluewater Network, a project of Earth Island Institute, to question whether this activity belongs in our National Park System.

In 1916, the National Park Service Organic Act mandated that the National Park Service (NPS) "leave [the parks] unimpaired for the enjoyment of future generations." Allowing the use of motorized vehicles (thrill craft) on public lands is inherently incompatible with this mission. Their two-stroke motors dump up to 30% of their fuel and oil unburned into the environment, creating enormous amounts of hydrocarbon pollution. A single jet ski dumps up to three gallons of unburned fuel into the water per hour. Each year, snowmobiles in Yellowstone National Park produce the equivalent of 55–65 years of parkwide automobile pollution. These machines directly harass the wildlife—causing birds to take flight, disturbing animals during critical periods, and sometimes directly causing injury or death. Their noise, in addition to upsetting humans, disrupts many species' feeding and behavior patterns. Furthermore, motorized recreation is incompatible with other forms of recreation—it ruins the wilderness experience for others, especially kayakers, swimmers, canoeists, skiers, snowshoers, and wildlife enthusiasts. In short, these machines are loud, dangerous, annoying, and ecologically destructive.

Group Profile



BLUEWATER NETWORK

Fighting Pollution in our Parks

The multiple negative effects of motorized recreation should be addressed by the National Park Service. In 1997, Bluewater Network launched the "Redefining Recreation" campaign to compel the NPS to examine and act on the issue of thrill craft in the National Park System. We hope to convince NPS to develop farsighted regulations on recreation and adopt a plan for park supervisors that outlines specific criteria defining appropriate and inappropriate activities in each park.

Bluewater Network's petition to ban jet skis in the National Park System was signed by over 60 environmental groups and 5000 individuals. In July, the NPS proposed regulations that would place a partial ban on jet skis. These regulations contain a loophole, however, that allows 25 National Park units to permit personal watercraft use. We continue to push NPS for a full ban on jet skis and are working to convince individual superintendents to ban personal watercraft within their park. Bluewater Network recently submitted 70 pages of comments, including 50,000 citizen comments, to the Park Service. Nine out of ten comments favored the ban.

Bluewater Network will be launching a snowmobile campaign in January, and we plan to expand our campaign to address other damaging off-road vehicle use on public lands. Ultimately, Bluewater hopes to convince the Park Service to create guidelines that would force park managers to determine appropriateness prior to allowing new forms of recreation in their park. Such a system could help maintain the ecological integrity of ostensibly "protected" areas—and help to protect the ecosystems of our National Park System for generations to come.

—SHEILA GALLAGHER
Project Coordinator, Bluewater Network

Bluewater Network is a coalition of concerned environmentalists, recreationists, and scientists dedicated to reducing pollution and ecological damage from motorized vehicles, vessels, and craft. For more information, contact Bluewater Network, Earth Island Institute, 300 Broadway, Suite 28, San Francisco, CA 94133; 415-788-3666 ext. 150; jetski@earthisland.org.

Rutting Season

by George Keithley

In winter when the high tundra is bare of succulent flowers, the sedge is frozen, and the low clouded sky is the bluish grey color that promises more snow before nightfall, a herd of bighorn sheep descends below the tree line of an east-facing slope in the Wind River mountains. Sure-footed ewes and young rams lead the way; the ruling rams follow.

Each day they're on the move now, from the first moments of sunrise until twilight, slowing only to graze among the few protected pockets of sparse grass.

I think it's their uncanny eyesight as much as their agility that enables the bighorns to negotiate both slick and rugged slopes without hesitation. Moreover, with their large intent eyes not only can they see in color in moderate sunlight, but they can also see in the dark—if not in detail then at least enough to detect movement. And they have what I call acute visual memory, the ability to process, sort, and retain the images of many other creatures—particularly those perceived as dangerous. Because bighorns have been startled by the flashbulbs of photographers and killed by trophy hunters using scope sights on their rifles, the herd is wary of humans and might be approached only very slowly, and with patience, if at all.

At night the bighorns sleep on steep slopes and weathered rocks washed in the river of the wind and patched with snow. They dislike brush or woodland, and with good reason—whatever limits their phenomenal eyesight causes anxiety in the herd. They feel secure in this rough open country, where no forest obstructs their vision; and a predator—coyote, wolf, or mountain lion—can be identified from a distance of more than a mile. Such early notice allows plenty of time for the herd to leap to safety among the broken crags.

Watching some two dozen bighorns, yesterday and today, I'm impressed with the mindfulness of the group, how the adults act sometimes singly, and at other times as a cohesive unit, for the benefit of the herd. Clearly, membership in the herd is a character trait in each of these individuals. Otherwise, they don't survive.

Now, in rutting season, the males determine their ruling order through procedure that establishes, and strictly limits, their mating rights.

Pairing off, two full-grown rams challenge each other. The contest begins with menacing glares intended to establish dominance. After the ritual posturing by both opponents—rearing, swaggering, glowering, always with those huge curled horns thrust forward—at last they lunge.

Suddenly the stillness of the slope is shattered by the sound of their horns crashing together. *Claaack!...Claaack!... Claaack!*...Where the terrain allows room to maneuver the two rivals will retreat several steps before they gallop forward. Driving from their powerful hind legs, they hurl themselves at each other, their horns colliding at full force. The report of each jolting impact reverberates along the slope, a sound that throbs in the cold air, while the combatants' skulls appear to roll backwards. More precisely, it's their scalps that shift backwards over their skulls, absorbing the violent blows.

The contest may be concluded in minutes. But some of these battles go on for hours, and a few have continued for an entire day, from dawn until dusk. As long as the challenge is fought, those thunderous claps resound on the mountain—until in time the weaker ram, exhausted almost to the point of collapse, backs down. He turns away. Staggers off.

Promptly the rest of the herd forms its order. Now at an amiable trot the other rams fall into line and follow the winner down the slope as he trails a ewe in heat. They won't mate with her. She'll favor only the victorious male; he alone is an acceptable partner.

It's a process of selection which, on a mild day in May, produces a large-eyed newborn with a healthy heart, legs that soon will be nimble and sturdy, and the daring and determination of its parents. Less than an hour after its birth the lamb is testing its legs, learning to leap among the crags and outcrop where the herd is grazing.

Whether we call it instinct or intelligence, the herd, with its communal mind, understands survival. So they wait for the ewe to return from the protected ground where she delivered her offspring. And with her comes the precocious lamb, which they quickly take into the fold, surrounding it, sheltering it, but not so closely as to restrict its rapid development. For its young eyesight, its heart, and its fresh legs are the future of the herd. A future which already prances in their midst, tottering slightly, and bleating for attention. ❙

Poet and essayist George Keithley, author of the epic The Donner Party *(Braziller, 1989) and* Earth's Eye *(Story Line Press, 1994), is at work on a book of essays about human encounters with the natural world. He lives in northern California.*

bighorn sheep by Evan Cantor (from the book *Along Colorado's Continental Divide Trail*, Westcliffe Publishers)

Political Correctness *and the Population Problem*

by William N. Ryerson

When I was a college student in the 1960s, I managed to take one course in psychology. The only thing I can remember from Psych 101 is the research by Professor Ashe of Princeton University on tendencies toward conformism. Professor Ashe would tell a classroom of students that he was going to conduct a study in visual perception and would hold up two objects, one clearly longer than the other. He would then ask each student, one by one, to state which object appeared longer from the student's vantage point in the room. In fact, every student in the room, with the exception of one individual, had been told before class by Professor Ashe to name the shorter object as looking longer. A hidden camera recorded the mounting distress on the face of the uninformed student over the fact that his perception was different from all of his classmates'.

Readings of the popularity weathervane on population and immigration issues... have caused major swings—and even retreats—by a number of organizations.

By the time Professor Ashe called on that student for his answer, he was often in a heavy sweat and looking panicked. On occasion, a brave student would say that he hated to disagree with all of his classmates, but from his vantage point in the room—perhaps it was just where he was sitting—the longer item actually looked longer. The other students would stare at him as if he were a visitor from Mars. Then Professor Ashe would repeat the experiment with two different objects. More often than not, when it came time for the uninformed student to give his answer, he would play right along with his classmates and name the shorter object. Professor Ashe repeated these experiments over and over with different groups of students, with the same results.

We have learned to a greater or lesser extent to conform with a large number of written and unwritten rules, customs, and attitudes as a basic survival mechanism. One of the rewards of conforming with the views and behaviors of others is public acceptance. One of the severest penalties humans impose on non-conformists is personal rejection.

So it comes as no surprise that the public is influenced in its views on population—or any other issue, for that matter—by what the "experts" have to say.

The environmental movement of the late 1960s and early 1970s grew out of a combination of concerns by ecologists and activists about industrial pollution, traffic congestion and automobile emissions, loss of wildlife habitat through human encroachment, and unsustainable use of natural resources. These concerns spawned both the creation of the Environmental Protection Agency and widespread interest in population issues that once were the sole province of demographers.

One of the early leaders in drawing attention to overpopulation was General William Draper, who advised President Eisenhower to include family planning in the US foreign aid program and later helped establish the Office of Population at USAID. He also spearheaded the development of the first UN conference on population and the creation of the UN Population Fund to help finance work in the field.

Zero Population Growth, founded in 1968 by biologists Paul Ehrlich, Charles Remington, and a lawyer named Richard Bowers, was, by 1970, reaching millions of people with the message, "stop at two." This message was carried to the American people by Paul Ehrlich, who appeared on the "Tonight Show" with Johnny Carson several times following publication of *The Population Bomb*.

People who provided medical family planning services took note of the growing concern with population. Planned Parenthood Federation of America adopted the moniker "Planned Parenthood-World Population," by which it was better known until it switched back to primarily using PPFA in the late 1970s. In family planning clinics, some providers started urging patients to limit family size. The women's movement questioned the traditional emphasis on childbearing for women and encouraged women who wanted to enter the workplace outside the home to do so.

The public took note. Among other changes, the birth rate in the United States dropped dramatically during the early 1970s. By 1973, the fertility rate had fallen to replacement level—the lowest it had been since the Great Depression. The pendulum had swung.

The first UN conference on world population in Bucharest in 1974 marked a new high point of global concern about population growth, with developed countries leading the cry for reducing growth rates and improving access to family planning services. General Draper led the US delegation to Bucharest. Media coverage of the conference was extensive.

Announcing the breakthrough on US birth rates, the National Center for Metropolitan Statistics issued a press release in the mid-1970s noting that, given enough time, the remarkable achievement of replacement level fertility that had just occurred would lead to zero population growth. The news media picked up the story and ran headlines such as "Population Problem Solved" and "US Arrives at Zero Population Growth." Columnist James Reston wrote an essay declaring that the world still faced many challenges, but thankfully the population problem was over. The general public reacted with relief that an issue as serious as human overpopulation had been solved.

As the 1970s wore on, many medical service providers started to see some of the problems that could arise when a health care worker gave advice about family size to a patient. Imagine the reaction of a patient who is seeking medical help in achieving another pregnancy being told by a health care worker that she thinks the patient has had enough children. Some groups in the women's movement suddenly had a new cause—to protect a woman's right to make her own decisions regarding her body and childbearing and not be harassed by zealous family planning workers. What may have been overlooked is that in many developing countries, the husbands and male partners make all important decisions regarding family life, including the number and spacing of children.

In a sign of the newly discovered sensitivity to patient autonomy, Planned Parenthood of New York City ran a public service announcement on radio that said essentially, *Have as many children as you want, and when you've had enough, come to us, Planned Parenthood.* In its more refined version, this view, which has come to predominate the field of reproductive health care, is that a medical service provider should be neutral with regard to personal goals such as family size and should serve the

Black-capped Chickadee by Robert M. Smith

patient by helping her achieve her goal—whether it be increased fertility, child spacing, or cessation of childbearing. Family planning service providers were coming to recognize that it is best to let the patient decide what is right for her, with information provided on her options.

At the same time, anti-abortionists started their drive to overcome the consequences of the 1973 Supreme Court decision on abortion. Recognizing that concern with population growth was one of the reasons many people supported legalized abortion, the Right to Life movement evolved a strategy to cast doubt on the existence of a population problem. This strategy has continued and been joined by various elements of the conservative movement. The pronatalist view was epitomized by an editorial in *Forbes* magazine by Malcolm (Stephen) Forbes Jr. claiming that population growth is a stimulant to economic growth and that slowing population growth would lead to economic stagnation. This led me to write a letter to the editor of *Forbes* (which the magazine chose not to run) suggesting that if his theory were true, Steve Forbes might be happier living in an outstanding economic powerhouse such as Bangladesh or Nigeria, rather than in any of the stagnant, unfortunate countries of Europe or North America.

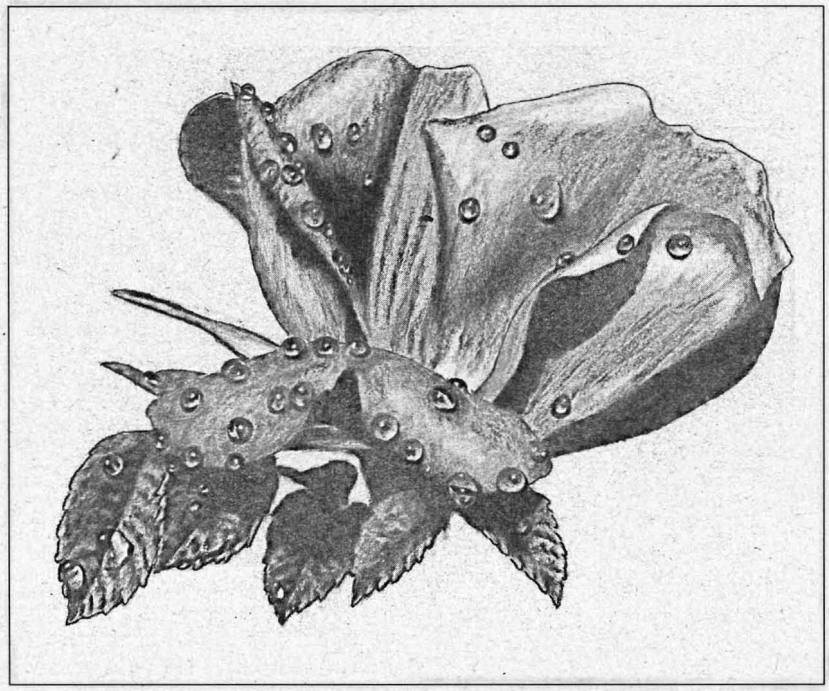
Creative and considerate use of mass communications networks has and can reach millions of couples at a time, treat them with dignity and respect, and still attempt to influence them for their own and the common good. But it seems that the pendulum of political correctness in the population field is still swinging—in the wrong direction, in my opinion.

In the 1960s and 1970s, population watchers here and abroad shifted more attention to developing countries with alarming population growth—in some cases national populations were doubling in little more than a generation. The UN's first International Conference on Population in Bucharest in 1974 brought worldwide attention to some of the implications. Soon afterwards, governmental alarm in India about galloping population growth led to family planning workers, acting under emergency powers declared by Indira Ghandi, rounding up many villagers for involuntary sterilizations. That excess caused a backlash which still has inhibiting effects there and elsewhere.

At the 1984 UN population conference in Mexico City, the United States, under the influence of ultra-conservatives and President Reagan, abandoned the leadership position it had taken in Bucharest, which unfortunately weakened the rest of the world's concern about population growth that the US had championed only ten years earlier. In the meantime, the American public had long since decided they had far more important things to do than to listen to this debate, and since the population problem had apparently been solved in the United States anyway, it was better to focus on more immediate concerns, like the economy.

By the time of the third world population conference in Cairo in 1994, the prevailing view was that elevating women's status and providing people with information about and access to reproductive health care was a sufficient strategy for addressing population concerns. Provide access to family planning, the theory went, and the problem of rapid population growth will largely solve itself. The primary evidence for this view was that birth rates had declined in most countries after contraceptives had been introduced and that there were many people not yet using birth control methods who would be happy to stop or limit their childbearing. Unfortunately, the Programme of Action adopted in Cairo largely ignored the fact that the average desired family size in sub-Saharan Africa and some other countries—the size that would be achieved if everyone could become a perfect contraceptor—was five children per couple, which would double a population in 20-plus years. The sentiment in Cairo was that as the culture of family planning spread and women gained the ability to participate in decision-making, desired family size would come down of its own accord. Accordingly, it would not be necessary to worry about influencing family size decisions in any way. Some believed that even *talking* about a population problem could lead to abuses. And unhappily, many in Cairo did not recognize there was an alternative—that at that very moment, large numbers of people in several countries were watching or listening to intriguing soap operas that educated them about the personal benefits of small families in a non-coercive way, resulting directly in significant decreases in their desired family sizes.

As a 30-year veteran of population activism, I have seen interest in population issues wax and wane and have sat through innumerable discussions about correct and incorrect language to use in population discussions. In recent years, we have all



wild rose by Robert M. Smith

witnessed the boards of more than one national organization holding a collective finger in the air to find out which way the wind was now blowing on these matters. Such readings of the popularity weathervane on population and immigration issues (often substantially influenced by pressure groups) have caused major swings—and even retreats—by a number of organizations.

If the public at large could be made aware of the basic demographic data, attitudes and actions on population-related issues would probably be quite different. True, birth rates around the world generally are falling. But the growth in actual numbers in the developing countries, where practically all the expected future growth is going to come from, remains high. Except for China, more people in their reproductive years in the developing countries do not use modern birth control methods than use them. And the average desired number of children in many of those countries is three to five or more. Accordingly, urgent and effective action to change minds and attitudes among very large numbers of people is essential. Otherwise, the momentum of growth is almost certain to continue from generation to generation, even taking account of other slowing factors that are likely to come into play. The end result would probably be a global population of 9–11 billion (as compared with the present nearly six billion) with all that means for our planet, including mounting ecological damage, species extinction, climate change, and water and resource shortages, not to mention spreading human hunger, suffering, and strife.

It is clear that any effective actions must be of a voluntary nature; strategies that smack of coercion are likely to produce resistance and backfire. It is clear, too, that very few couples' decisions about how many children to have are made with global demographic considerations in mind. But it is a dangerous mistake to jump from that fact to conclude that merely making family planning services readily available is enough—or, far worse, that world population will take care of itself.

I believe firmly that all of us who are concerned about population problems must respect the dignity of all individuals and, accordingly, give them full information and let them make their own decisions. But that does not mean we should forbear from encouraging people to adopt small family norms where that would be to their own and their childrens' advantage and would, as another consequence, help to forestall a looming global problem. Nor does it mean we should hit couples on the head with blunt exhortations to have only two children, especially when we know that bringing them entertaining soap operas in indigenous settings, to introduce them to role models who find happiness and material improvement stemming in part from limiting their family sizes, is far more effective.

For those who have been deeply concerned about the accumulating consequences of ongoing excessive population growth, and for those who are newly learning about the issue, there is a middle way. Creative and considerate use of mass communications networks has and can reach millions of couples at a time, treat them with dignity and respect, and still attempt to influence them for their own *and* the common good. But it seems that the pendulum of political correctness in the population field is still swinging—in the wrong direction, in my opinion. Just remember Professor Ashe's students next time someone tells you what is correct or incorrect thinking with regard to population, and decide for yourself what makes sense. ▮

William Ryerson is president of the Population Media Center (489 Thompson Rd., Shelburne, VT 05482-6803; 802-985-8156; fax 802-985-8119; bill_ryerson@together.org).

In June 1998, the non-profit Population Media Center (PMC) was created with the mission of working worldwide to "bring about stabilization of human population numbers at a level that can be supported sustainably by the world's natural resources," as well as to "lessen the harmful impact of humanity on Earth's environment." Using an effective communications strategy centered on social-content soap operas, PMC works to educate people about the benefits of small families, encourage the use of effective family planning methods, elevate women's status, and promote the concept of gender equity. The organization is currently developing media projects in Mexico, Brazil, China, and Nigeria.

Book Reviews

Reviewed in this issue

Coming Home to the Pleistocene

The Great New Wilderness Debate

To Save the Wild Earth

The Appalachian Forest

Preserving Nature in the National Parks

Coming Home to the Pleistocene

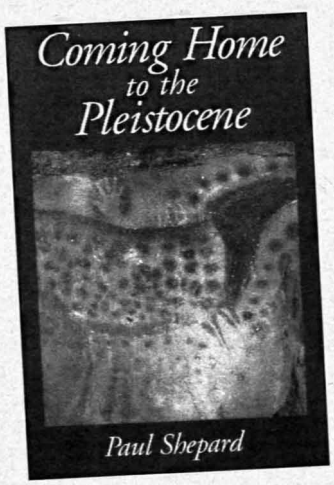
by Paul Shepard, preface by Florence R. Shepard; Island Press (Box 7, Dept. 4WE, Covelo, CA 95428; 800-828-1302); 1998; $24.95; 240 pages, tables, index.

Coming Home to the Pleistocene is Paul Shepard squared, if that's possible. Like a magnifying glass held up to a mammoth, this book enlarges what is already prodigious: Shepard's unique, lifelong exploration into how the primal hunter/gatherer way of life formed the root of our mental and physical well-being. It contains some of the writer's best prose, in a career built on razor-sharp sentences launched at his intellectual adversaries with the force of an atlatl. In the same way, Shepard's scholarly foibles also seem more noticeable here, but these are few and do not detract from his major theme.

Much of the subject matter of this posthumous book will be familiar to those who know Shepard's works going back to *The Tender Carnivore and the Sacred Game* (several of these classics had gone out of print but were reissued by the University of Georgia Press this year). But his ideas appear on these pages with a greater intensity and detail, as if Shepard, knowing he was nearing his last days (he was dying of lung cancer), could not write fast enough to empty his vast word-hoard celebrating our primal ancestors' way of life—or lamenting the modern pathologies that followed its passing.

The title sums up not only the subject, but also Shepard's intellectual evolution. The first person ever to hold an academic chair in human ecology, Shepard brought an original perspective to the environmental, psychological, and political problems of modernity, identifying the importance of our relationships with wild Nature—especially through the practices of hunter/gatherer cultures—to our growth into mature humans. In this, his legacy may be as unique and profound as Thoreau's (whom Shepard could never forgive for bad-mouthing hunters). *Coming Home to the Pleistocene* strikes the full chord merely rehearsed in his earlier books, arguing that only by weaving into our lives the relationships and lifeways of our primal ancestors can we hope to bring meaning to the wasteland of modernity.

The wasteland theme is something of a modern platitude. But unlike much of 20th-century doomsaying, Shepard's analysis is both optimistic and based on a sophisticated interpretation of human evolution. Shepard sets the stage by first deconstructing the idea of "History," which he associates with a linear, sequential, placeless understanding of events invented by the Hebrews and Greeks, and elaborated by Christianity. This he contrasts with the cyclical view of the world, informed by myth and sacred geography, that characterizes the cosmology of primal peoples. Shepard's point is that History scorns the past as defunct, discredited, larval, when in fact the deep past—humanity's hunter/gatherer existence that constitutes most of our time on this planet—is still with us in the form of our genetic makeup, our mental structures, our psychological needs. Indeed, according to Shepard, this legacy is not vestigial, like an earlobe, but fundamental: "human traits are Paleolithic."



Remarkably, Shepard pursues this argument without stumbling into the minefield of the socio-biology debate. His discussion of how genome, environment, and culture interrelate—what he calls a "mosaic"—is so finely tuned and elegant, it should make much of the socio-biology controversy moot.

Although his criticism of History is a very important point, and the basis of the rest of the book, Shepard's commentary on Hebrew, Greek, and Christian culture is needlessly glib. No first-century Greek, Christian, or Jew would have understood History as Shepard

defines it. On the contrary, all three of these cultures developed a rich, multidimensional historiography, so that Christian and Jewish exegesis of the Bible, for instance, saw events as constantly repeating themselves on a symbolic, moral, and sacred level: Adam falls and Isaac is sacrificed in history, and every day. Shepard's beef is really with the Enlightenment, not Judeo-Christian hermeneutics, which the Enlightenment desacralized and flattened out. While he skillfully pokes holes in the conventional wisdom that primal cultures are merely modern societies in utero, his suggestion that the roots of western civilization inevitably lead to a modern deracinated spirituality suffers from the same historical determinism as the History he deconstructs.

Leaving that aside, the rest of the book is a tour de force. Shepard makes a compelling argument that our physical and mental makeup was formed in the hunter/gatherer cultures of the Paleolithic. Tunneling into modern society with commentaries about youth gangs, consumerism, singing, vegetarianism, nonobjective art, feminism, and cowboys, Shepard shows how our Pleistocene heritage, or rather its denial, makes itself tangible on every street corner. As he says, "The greater the degree to which a person or society conforms to our Paleolithic progenitors and their environmental context the healthier she, he, they, and it will be" (p. 34).

He gives this argument flesh in detailed observations, such as this beautiful passage on childhood play:

It would be hard to overestimate the degree to which trees give internal shape to the space in which the child plays. They are on the one hand like great, protective, benign adults whose whispering and lightly percussive tremolo is like the humming of a kindly aunt or uncle....Trees were made for climbing, a return to quadrupedal motion, touching a chord in our genetic memory of an arboreal safety. The rough texture of bark against the chest and arms, the smell reminiscent of a time so long ago that we still had whiskers, the gift of nests and fruit, the green galleries and corridors, the vestibular possibilities in being rocked by the wind or bouncing on a limb are part of my childhood recollections that go deep. I remember, as a child, climbing a twenty-foot sapling until it bent gently and lowered me to the ground, crawling into the hollow trunks of big old sycamores or river birches, imagining the possibilities of something else being in there (p. 42–43).

Shepard shows step by step how the abandonment of a hunter/gatherer way of life led to the pathologies of civilization, from slavery to religious fanaticism to urban estrangement to fleas. Most impressively, in a chapter entitled "The Cowboy Alternative," he persuasively argues that pastoralism developed out of agriculture as herdsmen had to take their animals farther and farther afield to graze, producing a rootless young male subculture that brought onto history's stage the puerile glorification of militarism, plunder, disdain for the earth, control over animals and women, and a preoccupation with the afterlife ("a dream," Shepard urges, "to which the old whip-waving, manure-treading herders clung, as they stared at the tail-ends of their 'meat on the hoof'"). He points out that this pastoral loutism lives on today in the déclassé cowboy.

What is Shepard's answer to this 10,000-year-long trail of tears and cow pies? His argument is both ineluctable and open-ended: since history is not an irretrievable arrow, since our hunter/gatherer existence has never really been left behind, but lives on in our bodies and psychic structures, since all cultures are a mosaic of past and present, we have the potential to weave into modern civilization the practices that defined our Paleolithic forebears. We can, Shepard writes in conclusion, "single out those many things, large and small, that characterized the social and cultural life of our ancestors—the terms under which our genome itself was shaped—and incorporate them as best we can by creating a modern life around them" (p. 173).

As best we can. Whether we can be successful at this before the natural world is damaged beyond repair—and madness devours humanity—Shepard himself admits no one can say. But this last book by one of America's most original thinkers offers a message of hope and humaneness, untainted by nostalgia and romanticism, hardened by good science and creative historical analysis. Appropriately, Shepard's legacy does not consist of superficial solutions to the problems of civilization, but rather in a cultural landscape that this humble hunter of knowledge discovered and now invites us to explore.

Reviewed by **CHRISTOPHER MANES**, *author of* Other Creations: Rediscovering the Spirituality of Animals *(Doubleday, 1997) and* Green Rage: Radical Environmentalism and the Unmaking of Civilization *(Little Brown, 1990).*

New Editions of Paul Shepard Classics

The Tender Carnivore and the Sacred Game by Paul Shepard, foreword by George Sessions. 1973 (1998). University of Georgia Press, Athens. 302 pp. $17.95.

Thinking Animals by Paul Shepard, foreword by Max Oelschlaeger. 1978 (1998). University of Georgia Press, Athens. 274 pp. $17.95.

Nature and Madness by Paul Shepard, foreword by C.L. Rawlins. 1982 (1998). University of Georgia Press, Athens. 130 pp. $17.95.

The Great New Wilderness Debate: An Expansive Collection of Writings Defining Wilderness from John Muir to Gary Snyder

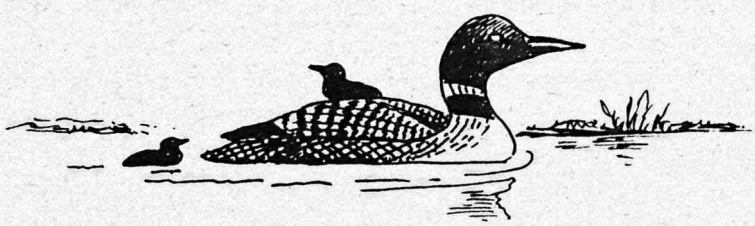
edited by J. Baird Callicott and Michael P. Nelson; University of Georgia Press (330 Research Drive, Athens, GA 30602); 1998; $30 paper; 697 pp.

This collection on the idea of wilderness includes 42 essays written between 1758 and 1998 (seven of which are new for this volume) by 34 authors. The editors, both environmental philosophers, have organized the essays into four sections: "The Received Wilderness Idea," "Third and Fourth World Views of the Wilderness Idea," "The Wilderness Idea Roundly Criticized and Defended," and "Beyond the Wilderness Idea." Most of the book's contributing writers will be familiar to readers; they range from John Muir and Aldo Leopold to Ramachandra Guha and Arne Naess, J. Baird Callicott and William Cronon to Dave Foreman and Reed Noss. The collection is comprehensive, though I found it biased toward the wilderness critics. This should come as no surprise, however, since the editors, J. Baird Callicott and Michael P. Nelson, identify themselves as critics. Their introductory essay provides a good overview of their aims and the contents of the collection.

By deconstructing the idea of wilderness, the wilderness critics may have provided a valuable service, but after reading and re-reading several of these essays I continue to think their critique has fundamental problems. The first problem is that many of their arguments are not as developed as the authors or editors presume. Three examples are illustrative:

■ In "Radical American Environmentalism and Wilderness Preservation," Guha argues that environmental problems result from overconsumption by the North and Third World elites, and militarism. Overpopulation—in the North and South—plays no role for Guha. By ignoring the effects of overpopulation, Guha undercuts his own critique.

■ Cronon's now well-known critique "The Trouble with Wilderness" attacks a 1960s conception of wilderness—one based exclusively on scenic, spiritual, and recreational values for humans—rather than the concept that has evolved since the rise of conservation biology.



■ The editors overstate and oversimplify the effect of native peoples on the American landscape. Yes, much of the landscape was humanized, but it is not the case that "the works of these peoples did dominate the landscape ecologically" (pp. 8–9) over all of the Americas.

Take fire, for instance. Although Native Americans employed fire to manipulate vegetation across many parts of North America, its use was by no means equally applied across the landscape, or universal, but varied by region and tribe. Based on Cronon's 1983 book *Changes in the Land*, many people now assume that fire was widely used by natives throughout New England. But Cronon's book is mostly about southern New England. To the north, in Vermont, the best available evidence indicates that the use of fire by the Abenaki was minimal. Due to this limited role of fire, the limited practice of horticulture, and an extremely low human population compared to today, the Vermont landscape at the time of European arrival was hardly one dominated by humans in any meaningful sense.

Indeed, to quote from Gordon Whitney's recent ecological history of the northeastern United States, "The effects [of the Indian's activities], however, were still localized. Large segments of the interior, i.e., northern New England, the Allegheny Plateau region of Pennsylvania and New York, and the High Plains region of Michigan, were almost devoid of Indian activity" (*From Coastal Wilderness to Fruited Plain*, 1994, p. 120). Furthermore, Callicott should know better than to lump the behaviors of all North American tribes together when discussing native peoples' effects on the landscape; he wrote a fine essay warning against doing just that when discussing Native American conservation thinking (see "American Indian Land Wisdom?" *Journal of Forest History*, 1989).

The second problem with these critiques is that despite their seeming sophistication, they often take complex situations and ideas and translate them into one-dimensional stories: the received wilderness idea is tied to this or

illustration by Rebecca Merrilees

that specific problem, therefore the wilderness idea *in toto* is bad. Even the title of the final section, "Beyond the Wilderness Idea," suggests abandoning wilderness rather than amending the idea. Why do some critics present the current option as wilderness or sustainable development? Why not both?

The third problem is that too often the writers offer criticism, but no alternatives. That is, they deconstruct the received wilderness idea, but don't help us construct a new wilderness idea appropriate to our time, place, and evolving state of ecological understanding (see Dave Foreman's fall 1998 *WE* "Around the Campfire" for more on this). Guha, for instance, delivers an impressive critique of the wilderness idea from a Third World perspective, using as an example a series of tiger reserves in India from which the local people have been expelled. Nowhere in the essay, however, does he suggest what should be done about the tigers. Does Guha believe that they should be allowed to go extinct? Or does he favor a more culturally appropriate way to save the tigers? Obviously, the former is not acceptable to many supporters of wilderness and biodiversity; the latter, though not presented, could be embraced.

There is something positive that can come out of this great new wilderness debate—a new wilderness idea for the 21st century. This idea should incorporate three core components:

1) The primary purpose of Wilderness Areas should be as ecological reserves for the survival of other species and the continuation of evolution. Although this may—in the short term—segregate humans from Nature on part of the landscape, such segregation is generally necessary until a transition to a more sustainable society occurs. Without these reserves, many species would go extinct during this transition.

2) The wilderness idea should be applied in temporally and spatially specific ways; that is, wilderness in Vermont, Alaska, and India may be implemented in different ways, just as today, wilderness in relatively pristine areas (Alaska) is implemented differently than in areas that have been greatly manipulated by humans but are recovering their wildness (many parts of the eastern United States).

3) The wilderness idea and its proponents must be clearly and actively supportive of those improving human management of nonwilderness land. Whether we adopt sustainability or stewardship as the approach for this land, the development of these ideas and management schemes should be fully connected to wilderness—the realm where wildness and natural processes predominate, and a necessary control by which we measure our progress toward ecologically benign management. This linkage can help reconnect humans with Nature, make us better understand that islands of wilderness cannot fully serve their role as ecological refugia unless the surrounding lands are managed compatibly, and demonstrate that wilderness advocates care greatly about the fate of humans as well as other species.

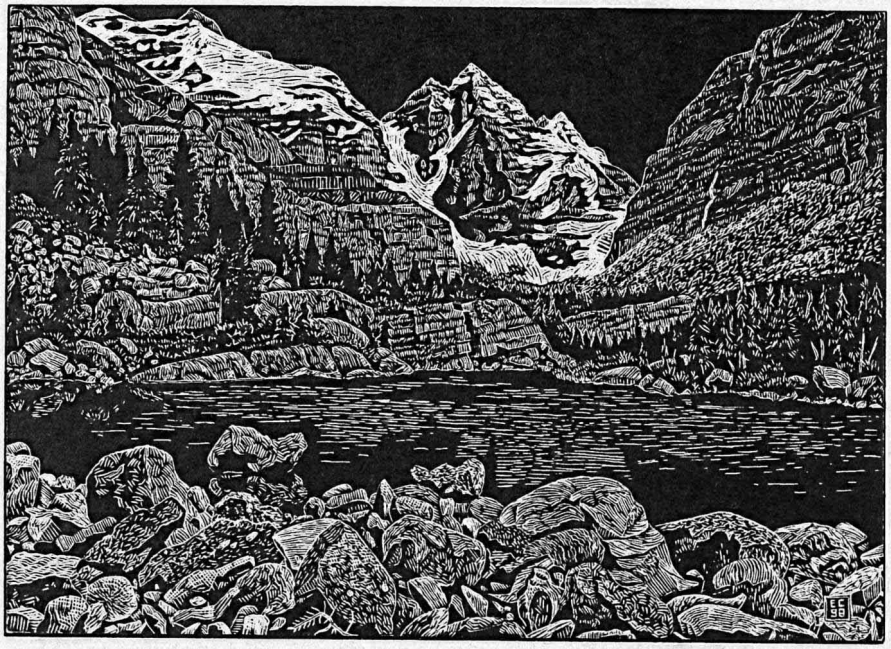
Reviewed by **CHRIS MCGRORY KLYZA**, *who teaches environmental studies and political science at Middlebury College in Vermont. His new book* The Story of Vermont: A Natural and Cultural History *(co-authored with Steve Trombulak) will be published in June 1999 by University Press of New England.*

To Save the Wild Earth: Field Notes from the Environmental Front Line

by Ric Careless; Raincoast Books (8680 Cambie St., Vancouver, British Columbia V6P 6M9); 1997; 256 pp.; $18.95 Canadian

Ric Careless's recent book *To Save the Wild Earth: Field Notes from the Environmental Front Line* gives us an in-depth look at the rainbow of tactics effective conservationists use to protect wild places. The book chronicles successful efforts to protect 5.4 million acres of wildlands in British Columbia over 25 years. The stories it contains, although important, are not unique. Their enduring value lies in the exciting and transparent way the author chronicles the development and implementation of a conservation strategy. To a lover of Nature it reads like a thriller.

What works best in a conservation campaign is the marriage of science and passion. Protecting wild country is about people, not Nature; Nature will look after herself—our concern is what *people* do *to* Nature. Humans are complex mixes of fear, hope, reason, and emotion. Ric Careless figured this out long ago; here, he explains how he applied that knowledge. Using declaratory and resonant phrases such as "North America's Wildest River" (to describe the Tatshenshini) or "Height of the Rockies" (to describe the Palliser and White River drainages adjacent to Banff and Kananaskis), he excited people's imaginations and created a mythology about unknown places for which he and his colleagues successfully sought legal protection. To appeal to reason, he used facts about the long-lasting environmental threats posed by acid mine drainage or stream siltation caused by clearcuts and logging roads.



Lake Lefroy, British Columbia by Evan Cantor

Just as compelling as the conservation messages he developed is the range of strategies Careless employed to create new parks. He began as a fresh-faced environmental activist concerned about the fate of the towering old-growth forests adjacent to Pacific Rim National Park on the west coast of Vancouver Island. Using the power of grassroots sincerity, he and others created the momentum that resulted in the addition of the Nitinat Triangle to the Park. Grassroots activists sometimes forget that bureaucrats have also done a lot of good work to protect wild Canada. Later, Careless tells the story of how, as a government employee, he helped protect the Babine Mountains in north central BC with little fanfare by developing agency and community support.

No matter how good the campaign, it is the politicians who create parks, for they control the legislature. Careless recognized that reality and plunged into the untidy world of politics to achieve conservation goals. He shares a number of tales about working the inside of power for Nature. At different times through various campaigns, he was able to engage personally Jean Chretien, when he was the Minister responsible for National Parks, in addition to BC Premier Mike Harcourt and Vice President of the United States Al Gore, to help protect wilderness areas.

The most intriguing story in the book demonstrates the key role Careless's political involvement played in protecting the fabulous Spatsizi Plateau—an area of enormous significance for large mammals in the northern interior of British Columbia. Careless was then land use advisor to the BC Cabinet, and an election was coming. The New Democratic Party was in power but in real trouble at the polls. Careless brazenly ignored protocols and called a Cabinet Minister to suggest a big park announcement for the election campaign. As a result, the 1.75-million-acre Spatsizi Wilderness Provincial Park was created eight days before the election.

To Save the Wild Earth also recounts high-stakes, blood stirring front-line campaigns for big wilderness prizes. Careless was deeply involved in the Tatshenshini and Purcell Wilderness Conservancy campaigns, both of which were tremendous achievements. For the Tatshenshini, he masterminded a North American-wide campaign involving environmental groups from Canada and the United States. It was a grand success: in 1995, the Tatshenshini-Alsek Provincial Park was created, designated as a World Heritage Site, and the mine proposal threatening the area was turned down. The Tatshenshini campaign also helped to inspire the network that created the Yellowstone to Yukon Conservation Initiative.

No one has ever pulled off a big wilderness victory single-handedly. *To Save the Wild Earth* is happily about many players, not just the story of Ric Careless's achievements. He approaches his topics with the knowledge and confidence of someone who played a critical role in major conservation events, while at the same time being generous in his recognition of the important contributions of others.

Few records exist of how wild Nature in Canada has been protected. J. B. Harkin's *History and Meaning of the National Parks of Canada* is out of print. Elizabeth May's *Paradise Won: The Struggle for South Moresby*, which is the story of how Gwaii Haina's National Park was protected, was for a while the lone member of its genre. Monte Hummel's *Protecting Canada's Endangered Spaces: An Owner's Manual* contains the nuts and bolts of conservation. Ric Careless's *To Save the Wild Earth* joins them as a major contribution to North American wildlands literature. It should become a conservation classic.

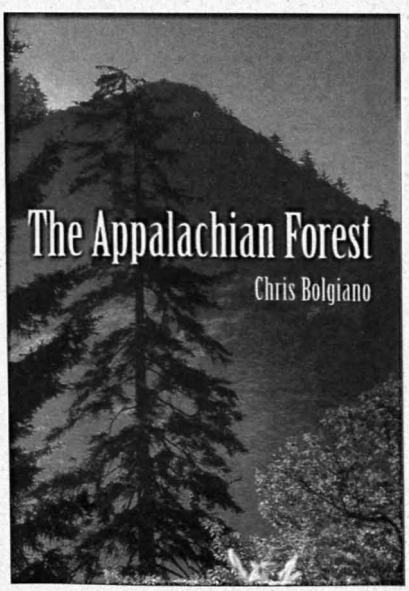
Reviewed by **HARVEY LOCKE**, *Alberta conservationist and incoming president of The Wildlands Project Board of Directors.*

The Appalachian Forest:
A Search for Roots and Renewal

by Chris Bolgiano; Stackpole Books (5067 Ritter Road, Mechanicsburg, PA 17055); 1998; $25; 280 pp.

At a time when Southern Appalachian forests face both the promise of a second maturity and new threats to their health and integrity, Chris Bolgiano's survey offers a revealing historical perspective on the region. Author of the wildlife study *Mountain Lion: An Unnatural History of Pumas and People* (Stackpole, 1995) and a neighbor of George Washington National Forest since the 1970s, Bolgiano mingles her personal experience of Appalachia with history, ecological data, and interviews to create a compact but rich picture of the highland forests. It is a picture more complicated than many readers will imagine, involving a long series of intentional and accidental human assaults on Nature, with layer upon layer of lingering effects.

After an introductory chapter sketching Bolgiano's own arrival in the mountains against the background of their settlement by Europeans, a section entitled "The Late Great Forest" outlines the phenomenon of old growth, the Cherokee period, the first commercial exploitations, and the beginnings of scientific forestry. The following section, "The Forest Today," treats Appalachia's present biological and recreational resources, with profiles of individual public lands and of some of the "native-born" activists who work to protect them. Finally, in "The Future Forest," Bolgiano examines three issues representative of the mountains' uncertain future: the blight-ridden but still very much extant American chestnut, the pervasive hunting—legal and illegal—of black bears, and the effects of acid rain.



Red-cockaded Woodpecker by Chuck Ouray

Along the way we meet dozens of the people Bolgiano interviewed for the book, some of whose names will be known to readers of *Wild Earth*: treemen Bob Zahner and Bob Leverett, the late Ernie Dickerman, Heartwood's Than Hitt, and Father Al Fritsch of Appalachia-Science in the Public Interest. But there are many others less familiar, from Cherokee Indians to the bear hunters Bolgiano joined in the field one December morning, whose presence fills out the account of Appalachia's human ecology. Readers interested in the work of the scientists interviewed will find their publications listed in the generous bibliography. (Thirty-seven archival photographs and four maps also illustrate the text.)

By emphasizing federally owned forests, Bolgiano skirts the issue of private lands and their role in the fate of the region. She does admit that the federal government manages less than 20% of Southern Appalachian woodland, but only as part of her argument against logging on public land: as in, there's plenty of cutting on private holdings, so ending the harvest in National Forests won't hurt the timber supply. Only once, in her discussion of songbird habitat, does she mention the terrifyingly rapid commercial and residential development on the edges of public lands. This is a touchy subject, even in conservation circles. Most conservationists in the region are transplanted outsiders; many, like Bolgiano herself, have built houses on property adjoining parks and National Forests. There is also a fear that any mention of private lands will raise an outcry from already-disgruntled native Appalachians and neo-conservative ideologues. And so activists spend their time and energy on the details of National Forest plan revisions, or on lawsuits to force the Forest Service to obey its own regulations, while forests surrounding and within the patchwork of federal property are irrevocably lost to development. The solution is self-evident, and two-pronged: an aggressive campaign for the acquisition of more public land, and strong measures—including regulations, incentives, and easements—to control the use of private land. It would not have been inconsistent with the gentle manner of *The Appalachian Forest* to call for both.

Reviewed by writer and conservation activist **JAY KARDAN**, *who lives in Palmyra, VA.*

Preserving Nature in the National Parks: A History

by Richard West Sellars; Yale University Press (POB 209040, New Haven, CT 06520); 1997; $35; 380 pp.

Richard Sellars's recent book, *Preserving Nature in the National Parks*, is the most thorough history of US National Parks and the National Park Service (NPS) yet published. It is also surprisingly blunt. Over and over Sellars documents what many close observers have long known—our National Parks have not always been managed with the needs of Nature first. Science—biology in particular—has gotten little respect from top agency supervisors, and ecological integrity has been a low priority of park management over the years.

Meticulously documented, the book traces the Park Service's administrative and cultural biases from their roots when magnificent scenery and tourist development were the driving force behind park establishment and policy. Stephen Mather, the first NPS director, was a multi-millionaire businessman who had strong connections with the corporate leaders of his day; Mather organized his fledgling agency as an arm of industrial tourism. In order to create public (and corporate) support for National Parks, early park officials condoned or helped construct parkways and roads, major hotels, ski slopes, and golf courses. Park Service Director Horace Albright even sought to have the 1932 Olympics in Yosemite. Such development often had negative effects on wildlife, flora, and scenic qualities, but, to park administrators, that was deemed inconsequential in the quest to create popular "nature parks."

The early Park Service placed so much emphasis on development that founding members of the Wilderness Society including Bob Marshall and Aldo Leopold saw the Park Service as a bigger threat to wildlands than the Forest Service.

Manipulation of Nature to "improve" it was also par for the day. Natural resource management, says Sellars, was an adjunct to tourism management. This translated into policies that promoted the stocking of barren lakes with exotic fish, the destruction of predators to protect "good" animals such as deer, the suppression of natural wildfire to protect forests, and the transplantation of animals—such as Tule elk to Yosemite—to parks outside their natural historic ranges.

Even as the Park Service seemed to be engaged in creating some idealized vision of Nature without claws and fangs, there were employees who advocated protection of the natural world. One of these leaders was NPS biologist George Wright, who tirelessly advocated protecting predators, natural ecosystems, and wild habitat. But the agency's few biologists were easily outnumbered by landscape architects and foresters, who dominated the rank and file of rangers and superintendents, and who tended to view manipulation of Nature less critically.

Still, as much as *Preserving Nature in the National Parks* is an indictment of the Park Service, Sellars is careful to present the complexity of agency people and their motives by placing them in an historical context. Though Mather and later administrators might advocate a major road through the middle of a park or a hotel by some scenic attraction, the NPS was largely sensitive to the need to protect backcountry areas. Mather declared, for example, that he did not want the parks "gridironed" with roads. He successfully fought against Idaho's irrigation lobby and their proposal to build dams in Yellowstone, threatening Secretary of Interior Lane that he would resign if the dams were approved.

Nevertheless, as Sellars aptly shows, the conflict within and outside of the agency over its management direction is a reflection of the larger question of preservation vs. conservation that has been debated since the days of Muir and Pinchot.

And Sellars notes that despite its past and present shortcomings—particularly regarding scientific management—the National Park Service is still the agency that advocates and embodies an environmental ethic to the millions of people who are drawn to our parks each year.

What is particularly striking about Sellars's book is not so much that he documents numerous situations where the Park Service could have put Nature first, and failed, but that he was allowed to put it down in print at all. Sellars is a full-time NPS historian, and essentially was paid to write about less-than-complimentary internal policy debates. If nothing else, this speaks highly of the agency, and perhaps is a hopeful recognition that the Park Service is slowly shifting priorities to not only advocate, but institutionalize an ecological and environmental ethic that reflects its critical role in wildlands preservation.

For anyone interested in American conservation history, public lands, and particularly National Parks, *Preserving Nature in the National Parks* provides a case study of one agency's role in the contextual framework of the larger ideological struggles within the conservation movement. It will likely be a long time before anyone writes another National Park history that can surpass Sellars's book for honesty and careful scholarship.

Reviewed by author and photographer
GEORGE WUERTHNER
(POB 1526, Livingston, MT 59047).

Wilderness Science Conference

Wilderness Science in a Time of Change will present wilderness science research results and synthesize knowledge and its management implications. In addition to plenary sessions discussing the interface of science and wilderness, the conference is organized around three symposia: Science for Understanding Wilderness in the Context of Larger Systems; Wilderness for Science: A Place for Inquiry; and Science for Wilderness: Improving Management. The University of Montana in Missoula will host the conference from May 23–27, 1999. For registration information, contact Christine Ross at 406-243-4623; fax 406-243-2047; nrm@selway.umt.edu, or visit www.umt.edu/wildscience.

Headwaters' Forest Activists Conference

From February 4–7, 1999, Headwaters' 8th Annual Western Forest Activists Conference will gather folks working for forest protection from across the West and beyond. Over 400 activists will convene at Southern Oregon University in Ashland to attend a series of workshops, plenary and breakout sessions, field trips, wilderness hikes, networking caucuses, and keynote addresses. The conference theme is "Toward a Regional Culture: Restoration, Politics, and Wilderness." Registration is $75–$100; academic credit is available. For more information, contact Chant Thomas at 541-899-1712/482-4459; chant@mind.net; www.headwaters.org.

Society for Conservation Biology Annual Meeting

The 1999 annual meeting of the Society will be co-hosted by the University of Maryland's graduate program in Sustainable Development and Conservation Biology and the Smithsonian Institution's Institute of Conservation Biology. The gathering will take place June 17–21 on the University of Maryland's campus in College Park. Contact David Inouye at 301-405-6946; fax 301-314-9358; di5@umail.umd.edu; or visit www.inform.umd.edu/SCB for more information.

Western Canada Wildlife Conference

From February 15–19, 1999, University College of the Cariboo will host a conference on the biology and management of species and habitats at risk in British Columbia. As the first major conference on this topic in nearly 20 years, the gathering aims to increase the availability and application of emerging information on sensitive species and habitats and to serve as a platform for discussion of issues, research, and management techniques within a Pacific Northwest context. Contact Laura Darling, Wildlife Branch, BC Environment, POB 9374 STN PROV GOV, Victoria, BC CANADA V8W 9M4; ATRISK99@fwhdept.env.gov.bc.ca; www.cariboo.bc.ca/speciesatrisk.

Call For Papers

The Adirondack Research Consortium will hold its 6th Annual Conference on the Adirondacks from May 26–28, 1999 in Saranac Lake, New York. Submission of papers, posters, discussion panels, and workshops that explore the natural, economic, cultural, historic, and philosophical features of the Adirondacks, Lake Champlain, and the North Country are encouraged. Send inquiries and proposals (due by January 31) to Philip Terrie, American Culture Studies, BGSU, Bowling Green, OH 43403; 419-372-8886; fax 419-372-7537; pterrie@bgnet.bgsu.edu.

Zahniser's Legacy

Greenville College in Illinois recently dedicated the Zahniser Institute for Environmental Studies in honor of public lands advocate and Greenville alumnus Howard C. Zahniser. The new institute was named after Zahniser as a tribute to his efforts to pass the 1964 Wilderness Act and to the continuing impact of his work within the wilderness movement. For additional information, contact the Zahniser Institute for Environmental Studies, Greenville College, POB 159, Greenville, IL 62246; 618-664-2800 ext. 4485; fax 618-664-9880; rsnyder@greenville.edu.

TWP POSITION OPEN: Reserve Design Coordinator

The Wildlands Project seeks an experienced grassroots conservation organizer to work with a staff team and cooperating groups to facilitate the development of reserve design proposals and implementation strategies throughout North America. Motivational skills and the ability to work independently required. Application deadline is January 30, 1999. For further information contact 520-884-0875 or wildlands@twp.org.

XVI International Botanical Congress

Held once every six years, this year's International Botanical Congress will convene in St. Louis, Missouri from August 1–7, 1999. An estimated 5000 botanical professionals from around the world will attend to discuss new research in the plant sciences. The Commercial Exposition from August 2–6 allows exhibitors to display equipment, products, and services that assist and support the fields of botany, mycology, ecology, horticulture, and agriculture. Contact XVI IBC, c/o Missouri Botanical Garden, POB 299, St. Louis, MO 63166; 314-577-5175; fax 314-577-9589; ibc16@mobot.org; www.ibc99.org.

Conference on Environment and Community

Weber State University in Ogden, Utah will host the North American Interdisciplinary Conference on Environment and Community from February 11–13, 1999. This gathering of scholars, artists, natural resource managers, and others will feature speakers such as John Elder, Stephen Trimble, C.L. Rawlins, David Rothenberg, and Max Oelschlaeger. Contact Mikel Vause (801-626-6659; mvause@weber.edu) or William McVaugh (801-626-6660; wmcvaugh@weber.edu) at Weber State University, Ogden, UT 84408; home page: catsis.weber.edu/wildmcvause.

Natural Resource & Recreation Symposium

The 11th Northeastern Recreation Research Symposium will be held April 11–13, 1999 at the Sagamore Resort in Bolton Landing, New York. The conference brings planners, managers, and researchers together to exchange information and ideas about natural resource management, outdoor recreation and tourism, community planning, and development policy. Student registration is $50 and professional registration is $85. For more information, contact Conference Chair Walter Kuentzel, 357 Aiken Center, School of Natural Resources, University of Vermont, Burlington, VT 05405; 802-656-2684; fax 802-656-8683; wkuentze@nature.snr.uvm.edu.

Bring Binoculars to Kachemak Bay

Alaska's largest wildlife festival, the Kachemak Bay Shorebird Festival celebrates the spring migration of shorebirds such as plovers, godwits, and turnstones. From May 6–9, 1999, participants can attend advanced ornithology workshops or beginning backyard birding presentations, join boat trips and children's activities, and, of course, identify the pelagic, coastal, and woodland birds that use sites around Kachemak Bay as feeding grounds. (At past festivals, over 100 species of birds have been seen in one day.) Authors Don & Lillian Stokes will be the keynote speakers. For more information, contact Festival Coordinator Dorle Scholz, POB 541, Homer, AK 99603; 907-235-7740; fax 907-235-8766; www.xyz.net/~homer.

Deep Ecology Summer Internships

Live in an intentional community on a historic wilderness homestead in southwest Oregon's Siskiyou Mountains and receive academic credits in natural history, applied conservation biology, environmental ethics, community studies, education, and ecoforestry. Spring and fall sessions are also available. Send introductory letter to Trillium Community Land Trust-WE, POB 1330, Jacksonville, OR 97530; trillium@mind.net.

Artists This Issue

Bill Amadon, Brian B. Beard, Valerie Cohen, Libby Davidson, Patrick Dengate, Bob Ellis, L.J. Kopf, Rob Leverett Jr., Peter Lucchetti, Rebecca Merrilees, Chuck Ouray, Robin Peterson, Nancy Roy, N.P. Shear, Claus Sievert, Robert Smith, D.D. Tyler, Lezle Williams, Helen Wilson, Ann Young

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

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Back Issues

1 Spring 1991 • Ecological Foundations for Big Wilderness, Howie Wolke on The Impoverished Landscape, Reed Noss on Florida Ecosystem Restoration, Biodiversity & Corridors in Klamath Mtns., Earth First! Wilderness Preserve System, GYE Marshall Plan, Dolores LaChapelle on Wild Humans, and Bill McCormick's Is Population Control Genocide?

2 Summer 1991 • Dave Foreman on the New Conservation Movement, Ancient Forests: The Perpetual Crisis, Wolke on The Wild Rockies, Grizzly Hunting in Montana, Noss on What Wilderness Can Do for Biodiversity, Mendocino NF Reserve Proposal, Christopher Manes on the Cenozoic Era, and Part 2 of McCormick's Is Population Control Genocide?

3 Fall 1991 • SOLD OUT (but photocopies of articles are available). The New Conservation Movement continued. Farley Mowat on James Bay, George Washington National Forest, the Red Wolf, George Wuerthner on the Yellowstone Elk Controversy, The Problems of Post Modern Wilderness by Michael P. Cohen and Part 3 of McCormick's Is Population Control Genocide?

4 Winter 1991/92 • Devastation in the North, Rod Nash on Island Civilization, North American Wilderness Recovery Strategy, Wilderness in Canada, Canadian National Parks, Hidden Costs of Natural Gas Development, A View of James Bay from Quebec, Noss on Biologists and Biophiles, BLM Wilderness in AZ, Wilderness Around the Finger Lakes: A Vision, National ORV Task Force

5 Spring 1992 • Foreman on ranching, Ecological Costs of Livestock, Wuerthner on Gunning Down Bison, Mollie Matteson on Devotion to Trout and Habitat, Walden, The Northeast Kingdom, Southern Rockies Ecosystem Protection, Conservation is Good Work by Wendell Berry, Representing the Lives of Plants and Animals by Gary Paul Nabhan, and The Reinvention of the American Frontier by Frank and Deborah Popper

6 Summer 1992 • The Need for Politically Active Biologists, US Endangered Species Crisis Primer, Wuerthner on Forest Health, Ancient Forest Legislation Dialogue, Toward Realistic Appeals and Lawsuits, Naomi Rachel on Civil Disobedience, Victor Rozek on The Cost of Compromise, The Practical Relevance of Deep Ecology, and An Ecofeminist's Quandary

7 Fall 1992 • How to Save the Nationals, The Backlash Against the ESA, Saving Grandfather Mountain, Conserving Diversity in the 20th Century, Southern California Biodiversity, Old Growth in the Adirondacks, Practicing Bioregionalism, Biodiversity Conservation Areas in AZ and NM, Big Bend Ecosystem Proposal, George Sessions on Radical Environmentalism in the 90s, Max Oelschlaeger on Mountains that Walk, and Mollie Matteson on The Dignity of Wild Things

8 Winter 1992/93 • Critique of Patriarchal Management, Mary O'Brien's Risk Assessment in the Northern Rockies, Is it Un-Biocentric to Manage?, Reef Ecosystems and Resources, Grassroots Resistance in Developing Nations, Wuerthner's Greater Desert Wildlands Proposal, Wolke on Bad Science, Homo Carcinomicus, Natural Law and Human Population Growth, Excerpts from *Tracking & the Art of Seeing* and *Ghost Bears*

Wildlands Project Special Issue #1 • TWP (North American Wilderness Recovery Strategy) Mission Statement, Noss's Wildlands Conservation Strategy, Foreman on Developing a Regional Wilderness Recovery Plan, Primeval Adirondacks, Southern Appalachians Proposal, National Roadless Area Map, NREPA, Gary Snyder's Coming into the Watershed, Regenerating Scotland's Caledonian Forest, Geographic Information Systems

9 Spring 1993 • The Unpredictable as a Source of Hope, Why Glenn Parton is a Primitivist, Hydro-Quebec Construction Continues, RESTORE: The North Woods, Temperate Forest Networks, The Mitigation Scam, Bill McKibben's Proposal for a Park Without Fences, Arne Naess on the Breadth and Limits of the Deep Ecology Movement, Mary de La Valette says Malthus Was Right, Noss's Preliminary Biodiversity Plan for the Oregon Coast, Eco-Porn and the Manipulation of Desire

10 Summer 1993 • Greg McNamee questions Arizona's Floating Desert, Foreman on Eastern Forest Recovery, Is Ozone Affecting our Forests?, Wolke on the Greater Salmon/Selway Project, Deep Ecology in the Former Soviet Union, Topophilia, Ray Vaughan and Nedd Mudd advocate Alabama Wildlands, Incorporating Bear, The Presence of the Absence of Nature, Facing the Immigration Issue

11 Fall 1993 • Crawling by Gary Snyder, Dave Willis challenges handicapped access developments, Biodiversity in the Selkirk Mtns., Monocultures Worth Preserving, Partial Solutions to Road Impacts, Kittatinny Raptor Corridor, Changing State Forestry Laws, Wild & Scenic Rivers Act, Wuerthner Envisions Wildland Restoration, Toward [Population] Policy That Does Least Harm, Dolores LaChappelle's Rhizome Connection

12 Winter 1993/94 • A Plea for Biological Honesty, A Plea for Political Honesty, Endangered Invertebrates and How to Worry About Them, Faith Thompson Campbell on Exotic Pests of American Forests, Mitch Lansky on The Northern Forest, Human Fear Diminishes Diversity in Rocky Mtn. Forests, Gonzo Law #2: The Freedom of Information Act, Foreman on NREPA and the Evolving Wilderness Area Model, Rocky Mtn. Nat. Park Reserve Proposal, Harvey Locke on Yellowstone to Yukon campaign

13 Spring 1994 • Ed Abbey posthumously decries The Enemy, David Clarke Burks's Place of the Wild, Ecosystem Mismanagement in Southern Appalachia, Mohawk Park Proposal, RESTORE vs. Whole-Tree Logging, Noss & Cooperrider on Saving Aquatic Biodiversity, Atlantic Canada Regional Report, Paul Watson on Neptune's Navy, The Restoration Alternative, Intercontinental Forest Defense, Chris McGrory-Klyza outlines Lessons from Vermont Wilderness

14 Summer 1994 • Bil Alverson's Habitat Island of Dr. Moreau, Bob Leverett's Eastern Old Growth Definitional Dilemma, Wolke against Butchering the Big Wild, FWS Experiments on Endangered Species, Serpentine Biodiversity, Andy Kerr promotes Hemp to Save the Forests, Mapping the Terrain of Hope, A Walk Down Camp Branch by Wendell Berry, Carrying Capacity and the Death of a Culture by William Catton Jr., Industrial Culture vs. Trout

15 Fall 1994 • BC Raincoast Wilderness, Algoma Highlands, Helping Protect Canada's Forests, Central Appalachian Forests Activist Guide, Reconsidering Fish Stocking of High Wilderness Lakes, Using General Land Office Survey Notes in Ecosystem Mapping, Gonzo Law #4: Finding Your Own Lawyer, The Role of Radio in Spreading the Biodiversity Message, Jamie Sayen and Rudy Engholm's Thoreau Wilderness Proposal

16 Winter 1994/95 • Ecosystem Management Cannot Work, Great Lakes Biodiversity, Peregrine Falcons in Urban Environments, State Complicity in Wildlife Losses, How to Burn Your Favorite Forest, ROAD-RIPort #2, Recovery of the Common Lands, A Critique and Defenses of the Wilderness Idea by J. Baird Callicott, Dave Foreman, and Reed Noss

17 Spring 1995 • Christopher Manes pits Free Marketeers vs. Traditional Environmentalists, Last Chance for the Prairie Dog, interview with tracker Susan Morse, Befriending a Central Hardwood Forest part 1, Economics for the Community of Life: Part 1, Minnesota Biosphere Recovery, Michael Frome insists Wilderness Does Work, Wilderness or Biosphere Reserve: Is That a Question?, Deep Grammar by J. Baird Callicott

18 Summer 1995 • Wolke on Loss of Place, Dick Carter on Utah Wilderness: The First Decade, *WE* Reader Survey Results, Ecological Differences Between Logging and Wildfire, Bernd Heinrich on Bumblebee Ecology, Michael Soulé on the Health Implications of Global Warming, Peter Brussard on Nevada Biodiversity Initiative, Preliminary Columbia Mtns. Conservation Plan, Environmental Consequences of Having a Baby in the US

19 Fall 1995 • SOLD OUT (but photocopies of articles are available). Wendell Berry on Private Property and the Common Wealth, Eastside Forest Restoration, Global Warming and The Wildlands Project, Paul J. Kalisz on Sustainable Silviculture in

Eastern Hardwood Forests, Old Growth in the Catskills and Adirondacks, Threatened Eastern Old Growth, Andy Kerr on Cow Cops, Fending of SLAPPS, Using Conservation Easements to save wildlands, David Orton on Wilderness and First Nations

20 Winter 1995/96 • ***TWP Special Issue #2.*** Testimony from Terry Tempest Williams, Foreman's Wilderness: From Scenery to Strategy, Noss on Science Grounding Strategy and The Role of Endangered Ecosystems in TWP, Roz McClellan explains how Mapping Reserves Wins Commitments, Second Chance for the Northern Forest: Headwaters Proposal, Klamath/Siskiyou Biodiversity Conservation Plan, Wilderness Areas and National Parks in Wildland Proposal, ROAD-RIP and TWP, Steve Trombulak, Jim Strittholt, and Reed Noss confront Obstacles to Implementing TWP Vision

21 Spring 1996 • Bill McKibben on Finding Common Ground with Conservatives, Public Naturalization Projects, Curt Steger on Ecological Condition of Adirondack Lakes, Acid Rain in the Adirondacks, Bob Mueller on Central Appalachian Plant Distribution, Brian Tokar on Biotechnology vs. Biodiversity, Stephanie Mills on Leopold's Shack, Soulé asks Are Ecosystem Processes Enough?, Poems for the Wild Earth, Limitations of Conservation Easements, Kerr on Environmental Groups and Political Organization

22 Summer 1996 • McKibben on Text, Civility, Conservation and Community, Eastside Forest Restoration Forum, Grazing and Forest Health, debut of Landscape Stories department, Friends of the Boundary Waters Wilderness, Private Lands in Ecological Reserves, Public Institutions Twisting the Ear of Congress, Laura Westra's Ecosystem Integrity and the Fish Wars, Caribou Commons Wilderness Proposal for Manitoba

24 Winter 1996/97 • SOLD OUT (but photocopies of articles are available). Opposing Wilderness Deconstruction: Gary Snyder, Dave Foreman, George Sessions, Don Waller, Michael McCloskey respond to attacks on wilderness. The Aldo Leopold Foundation, Grand Fir Mosaic, eastern old-growth report, environmental leadership. Andy Robinson on grassroots fundraising, Edward Grumbine on Using Biodiversity as a Justification for Nature Protection, Rick Bass on the Yaak Valley, Bill McCormick on Reproductive Sanity, and portrait of a Blunt-nosed Leopard Lizard

25 Spring 1997 • Perceiving the Diversity of Life: David Abram's Returning to Our Animal Senses, Stephanie Kaza on Shedding Stereotypes, Jerry Mander on Technologies of Globalization, Christopher Manes's Contact and the Solid Earth, Connie Barlow Re-Stories Biodiversity by Way of Science, Imperiled Freshwater Clams, WildWaters Project, eastern old-growth report, American Sycamore, Kathleen Dean Moore's Traveling the Logging Road, Mollie Matteson's Wolf Re-story-ation, Maxine McCloskey on Protected Areas on the High Seas

26 Summer 1997 • Doug Peacock on the Yellowstone Bison Slaughter, Reed Noss on Endangered Major Ecosystems of the United States, Dave Foreman challenges biologists, Hugh Iltis challenges abiologists, Virginia Abernethy explains How Population Growth Discourages Environmentally Sound Behavior. Gaian Ecology and Environmentalism, The Bottom Line on Option Nine, Eastern Old Growth Report, How Government Tax Subsidies Destroy Habitat, Geology in Reserve Design, part two of NPS Prescribed Fires in the Post-Yellowstone Era

27 Fall 1997 • SOLD OUT (but photocopies of articles are available). Bill McKibben discusses Job and Wilderness, Anne LaBastille values Silence, Allen Cooperrider and David Johnston discuss Changes in the Desert, Donald Worster on The Wilderness of History, Nancy Smith on Forever Wild Easements in New England, George Wuerthner on Subdivisions and Extractive Industries, More Threatened Eastern Old Growth, part 2, the Precautionary Principle, North and South Carolina's Jocasse Gorges, Effects of Climate Change on Butterflies, the Northern Right Whale, Integrating Conservation and Community in the San Juan Mtns., Las Vegas Leopard Frog

28 Winter 1997/98 • ***Overpopulation Issue*** explores the factors of the I=PAT model: Gretchen Daily & Paul Ehrlich on Population Extinction and the Biodiversity Crisis, Stephanie Mills revisits nulliparity, Alexandra Morton on the impacts of salmon farming, Sandy Irvine punctures pro-natalist myths, William Catton Jr. on carrying capacity, Virginia Abernethy considers premodern population planning, Stephanie Kaza on affluence and the costs of consumption, Kirkpatrick Sale criticizes the Technological Imperative, McKibben addresses overpopulation One (Child) Family at a Time, Interview with Stuart Pimm, Resources for Population Publications & Overpopulation Action, Spotlight on Ebola Virus

29 Spring 1998 • Interview with David Brower, Anthony Ricciardi on the Exotic Species Problem and Freshwater Conservation, George Wuerthner explores the Myths We Live By, forum on ballot initiatives, John Clark & Alexis Lathem consider Electric Restructuring, Paul Faulstich on Geophilia, critiques of motorized wreckreation, Mitch Friedman's Earth in the Balance Sheet, Anne Woiwode on Pittman Robinson, Peter Friederici's Tracks, Eastern Old Growth, Connie Barlow's Abstainers

30 Summer 1998 • ***Wildlands Philanthropy*** tradition discussed by Robin Winks, John Davis on Private Wealth Protecting Public Values, Doug Tompkins on Philanthropy, Cultural Decadence, & Wild Nature, Sweet Water Trust saves wildlands in New England, A Time Line of Land Protection in the US, Rupert Cutler on Land Trusts and Wildlands Protection, profiles of conservation heroes Howard Zahniser, Ernie Dickerman, & Mardy Murie, Michael Frome recollects the wilderness wars, David Carle explores early conservation activism and National Parks, and Barry Lopez on The Language of Animals

31 Fall 1998 • ***Agriculture & Biodiversity*** examined by Paul Shepard, Catherine Badgley, Wes Jackson, and Frieda Knobloch, Scott Russell Sanders on Landscape and Imagination, Amy Seidl addresses exotics, Steve Trombulak on the Language of Despoilment, George Wuerthner & Andy Kerr on livestock grazing, **Rewilding** paper by Michael Soulé & Reed Noss, Gary Nabhan critiques the Terminals of Seduction, Noss asks whether conservation biology needs natural history, Y2Y part 2, profile of Dan Luten

Additional *Wild Earth* Publications

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by Mary Byrd Davis

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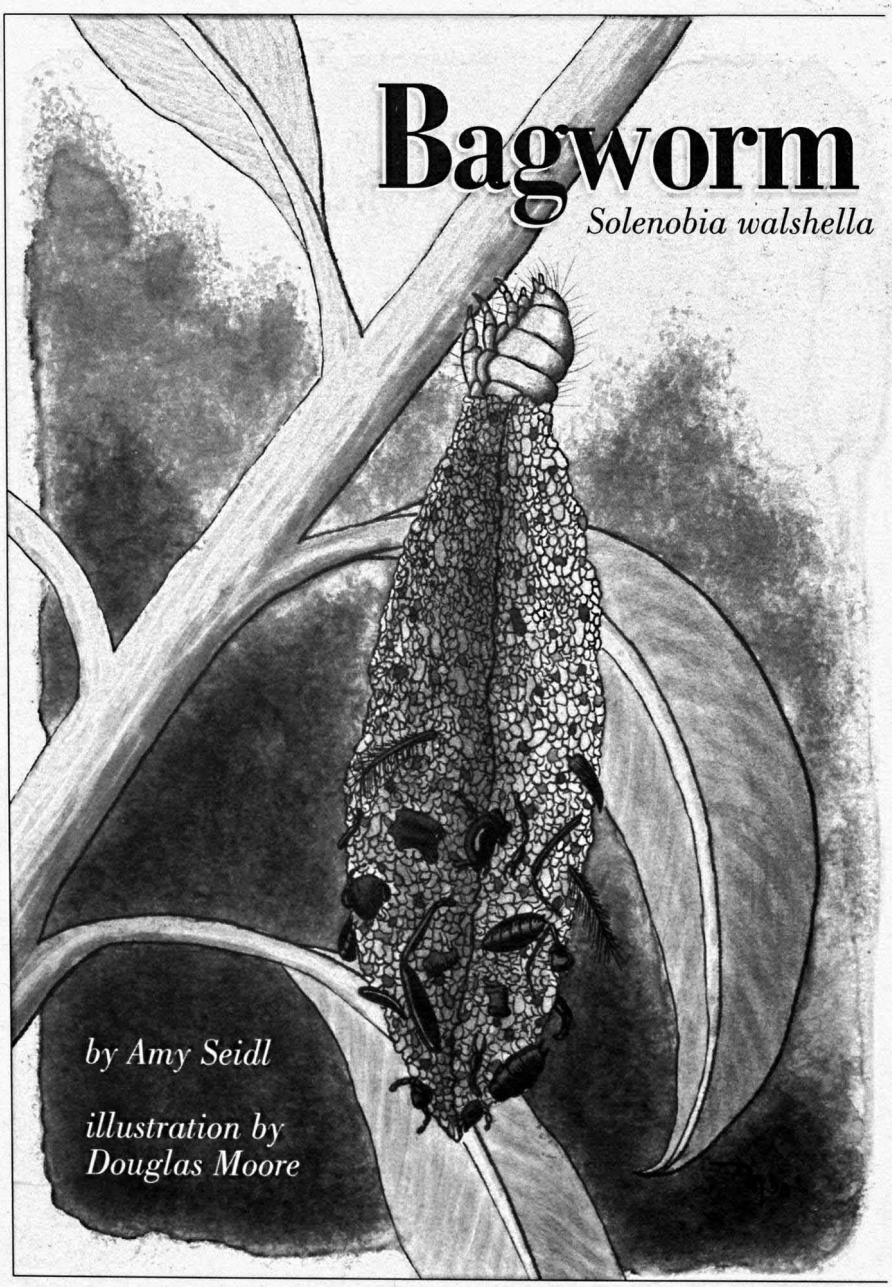
Bagworm

Solenobia walshella



by Amy Seidl

illustration by Douglas Moore

ALTHOUGH INSECTS COMPRISE THE MAJORITY OF EARTH'S BIODIVERSITY, the basic ecology and biology of many remain little known. Such is the case with members of the bagworm genus *Solenobia*, a group of cryptic smoky-colored moths belonging to the family Psychidae in the order Lepidoptera. Common but rarely seen creatures, bagworms are distributed throughout Europe and occur as a single species, *Solenobia walshella*, in North America.

Bagworms are aptly named for their silk-spun cases that surround them as larvae. Like their evolutionary cousins the caddisflies, bagworms house themselves in trihedrally shaped cocoons, angled boxes in which they spend most of their lives. The cases are miniature monuments covered with grains of sand, fragments of plants, and the cast-off exuviae of insects—assorted heads, tarsi, and forelegs. Bagworm cases are perfect foils that disguise the insects inside from their wasp predators; they may appear as unassuming as a mound of sand or as macabre as a many-headed multi-limbed monster.

Solenobia walshella's life cycle is characterized by a long larval period and a brief, nonfeeding adult stage. The cycle begins early in the spring when a female lays a clutch of several hundred eggs inside her larval case. After oviposition, the spent female exits through the rear end of the bag, enlarging an opening from which her newly hatched larvae emerge. And they do, on fine silken threads that lower them to the ground. Young bagworms immediately construct their own cases, gathering materials and fashioning a "neck" opening from which they extend to feed on protein-rich lichens and the leaves of woody trees and shrubs.

Early insects were apterous (wingless); not until millions of years after their appearance in the fossil record do we see evidence of their having attained flight. Wing loss in modern insects, however, is interpreted as a highly evolved and specialized trait, an attribute shared by female *Solenobia*. In addition to being wingless, female bagworms have also lost their legs, their ocelli (simple eyes), and their head and thorax are less developed than in males. In this unadorned form they have also become parthenogenetic and are able to self-fertilize, often producing populations of daughters, all female societies. Yet this specialized state makes them more prone to extirpation, a characteristic which in this time of species loss raises the question: How do we discern between natural and human-induced extinction? "The moon is always female" wrote Marge Piercy, but in celestial environs being exclusively female may have fewer repercussions than on Earth—where natural selection reigns.

Amy L. Seidl is a PhD candidate in ecology and evolutionary biology at the University of Vermont.

Artist and ecologist Douglas Moore is a highly regarded natural science illustrator whose work regularly appears in Wild Earth. *He studies (and draws) bugs and other critters in Tucson, Arizona (6840 N. Featherstone Tr., 85743).*

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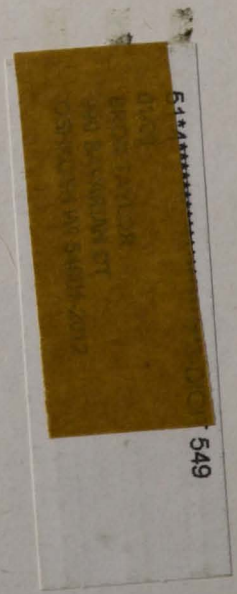

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