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THE MAGAZINE OF THE SIERRA CLUB • MARCH/APRIL 1994

21 ECOREGIONS

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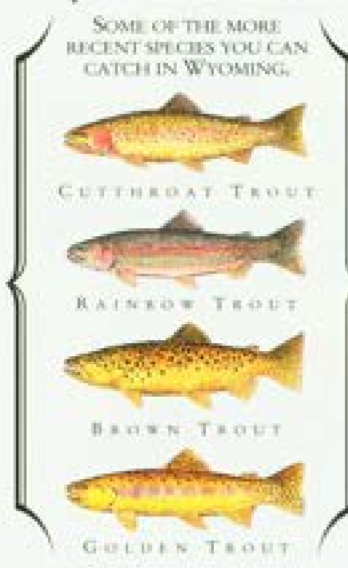

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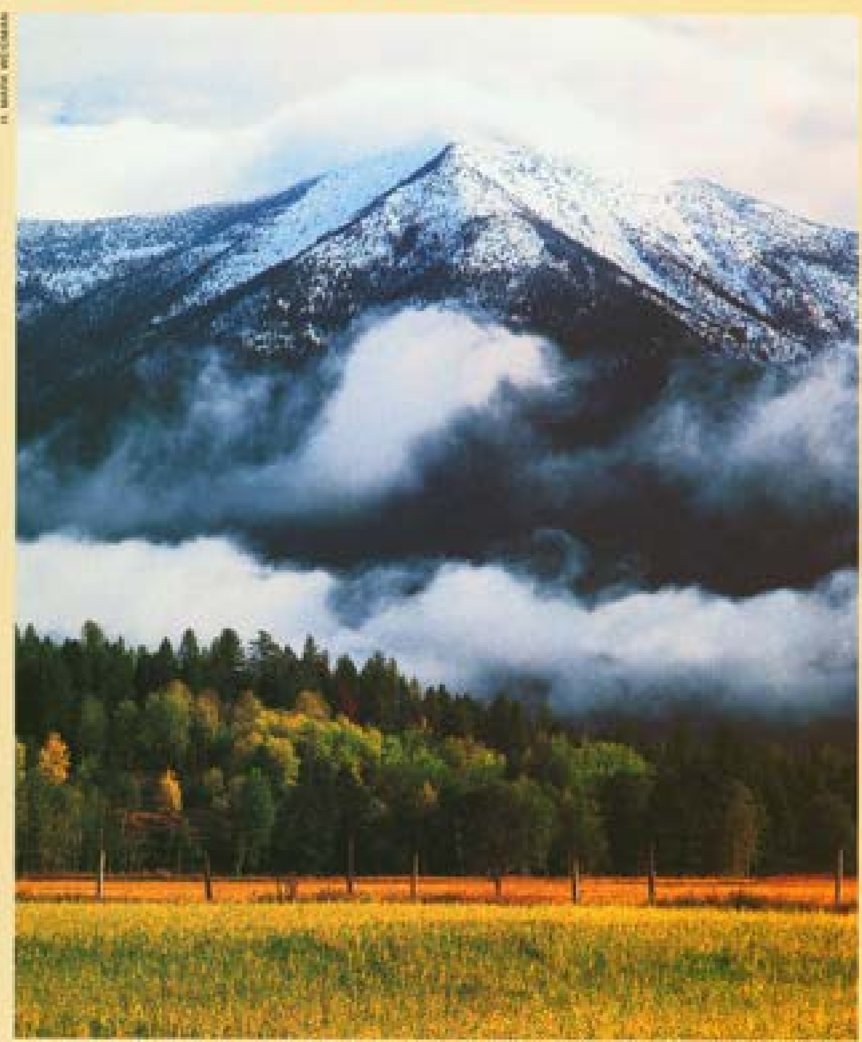

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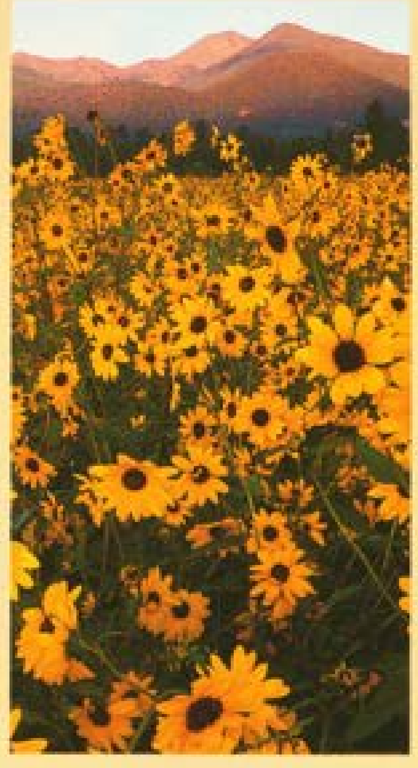

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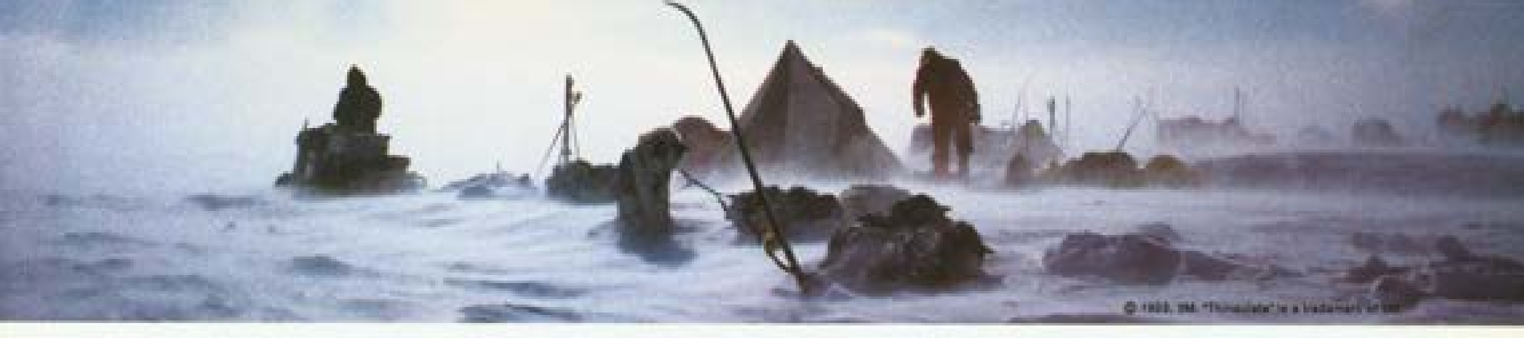

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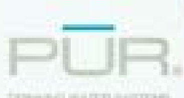

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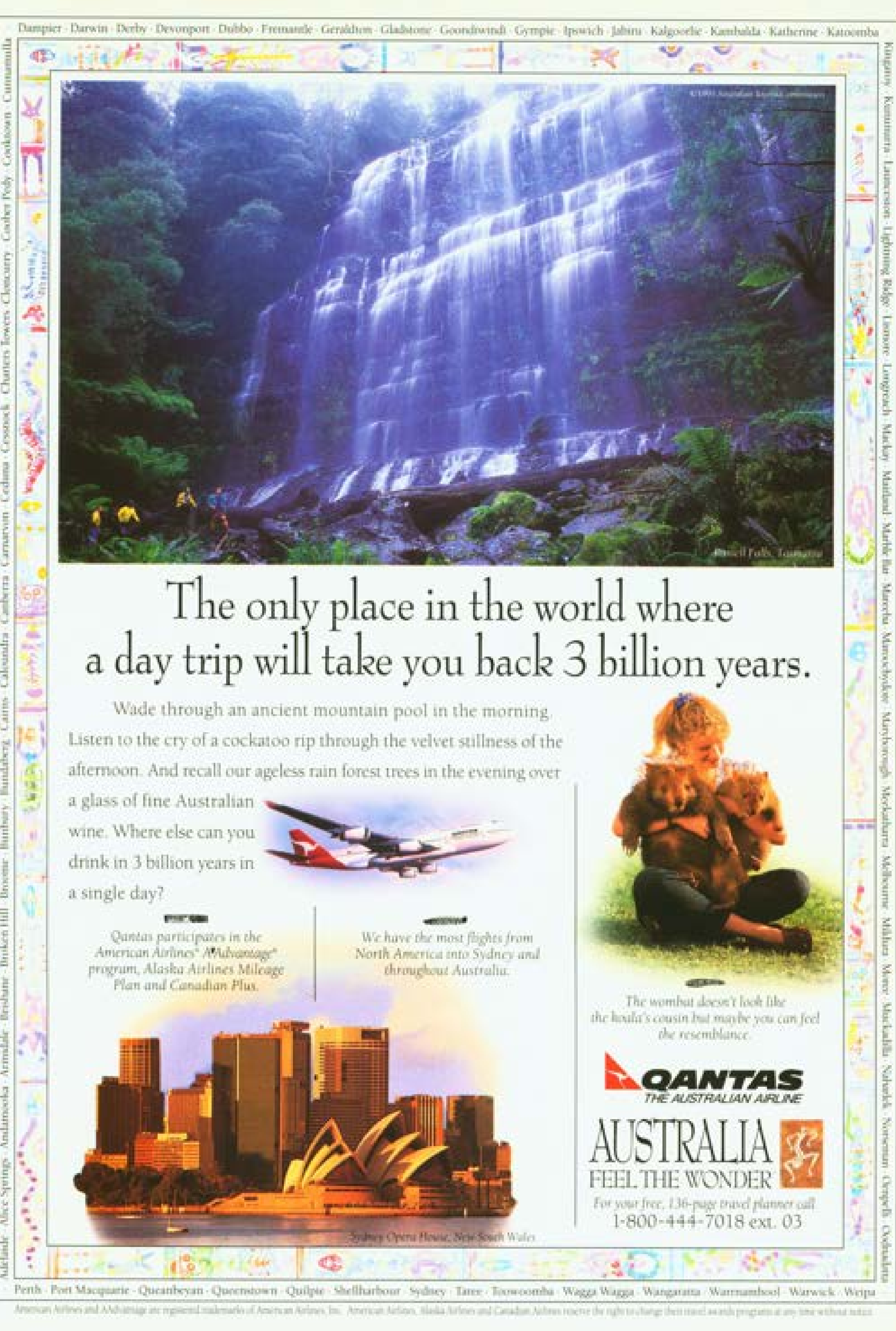

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PHOTO ABOVE BY LONNA TUCKER, 1993 SECOND-PLACE WINNER, "THE WAYS OF WATER"

Beyond the Boundaries

THE PIONEERS OF THE NORTH American conservation movement focused on preserving the scenic values of individual, highly distinctive places. Intense efforts were made a century ago to trumpet the unique character of such wonderlands as Yellowstone and Yosemite in the media of the day—then as now the key to success in the court of public opinion. State and federal legislators were thereby persuaded (sometimes) to maintain a few, or a few hundred thousand, acres of wildlands in a more-or-less natural condition in perpetuity, safe from settlers, speculators, developers, and others with an eye not for beauty, but for profit.

This approach has its unarguable merits, but it has as many faults. The national-park and wilderness movements that it spawned succeeded, it's true, in protecting a number of scenic and recreational treasures. But while these movements expressed their adherents' aesthetic and spiritual concerns, they did little to address or advance the era's primitive scientific understanding of the workings of complex ecosystems. Thus, the most brilliant victory for scenery or the soul was only coincidentally a triumph for what we today would call ecological integrity.

The latter concept has been explored and clarified by the writings and examples of John Muir, Aldo Leopold, Bob Marshall, E. O. Wilson, Michael Soulé, and other natural historians, ecologists, and conservation biologists who have instilled in us an appreciation for the interconnectedness of natural systems. This scientific worldview has found its political expression in ecoregionalism, the notion that environmental problems are best addressed in the context of broad geographic areas defined by natural features rather than by political boundaries and borders.

The root *eco-* is of course borrowed from *ecology*—a buzzword broadly and confusingly applied these days to phenomena as diverse as a local campaign to promote cardboard recycling and an international treaty to protect Antarctica. But this casual appropriation should not diminish the power of the concept properly applied—in simple terms (in Muir's timeless phrase), "when we try to pick out anything by itself, we find it hitched to everything else in the universe." Fully comprehended and backed by popular support, this insight could lead our species to reconciliation with the natural world from which it has become so estranged.

Our freelance ecoregionalists, clockwise from top left: John Daniel, Page Stegner, Andrei Codrescu, Bill McKibben, Jane Smiley, W.S. Merwin.

The Sierra Club has wholeheartedly embraced ecoregionalism as a context for our work during the coming decades, and has devoted significant energy to recasting the maps of the United States and Canada in this new light. As Jane Elder points out in "The Big Picture" (page 52), her introduction to this expanded issue of *Sierra* devoted to the Sierra Club's new Critical Ecoregions Program, we have come to realize that there is a limit to what we can preserve simply by drawing lines around visually spectacular chunks of landscape. It's not that lines on a map can't possibly describe areas sufficient to maintain biological diversity; it's that such lines, correctly drawn, won't correspond to the common divisions—towns, counties, states, provinces—comprehensible to bureaucrats and politicians.

The present issue of *Sierra* will, we hope, introduce our members and supporters to a fresh way of looking at the world. We here describe 21 ecoregions that, while embracing all 50 U.S. states and 12 Canadian provinces and territories, are not defined by them. Rather, they are distinguished by common watersheds and river basins, forest types and flyways. In each instance we provide sufficient information to enable interested readers to make contact with others working to protect their ecoregion.

We've labored long to bring you this, our largest issue ever. Though no single number of any magazine could do justice to the complexity of all 21 ecoregions, we found space to describe six of them at length, and chose six authors of uncommon insight and skill to do so. The remaining 15 ecoregions are treated more briefly following the features.

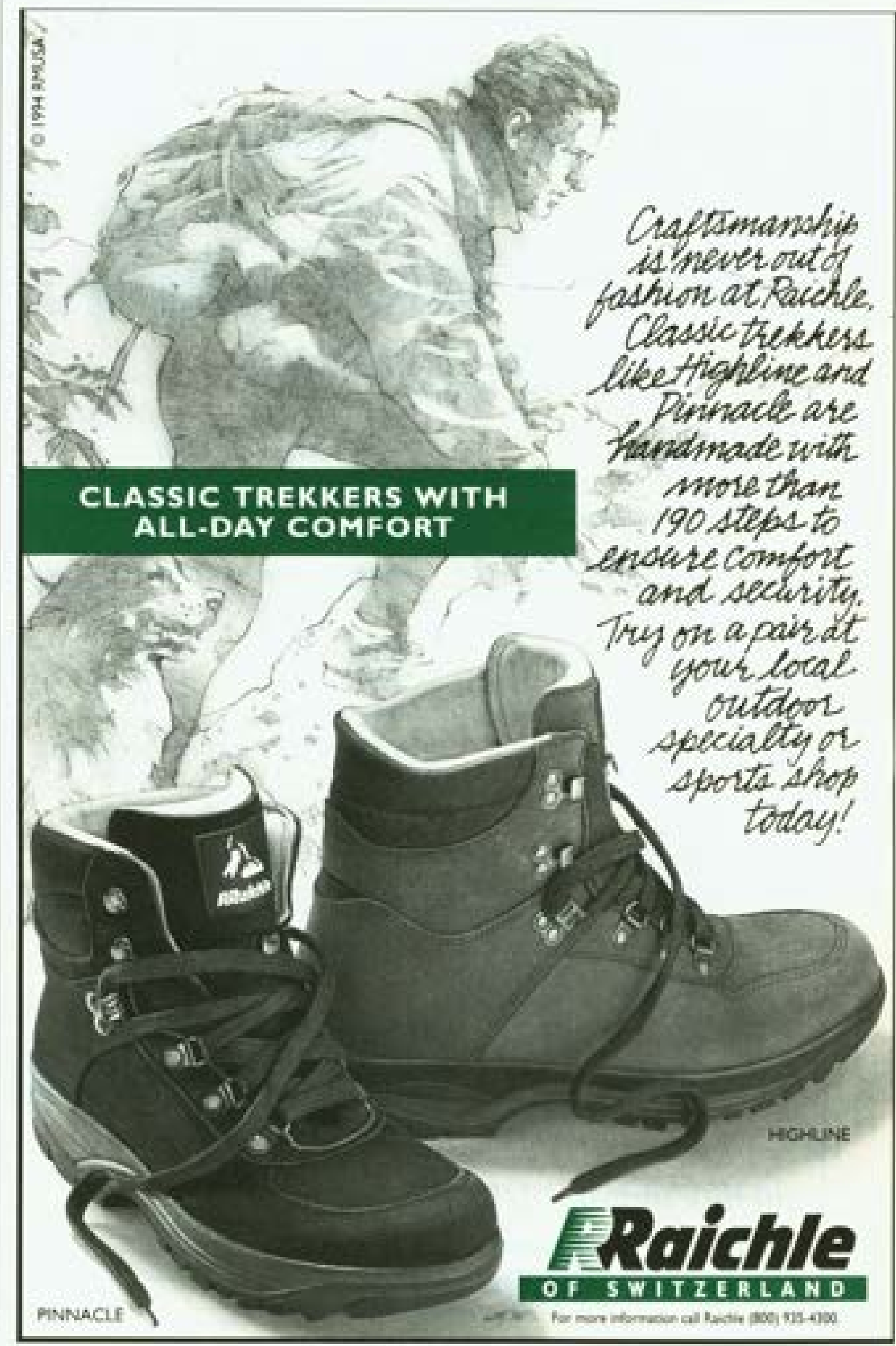
JOHN DANIEL (the Pacific Coast Ecoregion) made his way southward from Vancouver Island to the teeming Los

Angeles metroplex, meditating as he went on the foibles of our species and our prospects for setting right the environmental damage we have done to this stunning and fecund ecoregion—one he's explored tirelessly since 1966. "There's beauty and mystery enough on the sundown shore of North America to keep me occupied for several lifetimes," Daniel writes. "It's been a privilege to think out loud about it for the readers of *Sierra*." The result of all that rumination, "The Limits of Paradise," begins on page 64. An expanded paperback edition of the author's volume of essays, *The Trail Home*, is forthcoming from Pantheon this spring.

JANE SMILEY (the Great North American Prairie Ecoregion) is the author of, among other titles, *The Greenlanders* and *A Thousand Acres*. (The latter won a Pulitzer prize.) Acclaimed for instilling in her readers a sense of the verities of life in America's agricultural heartland, she nonetheless found our assignment an opportunity to increase her ecoregional awareness: "It was astounding to visit the larger remnants of the original prairie, and to see how surrounded these bits are by cultivated land. It's sobering to contemplate how total the loss of the tallgrass prairie is, and how thoroughly these fertile lands have been exploited." Smiley's historical recounting of the transformation of the prairie, "So Shall We Reap," begins on page 74.

ANDREI CODRESCU (the Mississippi Basin Ecoregion), a commentator well-known to listeners of National Public Radio, is a professor of English at Louisiana State University, editor of a journal called *The Exquisite Corpse*, and a successful transplant from Transylvania to New Orleans. "I live here because it's a gumbo, a mix of Creole spices, musics, accents, cookeries, masques, fineries, masquerades, the easy congress between the living and the dead, hoodoos, year-around-fleurs, and unceasing fertility"—as well as "pollution, corruption, ignorance, murderous passion, sloth, and indifference." This mélange of civilized and wild ingredients, he says, "is fueled by the mighty Mississippi all around, bringing us sediment and sentiment, vileness and blues, surrender and freedom." Codrescu's memoir of last year's Mississippi River catastrophe, "Down in the Flood," begins on page 84. The author of more than 20 books of poetry, fiction, essays, and autobiography also wrote and starred in the film *Road Scholar*; his latest book is *The Muse Is Always Half-Dressed in New Orleans* (St. Martin's Press).

PAGE STEGNER (the Colorado Plateau Ecoregion) is the author of *American Places* (with Wallace Stegner and Eliot Porter) and two Sierra Club Books, *Islands of the West* and, most recently, *Outposts of Eden*. He's well suited to describe this fascinating and complex ecoregion, having hiked and camped the Plateau for some 50 years. (He's run every whitewater river thereabouts too, including the Green and the Colorado.) As Stegner notes in "Red Ledge Province" (page 92), his father, Wallace,



was instrumental in identifying parts of the Plateau that could best be preserved within the national-park system; he also, through his many writings, gave Americans their clearest insights into the virtues and values of life in the natural West. Though Page himself spends much of each year as a professor of English at the University of California at Santa Cruz, he is familiar with more far-flung ecoregions as well: a part-time Vermonter, his most recent contribution to *Sierra* was an essay on the carving up of New England's forests for second-home subdivisions ("Let It Be Woods," September/October 1991).

BILL MCKIBBEN (the Great Northern Forest Ecoregion) lives in a small community within the "Blue Line" of Adirondack Park in New York State. He has written widely on the challenges facing this huge tract of wildlands, situated so near the East's most populated cities. The former *New Yorker* staff writer, best known to environmentalists as the author of the influential *The End of Nature* (Random House), is currently at work on a new book about environmental hope. In "The People and the Park" (page 102) he gives voice to another kind of hope: that the human beings on whom the park depends for its political survival can themselves find a way to survive within it. "Living in the Adirondacks, in a place that was once under assault and has now grown back to real wilderness," he tells us, "is the best antidote to despair that I know of. Its example is subversive; if only it proves contagious, too."

W.S. MERWIN (the Hawaii Ecoregion) is a translator and Pulitzer prize-winning poet, and a poetic sensibility suffuses "Snail Song" (page 110). The extraordinary complexity of this archipelago has been savaged in the blink of a historical eye, as invaders and settlers have introduced aggressive alien plant and animal species while "developing" indigenous ones to the brink of extinction. For years Merwin has been part of what he calls the "dug-in opposition" to a geothermal project in the Wao Kele O Puna rainforest, as well as a defender of Hawaii's native flora. "The destruction of parts of the ecosystem and of individual species continues at a headlong rate," he says, "in a place that is biologically unique and extremely fragile—quite apart from being, still, indescribably beautiful, wherever one can avoid the improvements."

THAT SENSE OF PARADISE ABOUT TO BE lost is what motivates Sierra Club activists to champion—with all their hearts and energies—what remains of our planet's natural heritage. Our hope for this issue of *Sierra* is to inspire countless others to join us in dreaming big. Together we may save not only the obvious scenic treasures of the United States and Canada, but the landscapes, species, and visions that compose a seamless web of life, from frozen north to steamy south, from ocean to ocean, from distant wilds to our own backyards. —*the editors*

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NPG Statement on Population

We Believe that the Optimum Rate of Population Growth is Negative

We believe that the optimum **rate** of population growth for the United States (and for the world) is **negative** until such time as the **scale** of economic activity, and its environmental effects, are reduced to a level that would be sustainable indefinitely.

We are convinced that if present rates of population and economic growth are allowed to continue, the end result, within the lifetimes of many of us, would inevitably be near universal poverty in a hopelessly polluted nation and world.

We agree with Professor Herman Daly who has pointed out that the human economy is a subset of the biosphere, and that **the current scale of economic activity relative to the biosphere is already far too large to be sustainable indefinitely**.

Stabilization Is Not Enough

We believe that calls for merely slowing down rapid population growth, or for stabilizing population at present or even higher levels, **are totally inadequate**.

Such proposals, while presented as a solution, **fail to address the central issue**: how to create a national (and world) economy that will be sustainable indefinitely.

At present or at even higher levels of population, neither the application of science and technology, nor simplifying life-styles, nor any combination of the two, can offer any hope of reducing our impact on the environment to a sustainable level.

We Need a Smaller Population

We recognize that our impact on the environment in terms of pollution and resource depletion is the product of our numbers times our per capita consumption of energy and materials. Thus, there are only three ways by which that impact can be reduced:

- By reducing the size of our population by a negative rate of population growth.
- By reducing over consumption (in the United States and other developed countries) by simplifying life-styles.
- By reducing resource depletion and pollution per unit of consumption through more efficient use of energy and materials.

Population size is by far the most critical of those three variables. **Nevertheless, our present scale of economic activity is so large relative to the biosphere that all three measures are needed in order to reduce it to a sustainable level.**

An Urgent Need

Over 20 years ago, when our U.S. population was far smaller, (about 202 million, rather than our present 260 million), Professor John Holdren correctly saw the urgent need for a negative rate of population growth. At that time he wrote,

"...What is surprising...is that there is not more agreement concerning what the rate of change of population size should be. For given the uncertain, but possibly grave, risks associated with substantially increasing our impact on the environment, and given that population growth aggravates or impedes the solution of a wide variety of other problems...it should be obvious that the optimum **rate** of population growth is zero or negative until such time as the uncertainties have been removed and the problems solved."

A Population Goal for Our Country

We must have, first of all, a nationally-determined population goal for our country, accompanied by effective policies to achieve it.

We urge Congress and President Clinton to set, as a top priority national goal, **the achievement of a negative rate of population growth for the United States until such time as the scale of our economic activity is reduced to a sustainable level**.

We also call on our political leaders to urge other nations to pursue a similar goal.

Please help us build broad public support for a national policy to achieve a negative rate of population growth.

NPG is a nonprofit, national membership organization established in 1972. ***We are the only organization that calls for a smaller U.S. and world population, and recommends specific, realistic measures to achieve those goals.***

Contributions to NPG are tax deductible to the extent the law allows. As reported to the IRS on our most recent Form 990, our fundraising and administrative expense was only 13.3 percent of our total income.

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POWER POLITICS

Phillip Greenberg's "Dreams Die Hard" (November/December 1993) faithfully recites the worn-out and disproven claims of the anti-nuclear movement. But it's not even a good anti-nuclear tapestry—it's really a tangled knot of selectively chosen factoids and canards.

In just 20 years, nuclear has grown from an alternative-energy source into our second-largest generator of electricity. Like beauty, "failure" is in the eye of the beholder. Unfortunately, the Sierra Club's vision is myopic when it comes to the facts on nuclear energy.

Phillip Bayne
President and CEO
U.S. Council for Energy Awareness
Washington, D.C.

All energy sources have severe environmental or economic problems associated with their use. Nuclear energy in the United States and other Western nations has been largely a success. It has a better safety record than any of the conventional fuels—coal, oil, and natural gas. Not a single member of the public has ever been injured by radiation from a nuclear plant in this country.

Contrary to your article, there are indeed a substantial number of nuclear plants in the United States that produce power at very low cost. The cost of power from nuclear reactors in France is the lowest on the European continent, allowing it to sell large amounts of electricity to neighboring countries. As a result of its commitment to energy independence, France gets more than 70 percent of its power from nuclear plants. New designs for future U.S. plants promise to be competitive with the lowest-cost alternative and even safer than the previous generation.

Finally, there is no way we can meet the nation's goals in controlling greenhouse-gas emissions, as promised by the Clinton administration, without the significant use of nuclear energy. Since they produce no greenhouse gases, nuclear plants have already prevented the release of 4.6 billion tons of carbon dioxide. It will take great efforts in conservation and the use of our least-polluting energy technologies both to preserve the environment and provide for adequate economic growth. Without rational discourse, we can never come to agreement on how to solve our energy problems. I hope in the future that *Sierra* will make a productive contribution to that discussion.

Frank R. Bruce
Associate Director (retired)
Oak Ridge National Laboratory
Oak Ridge, Tennessee

Greenberg uses scare tactics to suggest that U.S. nuclear reactors are just like the Russian Chernobyl design and that they pose the same dangers. The fact is that U.S. reactors are fundamentally different, and could never cause the same magnitude of problems as seen in the Chernobyl accident. Very early in the development of nuclear power in the United States, scientists rejected this Russian design approach because they recognized its potential problems and inherent dangers.

All current Sierra Club members should be reminded that some years ago the Club was on record as supporting nuclear power as a way of improving the environment by eliminating the need for damming more rivers or mining more coal. (I would suggest that you examine some of the articles in the old *Sierra Club Bulletins* and the statements made by Ansel Adams and other Club leaders.) Many people still reject the way that the nuclear-power issue has been politicized by the Club.

Many of us who have been environmentalists long before most Club members knew the meaning of the word look forward to the time when all members will educate themselves on the facts of nuclear technology and once again support one of the best ways of improving the world's environment and our way of life.

James E. Gingrich
Lafayette, California

In light of our energy problems, I think it is time for environmentalists to re-evaluate their stance toward nuclear power. For the near future the four major options for energy sources are hydroelectric, coal, oil and gas, and nuclear power. Many rivers are dammed already, and I don't know of any more dams that can be built without adverse environmental effects. Coal is the most polluting source of all; coal-fired plants release significant amounts of detrimental polluting oxides. Most of us are now aware that the real costs of cheap oil and gas extend far beyond what we pay at the gas pump. The political and military costs of controlling the Middle East will continue to be high, as future conflicts in the region are inevitable, and hydrocarbons are sources of problems such as smog and acid rain. None of these first three options is environmentally desirable.

Nuclear power, however, causes very little pollution during its generation. The extraction of uranium ore from mines is strictly regulated. Up-to-date reactor designs prevent any danger from explosions or meltdowns. The main problem associated with this energy resource is the disposal of radioactive waste. Having worked in this field for some time, I have seen firsthand that waste-disposal hang-ups are mainly political and not technical problems. People oppose locating any type of disposal site near their communities. Due to public opposition, tremendous political pressure becomes a major factor in stalling selection of potential sites for disposal of radioactive wastes. A number of safe and technically feasible potential waste sites have been rejected purely on nontechnical grounds. Such situations result in enormous legal battles where lawyers and politicians profit in the guise of saving the environment.

I returned home only to discover my sketch pad was blank.

Amy Cunningham recalls one of Mississippi's state parks.

Cameras with long lenses may be the most expedient way to capture waterfowl, but I've always derived more satisfaction putting simple pencil to paper, then trusting my memory when I'm at the easel. Besides, I paint strictly for pleasure, not for the purists.

That's probably a good thing, too, considering I came home blissfully empty-handed from my long weekend in Mississippi. I couldn't help it. When I looked up and saw the Great Blue Heron wading in the shallows, I froze. He was almost touchably close and I knew if I moved, he'd take flight.

In my mind's eye, I hurriedly sketched page after page in exquisite detail. I filled the pages front and back. By the time he'd flown away, I knew every feather and the glint of his obsidian eye.

I don't know how long we looked at each other in our total stillness. It was long enough for the light to change, of that I'm sure. And it was long enough for my heart to change as well, because in the eye of a heron, deep in the heart of Mississippi, I knew I'd found a state of grace.

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The root of many of these problems is a basic ignorance of radioactivity on the part of the general public. We have been barraged by sensationalized news reports and Hollywood movies treating radioactivity in a way that has no basis in fact. Some people actually believe in giant mutant praying mantises and people glowing in the dark because of this. Such beliefs (and the opinions they support) are based on emotion and ignorance. This is understandable, since nuclear physics is a complicated subject. Scientists, however, understand the health risks associated with radiation better than those associated with other carcinogens, and have set safety and regulatory guidelines accordingly.

Further development of alternative fuels and energy resources should be encouraged. However, we cannot depend on such alternatives to satisfy our growing energy needs in the near future. Having been involved in the solar-energy industry for over ten years, I can say that most people will not pay extra for it, even though they support it morally. As an environmentalist, I believe that we should accept nuclear energy as a viable alternative to the highly polluting options. Stopping the opening of waste dumps (of any type) is not going to rid us of the waste problem. We should support efforts to make sure that radioactive wastes are disposed of properly and safely. We can only make proper decisions when all sides of an issue are presented.

Paul N. Breaux
Austin, Texas

I don't understand why a nuclear-power plant is held to a higher safety standard than other industries in our society. Your article points out that there is roughly a 45-percent chance of a severe core meltdown over a 20-year period. What is the chance that a commercial airline will have a severe crash over a 20-year period? Should we then outlaw all commercial flights?

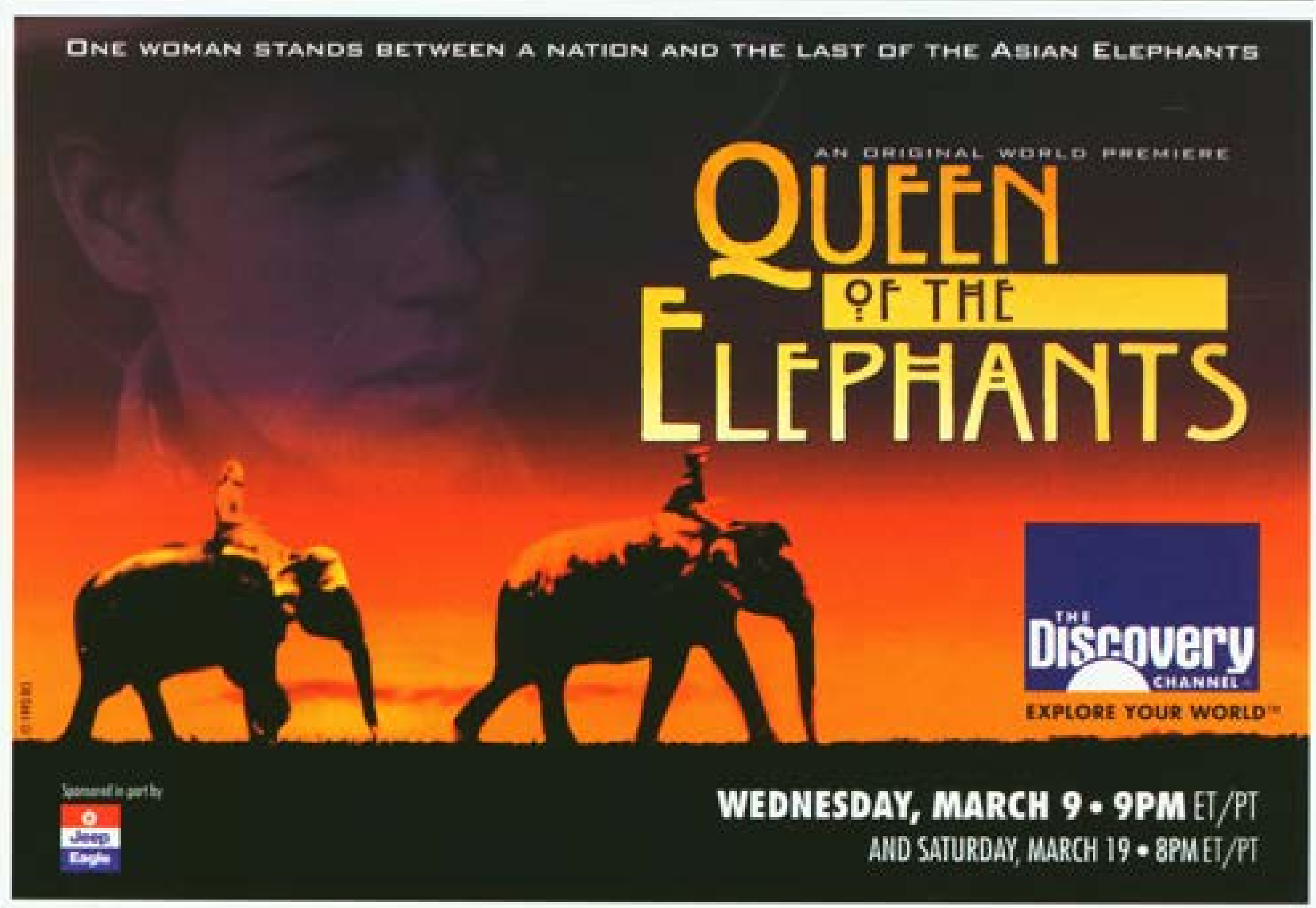
Now that I have read in *Sierra* about a topic with which I am familiar, I wonder if all the articles I read in it are this misleading.

David E. Lochtefeld
Murrysville, Pennsylvania

From my personal experience of living fairly near Three Mile Island, I have seen the benefits and consequences of nuclear power. The benefits are an infinite source of power at low cost, but the consequences are possible nuclear meltdown and the release of high levels of radioactivity that could destroy an entire state. I only hope that our government can find safer and cleaner sources of energy before another Chernobyl occurs in the United States.

Shawn M. Fullerton
Harrisburg, Pennsylvania

Phillip Greenberg replies: *The name of Phillip Bayne's organization is itself a telling indicator of the tactics of the nuclear-power industry. The U.S. Council for Energy Awareness is in fact the industry's chief public-relations arm. If this industry were regulated by the Food and Drug Administra-*



Kevin Carter

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tion, it would surely fail to meet all truth-in-labeling requirements. Regardless, Mr. Bayne's letter contained no factoid corrections, nor did he shoot down any canards.

Despite Frank Bruce's claims to the contrary, nuclear power remains a comparatively high-cost source of electricity—averaging 80 percent more than coal, according to a 1990 study by the Department of Energy (DOE). The true costs are even higher if one factors in its enormous government subsidies, plus such uncounted costs as decommissioning and waste disposal. In France, the price of nuclear-generated electricity is low because the cost of government subsidies is not passed on to consumers directly.

James Gingrich apparently missed the sentence in my article noting explicitly that the Chernobyl-era Soviet reactors do not meet Western design-safety standards. However, he is simply wrong when he says that U.S. reactors could never cause a catastrophe like Chernobyl. As Commissioner James Asselstine of the Nuclear Regulatory Commission told Congress in 1986: "While we hope their occurrence is unlikely, there are accident consequences for U.S. plants … which would result in the off-site release of fission products comparable to or worse than the [Chernobyl] releases. That is why the commission told the Congress recently that it could not rule out a commercial nuclear-power-plant accident in the U.S. resulting in tens of billions of dollars in property losses and injuries to the public."

It's precisely because a nuclear-power-plant accident could have such drastic consequences that even proponents agree nuclear power must be held to stricter safety standards than other industries. The most serious commercial-airliner crash imaginable would have far less disastrous results.

Under the Price-Anderson Act, moreover, the nuclear industry's exposure to public-liability claims is capped at $7 billion in the event of a severe reactor accident. Nuclear power is the only U.S. industry that enjoys such protection. If nuclear-power plants are so infallibly safe, why does the industry fight tooth-and-nail to preserve this favored treatment every time Price-Anderson comes before Congress for renewal? For some reason, an industry notorious for its loud protestations of safety always falls strangely silent when asked to put its money where its mouth is.

I disagree with Paul Breaux's assertion that public ignorance about radioactivity is at the root of nuclear power's problems. The public isn't worried about huge mutant insects; rather, it is concerned about the continuous pattern of misleading statements, outright falsehoods, and bland assurances that all will be fine if we just "trust the scientists." Recent revelations about the U.S. government's human radiation experiments underscore the validity of these concerns.

I do agree that we must respond to the threat of global warming by seeking to reduce fossil-fuel emissions. But nuclear power, with its high costs, safety concerns, and waste problems, is not the answer. As noted in my article, increased energy efficiency and the development and application of renewable and alternative energy technologies together offer more-economical, more-reliable, and safer energy supplies along with negligible greenhouse-gas emissions. The problem is that the United States has never made a steadfast, significant commitment to the development of these energy

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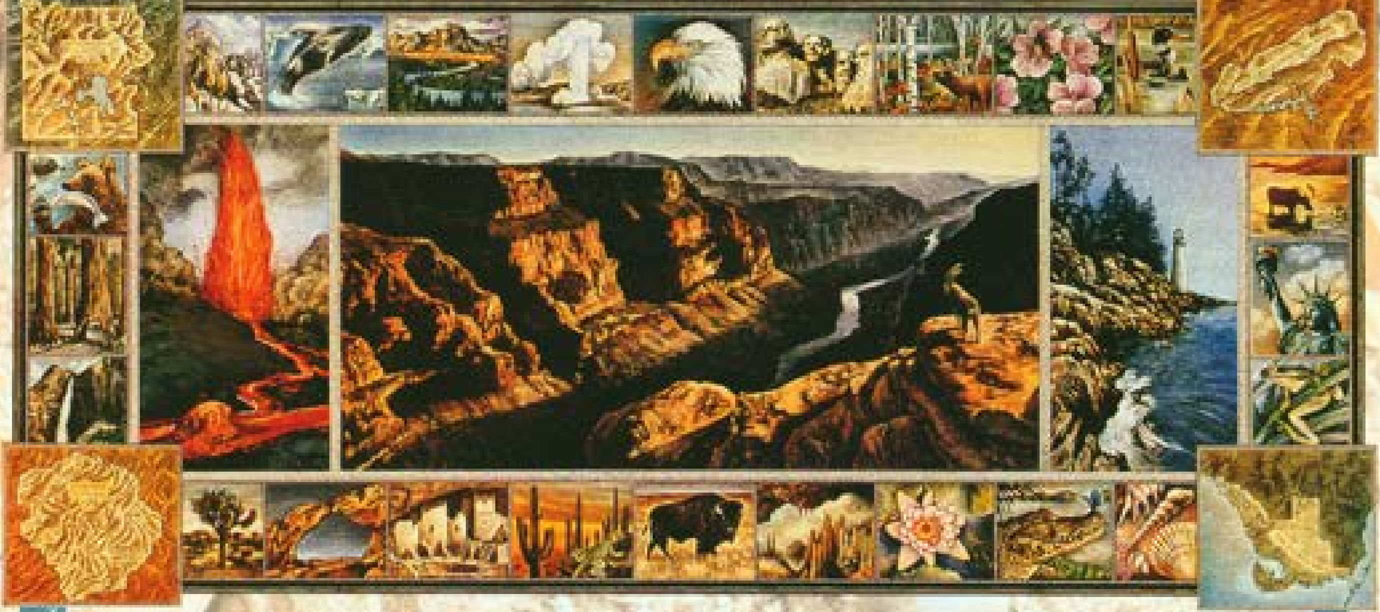

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sources, despite numerous authoritative studies that have documented their enormous potential and many advantages.

Let me cite just a few examples. Although Phillip Bayne notes correctly that nuclear power is the second-largest U.S. generator of electricity, it's certainly not the largest source of new energy supplies in recent years. Since 1979, the energy saved by increased efficiency and conservation totals four and a half times as much as that provided by new supply sources of all kinds; savings amount to $150 billion each year. Even so, the United States still uses roughly twice as much energy per dollar of GNP as Germany or Japan, so there are many improvements yet to be made. As for global warming, if it is our goal to replace coal-fired electricity with something more benign, each dollar spent on energy efficiency will displace seven times as much carbon as one spent on a new nuclear-power plant. A 1990 DOE study estimated that, given a strong national commitment to developing renewable energy sources, by the year 2030 renewables could supply between 72 and 148 percent as much electricity as the U.S. consumed in 1992, the actual ratio depending on the level of federal effort.

Claims regarding the alleged safety of disposal sites for nuclear waste have been advanced by industry advocates ever since the Atomic Energy Commission announced in 1970 that it had found the perfect disposal site: an abandoned salt mine in Lyons, Kansas. Unfortunately, that and every similar claim to date has collapsed before fatally damaging technical criticism. Moreover, no other country has yet begun full-scale commercial disposal either. As for Yucca Mountain in Nevada, we may never know whether the site is really suitable if DOE persists—as usual—in emphasizing expediency over science in its management of the site assessment. (The latter conclusion is the U.S. General Accounting Office's, not mine.)

Finally, all who argue that the problems of nuclear power are political, not technical, seem to forget that in our democracy every technology must pass the litmus test of both public opinion and the marketplace. Nuclear power has failed on both grounds.

FAMILY WAYS

Thank you for Mary Jo McConahay's excellent article on reproductive choice in Guatemala ("Seven Children . . . Four Alive," November/December 1993). I would like to add a point that she didn't address. Governments have many reasons to promote family planning, and women/couples/families have many reasons to want to use family planning. But the reasons are not the same. Couples do not choose to use contraception to protect the environment; they want contraception to protect the mother's health, to enable them to devote more attention to fewer children, to ensure that their children are fed and clothed, and so on. Couples want to know what's in it for them and their families, not what's in it for the environment.

"Population control" arguments are not very compelling among the potential clients of family-planning clinics, and may even have set back progress in family planning. The most effective way to promote family planning is to emphasize its health benefits for women, children, and families, an issue that is likely to emerge at the World Population Conference in Cairo next September. We must acknowledge that it is individuals who make the choices—and it is the benefits to individuals that will influence those choices.

Judith A. Fortney
Corporate Director for Scientific Affairs
Family Health International
Research Triangle Park, North Carolina

Mary Jo McConahay makes the plight of poor women all over the world come to life, and suggests the unreality of various studies of desired family size. To have asked one of the Guatemalan women how many children she wanted would have produced an almost meaningless answer because, among other things, she has almost no control over her life. Despite many current arguments to the contrary, the single best way to reduce family size in rural and remote areas of poor countries is to make top-quality family planning readily available. Those women who are not sure they want it, or who are negative about it, will be influenced by their peers who are using family planning, and by the reality of a functioning clinic with a wide range of contraceptive options. Desired family size is not static or written in concrete.

Max Thelen, Jr., Vice-President
S.H. Cowell Foundation
San Francisco, California

If Guatemalan women believe that the rhythm method is the only one available to them, why not teach them how to use it properly? The method obviously cannot work everywhere, but it can be effective; studies indicate that, even accounting for human error, the rhythm method works as well as the pill. It is also an effective way to empower women through knowledge of themselves, and to allow them to exert control—without hormones or surgery—over their own fertility.

Sharon Gouveia
East Montpelier, Vermont

A MATTER OF SOME CAVITY

Michael Castleman ("Afield," November/December 1993) is far afield indeed, apparently without a compass or a clue. Silver fillings, or amalgams, have been successfully used in dentistry since the last century. They have recently been investigated by the National Institutes of Health and found to be statistically unrelated to any alleged disease process, except for rare cases of allergy. Allergic reactions, when present, manifest as a local gumline irritation adjacent to the filling. I've only been doing dentistry for 20 years—I look forward to seeing such a case some day.

In many states the removal of sound silver fillings solely due to mercury content is defined as health fraud. I can cite a fair number of "anecdotal" accounts in which dentists were successfully sued by patients after such treatment, because their symptoms got worse, not better. Historically, treatment of vague episodic symptoms like headache or tiredness has been the purview of medical quackery. Such therapy has been delivered by practitioners who, though perhaps well-meaning, were self-deluding or else

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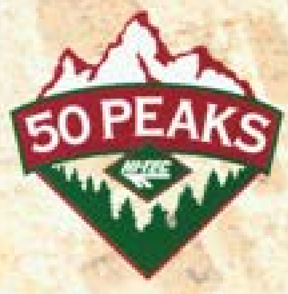

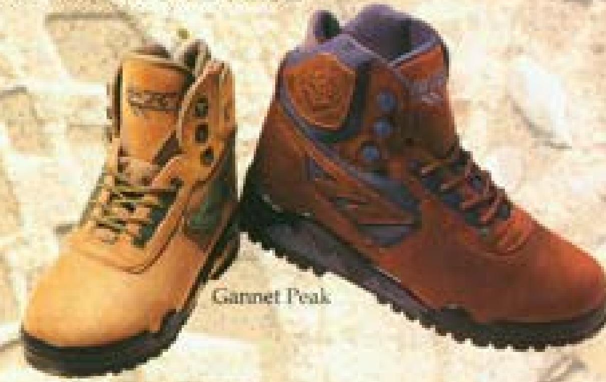

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motivated by baser instincts. I doubt that anti-mercury dentists can guarantee that following treatment their patients will never have a headache or feel tired again.

By the way, the composite-resin filling Mr. Castleman opted to put in his son's mouth is a fairly close relative of resins known to be carcinogenic. Everything in life has some risk, tiny though that risk may be. A nice, expensive gold crown . . . that's the answer!
Bruce Strathdee, DDS
Palm Desert, California

Dentists are wearying from fighting the incessant barrage of articles aimed at the safety of dental amalgam. Every responsible scientific body that has ever researched amalgam states that its safety is not suspect.

Let's clear one thing up: dentists in no way profit from placing silver fillings. They are inexpensive, and the least profitable fillings. We place them because they are very long-lasting, and they have a track record of 150 years. Unlike composite resins, they are not very prone to recurrent decay, and unlike composites, they resist wear from the bite. In other words, ethical dentists use amalgam because they want to treat their patients as they would their own families.

People should not be duped into spending thousands of dollars at a dental office like that of Ward Eccles. Nothing will be cured except Eccles' pocketbook. Those truly afraid of mercury should stop eating tuna and other seafood—these contain far more biologically significant mercury than the parts per billion released when chewing on dental amalgam.
Gary Gustavson, DDS
Skokie, Illinois

Michael Castleman replies: *I sincerely hope these dentists are correct in asserting that amalgam is completely safe, because I have a mouthful of the stuff. However, while it's true that amalgam has never been conclusively linked to any major health hazard (a point I made in my article), its safety remains open to question; the National Institute of Dental Research itself is seeking alternative materials for fillings.*

Without ever saying that amalgam should be banned or even restricted, I did use my column to raise troubling questions: how can an element as toxic as mercury suddenly become harmless once it's packed into teeth? And how can amalgam supporters insist that mercury is locked into fillings when several studies show that mercury vapor is detectable in the mouths of those who have amalgam fillings?

On December 15, 1993, in settling a lawsuit brought by the Environmental Law Foundation of Oakland, California, against Jeneric/Pentron, Inc., a major amalgam manufacturer, the corporation agreed to label amalgam sold in California with warnings that it contains toxic mercury. "The dental industry has covered up the hazards of mercury for decades," says James Wheaton, director of the foundation. "According to the World Health Organization, the chief source of mercury exposure in the industrialized world is amalgam. The public should be warned."

If amalgam supporters have the studies to answer the questions about this material, I would love to see them—and if they're persuasive, I'll be happy to eat crow in a future column. If it turns out that amalgam is proven hazardous, however, I wonder how many of its defenders would do the same.

WILD WAIVERS?

In "When Nature Turns Nasty," your November/December 1993 article on responses to wildlife attacks on humans, Paul Rauber states that "following a depredation in Canada's Jasper National Park, two grizzlies were found poisoned by large doses of strychnine." The impression is given that these were revenge poisonings. This is highly unlikely—though the idea was bandied about by the media for some time. What actually happened, as far as anyone has been able to determine, is that the bears were feeding on the carcasses of ground squirrels that had been poisoned by strychnine, or perhaps even directly on the poison set out by a resort owner to kill squirrels.

As to the larger scope of your article, it is our personal feeling that anyone entering a park or wilderness should be required to sign a waiver releasing anyone and everyone from liability in the case of their injury or death, as is being done by the California state park mentioned by Rauber. This would apply not only to animal attacks, but also to falling off mountains or into crevasses, or succumbing to any other natural hazard encountered. Not only would this improve the chance of survival for animals, but people would pay closer attention to the information about local hazards routinely provided to park visitors. Wilderness, after all, is defined as much by the presence of these natural hazards as it is by scenic vistas or old-growth forests. If we are unwilling to accept danger as part of the price of traveling in the wilderness, then we do not really want true wilderness, but rather a sanitized, safe, "as seen on television" version of the real thing.
Lelani Arris and Robert Ellement
Dunster, British Columbia

SHE MUST HAVE MEANT COLIN POWELL

Joan Hamilton, in writing about Interior Secretary Babbitt's plan to inventory U.S. biodiversity ("Priorities," November/December 1993), compared Babbitt to U.S. Geological Survey founder John Wesley Powell. In doing so, however, she posthumously promoted Major Powell to the rank of general. Although Powell's tenure as director of USGS was indeed significant, his Civil War military career ended much earlier. He enlisted as a private, and was discharged as brevet lieutenant-colonel in 1865, though the title of major clung to him for life.
N. King Huber
Mountain View, California

CORRECTION

We neglected to credit Stephen Johnson for his September/October 1993 "At a Glance" photo of cattle grazing in California's Great Central Valley.

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HAND & EYE

Character Studies

HANNAH HINCHMAN

Toward the end of my day at the Metropolitan Museum of Art, I fought against a current of bodies just to reach the Pissarro room, in the new 19th Century Painting Wing. It was no use trying to study the canvasses as part of the crowd that filed mechanically past them. I decided to take a more aggressive approach, and planted myself in front of each work, becoming a boulder in the stream instead of a piece of flotsam. The paintings need time to reveal themselves, and I intended to stay until I could return to their point of invention, find the seed of Pissarro's discoveries.

Among the Impressionists, Camille Pissarro (1830–1903) was a conservative. Unlike Monet, Pissarro never dissolved his trees and fields into pure light. His affection for the solidity of things is palpable in every square inch of his paintings; light follows the surfaces of objects rather than consuming them. In one of a series of the Tuileries Gardens in Paris, he painted the pale spring sunlight as it struck each trunk of a retreating colonnade of trees, as it threw shadows across the lawns of the gardens, and as it gilded buildings and children. In his work, chestnut trees remained chestnut trees.

Trees are trees, and the eye is glad of it

Satisfied with Pissarro, I had to decide how to use my final hour at the museum. A visit to the American Impressionists, I thought, might complement the images I'd gathered of fine midwestern hardwoods in my drive across the country. But an elevator delivered me to a basement room, to an exhibit called "Master Drawings of the Hudson River School." I almost left, still holding a grudge against the Hudson River painters because of Albert Bierstadt. Living in the Rockies, I've always found his humidity-distorted colors and pastoral fantasies an insult to the native dry light and spare forms. But this was a show of drawings, less likely to be tainted with bombast.

There were about 40 small works on paper and in well-used sketchbooks. Only a handful of vistas, many more intimate studies of trees, rocks, and ferns, done mostly with everyday pencil. Pissarro would have liked these, would have been at home with Asher Durand's "Study of the Branch Structure of Trees," with its eager pencil strokes and distinctive shapes of white oaks and tulip poplars.

These drawings, I read in the exhibit catalog, represented an end run around the unchallenged rules of the 18th-century art world, the same rules Pissarro had quietly ignored in France. To the

academic painters who ruled European art, the goal of the artist should be, in the words of Sir Joshua Reynolds, "to raise the viewer's sensibilities by the grandeur of ideas, rather than to titillate the eye with superficial likeness." Pissarro and Durand's retort had been to show that a respect for natural forms doesn't have to rest on superficial likeness; perhaps the structure of a tree branch, or the light on a solitary figure, might illustrate the grandest of ideas. And what's wrong with titillating the eye?

Reynolds and his ilk believed that nature is an inappropriate subject, that the serious artist should master "pictorial conventions that would identify the composition as artful." That phrase reminded me of the academic critics I suffered through in college, who hid behind jargon to create a club of experts. Bierstadt's paintings contained a similar disdain: the world as he found it wasn't good enough, it had to be "elevated."

Asher Durand wrote a series of essays in 1855 called "Letters on Landscape Painting." In one he described how to draw a tree:

"Observe particularly wherein it differs from those of other species; in the first place, the termination of its foliage, best seen when relieved on the sky, whether pointed or rounded, drooping or springing upward. . . . Next mark the character of its trunk and branches, the manner in which the latter shoot off from the parent stem, their direction, curves, and angles. Every kind of tree has its traits of individuality."

Walking on a moraine hill in Montana two weeks later, it struck me that Pissarro's and Durand's points of view are by no means exhausted. There will be generations of artists who go back to the simplest sources, in the most direct way, insisting that we do not yet fully understand the traits of individuality in the chestnut, or in any other tree. ■

WAYS & MEANS

Wrong-Headed Right

CARL POPE

Late in the last session of Congress, a member of the House of Representatives revealed to his colleagues the most recent threat to the Republic: volunteerism. Not merely the historic sort, mind you, performed by candy-stripers and rural fire departments, but the kind undertaken by folks looking at birds, ants, and other wildlife. Worst of all, these volunteers might be from the Sierra Club or other environmental organizations.

The occasion for this surprising pronouncement was Congress' consideration of Interior Secretary Bruce Babbitt's proposal to establish a National Biological Survey to identify and catalog the biological resources of the United States. One provision of the bill would allow citizens to participate in the survey. The component that sent Representative Billy Tauzin (D-La.) into paroxysms of paranoia was that private as well as public lands are to be inventoried. Tauzin and the faction of the House that huddles under the banner of "property rights" ranted that if volunteers from environmental groups are allowed to go out and identify the nation's biological resources, most of which happen to be on private land, landowners might eventually be required to preserve the resources found on their property.

Similar arguments crop up regularly

What's theirs, sometimes, is all of ours

these days. Bills to extend the Endangered Species Act and to make the EPA a cabinet-level agency have been attacked by Tauzin and others who claim they want to "protect" property owners from government regulation. Such regulation, they say, constitutes a "taking" of private property.

Ignored in this campaign are centuries of Anglo-American legal tradition wherein the rights of property owners are clearly limited as soon as the rights of others enter the picture. Wildlife, for example, is in the public domain. Hunting and fishing laws restrict the right of property owners to kill wildlife even if it lives on their land. If killing wildlife with a gun is prohibited, how can killing it with a bulldozer suddenly be considered a right to be defended? Similarly, if pouring sulfuric acid into someone else's yard is illegal, why is it so outrageous for the public to prevent landowners from pouring poisons into streams and rivers that, like wildlife, belong to all of us? Across the country, however, in state legislatures and now in Congress, such acts of government regulation are being cited by the property-rights movement as a threat to American freedoms.

The best response to their arguments is to be found in Justice Harry Blackmun's dissent to last year's Supreme Court ruling in the *Lucas* case. The court majority ruled that if in fact South Carolina had "taken" 100 percent of the value of developer Lucas' beachfront lots through its environmental regulations, it might have to compensate him. (Some legislators advocate paying landowners for *any* limitations on the use of their land.) In a scathing dissent, Blackmun pointed out that the court majority was ignoring the well-established legal precedent that the rights of property owners are limited by government's interest in protecting other public values.

"The principle that the State should compensate individuals for property taken for public use was not widely established in America at the time of the Revolution," Blackmun wrote. "During the 19th century there continued to be a strong current in American legal thought that regarded compensation simply as a bounty given by the State out of kindness. Courts continued to uphold bans on particular uses without paying compensation, on the rationale that no one can obtain a vested right to injure or endanger the public. I find no clear and accepted 'historical compact' or 'understanding of our citizens' justifying the court's new takings doctrine. Instead, the court seems to treat history as a grab-bag of principles, to be adopted where they support the theory, and ignored where they do not."

One can only imagine what a legal scholar like Blackmun would make of some of the other "rights" to which some citizens have laid claim. Wayne Hage, a Nevada rancher, is suing the federal government on the grounds that, as a tenant, he has the property right to overgraze federal lands on which he holds grazing permits. Owners of second homes on Fire Island, a barrier island near New York City, object to legislation that would deny them subsidized federal flood insurance; this constituted a taking, they said, because it deprived them of the value of their houses. The mining industry recently complained that proposed reforms of the 1872 Mining Law would deny them the right to dig minerals on "their" public lands.

It is crucial to unmask the underlying motives behind this wild melange of claims and assertions. It is not the rights of property owners that are being defended. Clear legal history demonstrates that the rights being invoked—and in some cases the property being claimed—do not exist. What is being defended is the pursuit of activities that destroy the natural values of the land. This "right" is cited even when those activities damage other private property, endanger other people, destroy public resources, or actually appropriate public land for private use.

Commercial profit—not private property—is the real agenda of this new movement, which acknowledges neither history nor common sense. It's up to the American people to resist the absurdity being peddled in Congress, and to remind our nation's leaders that exploitation is no one's right. ■

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BODY POLITICS

On the Hook

MICHAEL CASTLEMAN

When health experts advised a switch from high-fat red meats to fish, millions heeded the call: consumption of fish in the United States jumped by 24 percent during the 1980s. But it was not necessarily a risk-free conversion. Two recent reports—one by the Environmental Protection Agency, the other by the Environmental Defense Fund (EDF)—warn that fish taken from many of the nation's lakes, streams, and estuaries contain hazardous levels of mercury, PCBs, dieldrin (a pesticide), and other toxic pollutants.

The EPA began investigating disturbing fish stories a few years ago as state after state restricted consumption of one or more freshwater-fish species caught within their borders. Currently, the only five states without restrictions are Hawaii, Idaho, South Dakota, Washington, and Wyoming.

The EPA report, released in September 1992, evaluated the fish caught at 388 inland sites for 60 potentially hazardous chemicals. Fish from more than half the locations contained numerous organic poisons, according to the report, and "PCBs, mercury, and biphenyl were detected at more than 90 percent of the sites."

The agency then estimated the increased cancer risk if a typical American were to spend 70 years eating two 4-ounce servings a month of fish caught at the waterways under investigation. For about 90 percent of the sites, the EPA estimated a risk of about one in 10,000. For 42 of the sites, however, the risk was greater than this. But the agency went on to say that none of the fish, even those from the most polluted sites, posed a major risk to humans, with the exception of those subsistence and avid recreational fishers who obtain much of their food from the worst waterways.

Water-safety tips: know where you are and watch what you eat

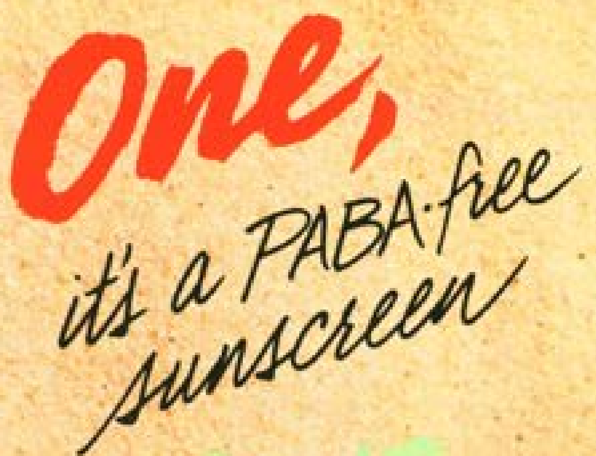
The EDF report was not so sanguine. Released two months after the EPA study, it charged that the agency understated the health risks from eating contaminated fish. While the EDF had only minor quibbles with the EPA's analysis of the toxic chemicals identified, it blasted the agency's assessment of cancer risk, saying that its consumption estimates were based on a survey done long before fish became as popular in our diets as it is today. "The Commerce Department reports that Americans now eat nearly 15 pounds of fish a year, more than twice the amount that formed the basis for the EPA's risk assessment," the EDF report noted.

What's a concerned icthyophile to do? The American Dietetic Association offers these suggestions:

- Alternate between freshwater and saltwater fish. In general, saltwater fish and seafood are less contaminated.
- Find out where freshwater fish comes from. Fish-farm trout is safer than that from lakes or streams. Fish from the Great Lakes is highly suspect, as are fish and oysters from Chesapeake Bay.
- Don't eat fish, including canned tuna, more than three times a week. Pregnant women should not eat fish from inland waters more than once a month.
- Steer clear of raw shellfish.
- Remove all visible fat before cooking, including the skin, as toxic chemicals generally accumulate in fatty tissue.
- Select smaller fish; they've spent less time in polluted waters and have picked up fewer contaminants.

Before baiting your hook, call your state department of natural resources and ask if your favorite fishing hole has been named in any bans or restrictions. If so, don't eat what you catch. Throw 'em back, and send a line to your legislators, letting them know it's time to get serious about cleaning up our inland waters. ■

► *For more information, see "Resources," p. 148.*



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HEARTH & HOME

Batting Down Bugs

LARRY VAN DYKE

Sitting in your lawn chair in the evening, chivvied by mosquitoes, you may not pay much attention to the other winged creatures sailing over your head. But if you knew how many annoying insects just one bat can consume in a night, you might sit up and take notice.

Some of the bats found in the southwestern United States feed on nectar, serving as key pollinators for many desert plants, but most North American bats are insectivorous, and are extremely important in keeping bug populations in check. A single little brown bat, for instance, can eat up to 600 mosquitoes during one hour of foraging. Aside from mosquitoes, bats find many garden pests appetizing, such as leafhoppers, cucumber beetles, and June bugs.

While you may come to appreciate their presence, not everyone wants bats roosting in the attic. In dealing with uninvited tenants, you don't have to resort to poisons. Instead, go outside and find the point of entry—often a loose board or a gap between wall and chimney—then tack up a piece of half-inch plastic bird netting, available at most hardware stores. The netting should cover the hole completely and extend at least two inches beyond it all around. The bottom of the netting should hang free to let the bats out during the night; they won't be able to get back in under the loose flap. After two or three nights, when all the bats have gone, the hole can be permanently sealed.

Make a space for the neighbors who won't get in your hair

If you've had bats in your house for a long time, you may have some bat droppings to clean up. This should be done with care (people with compromised immune systems need to be especially cautious), particularly if you live in the warmer parts of the country; bat guano has been known to harbor the spores that cause histoplasmosis, a fungal infection of the lungs. These spores, also found in chicken and pigeon droppings, are carried through the air when dry guano is stirred up. Wear a mask or respirator that can remove particles as small as two microns in diameter during cleanup. If the colony was large—more than 100 bats—it might be wise to call in a pest control expert to remove the guano.

Once you've made your house bat-proof, you can help keep the critters in your neighborhood by setting up some bat houses. Popular in Europe for more than 60 years, the bat house is a box without a bottom, made of rough-cut untreated wood. Interior partitions divide it into narrow, cozy compartments. Attached to a tree, post, or the side of a building, a

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bat house can become home to bats that have lost their roosts. Of the several species that seem to adapt well to living in bat houses, the most common are the little brown bat and the big brown bat in the middle and northern U.S. regions (and up into Canada), and the Mexican free-tailed bat in the south.

Bats tend to be very selective about their living quarters. It's a good idea to set up two or three houses around the yard, so they can choose the particular conditions that suit them. Bats like to roost in high places, protected from ground predators, where they have a clear, unobstructed flight path to and from the house.

Setting up a couple of bat boxes is no guarantee that you'll have tenants right away. Don't give up hope, though; if your houses aren't occupied after a couple of seasons, try putting them in different locations, or try another design. Even a minor change may make a crucial difference.

If you're lucky and bats move in, then you have a real treasure. Don't disturb them during the day—they're sleeping. As evening approaches you'll see them come out to do their nightly foraging. (An outdoor light is a good place to look for them—it will attract insects and thus bats.) If you're really enthusiastic, you can get a bat detector. Resembling a transistor radio, this device picks up the ultrasonic clicks and buzzes emitted by bats and translates them into audible sounds.

Occasionally, you may see a bat appear out of the darkness and swoop toward you, only to veer off at the last second. To feel the breeze from those silent wings as they pass by is truly magical. And remember, that bat may be feeding on the mosquitoes that would otherwise be feeding on you. ■

LARRY VAN DYKE, *a graphic artist and bat aficionado, lives in Oakland, California.*

► *For more information, see "Resources," p. 148.*

WHEREABOUTS

Spirit Level

MARY SOJOURNER

More than anything, my father wanted me to return to our northeastern home and to the religion in which I was raised. But the high-desert mountains, dark pine and amethyst light, white water and cedar smoke where I now live is temple enough. It is one of a thousand places, some yet unknown, where if I stop to look and listen and touch, I have, for a precious time, no doubts.

What I wanted from my father was that he would know this. He would visit. We would row an old wooden boat on a twilight-still lake and fish until darkness melted around us. The two of us would regain the serenity I had felt when I was a child and he rowed us out onto the evening mirror of a small Adirondack lake. As we floated on this western water I would tell him that he had taught me to find peace in wildness . . . and what had nagged between us would finally be still.

"Rocks," is what my father really said. "There's nothing out there but goddamn rocks. Why do you have to

travel so far just to see a few rocks?"

In the spring of 1992, after six months of harsh and persistent wasting, my father went much further. My brother called at 1 a.m. "He died peacefully," he said. "One of the last things he asked the doctor was if it seemed to be time to get a handicapped sticker for the car." I laughed.

"Are you coming home for the service?" my brother asked.

"No," I said. "We talked about it. He said there was no point in coming all that way once he was gone."

"I don't understand," my brother said, "but it's okay."

I lit a Virgen de Guadalupe candle and set it on the porch. My Dad had loved that Great Mother. Orion moved across the black sky, a breeze carried the scent of ponderosa pine. Somewhere a great horned owl gave one cry, no answer. It seemed strange to me, and comfortable, sitting on my porch, wrapped in my sleeping bag, my father's death brand-new, all held in the cool quiet off the mountains, as though my heart were cupped in a giant, stony hand. And of course, it wasn't enough.

A year later, I drove back east alone; what I needed to do could not be done in the company of anyone. I drove without music on an Oklahoma two-lane highway bordered with flame-orange gallardia and lush olive sage, below thunderheads that never broke. I camped on the banks of a dammed river and watched the mist rise into evening. Boats and RVs and people became the ghosts of a Japanese scroll. Fireflies moved in and out of the fog. I dipped my hand in the cold water, breathed in the mists and tasted river.

On the road a few mornings later, I looked in my rearview mirror and saw smoke from a burning field rise across a blood-red sun. White birds, and black ones that might have been cormorants, flew away from the fire. A dull-blue iron bridge rose in front of me, pewter water stretched out below, and the Mississippi held me for an instant exactly between my western home and my eastern birthplace. I held my breath and crossed.

I stayed alone in my parents' house. My mother was in a nursing home, but she was still present in her cooking tools, her embroidery, her books. I cleaned the fridge and did the dishes, and when they were gleaming in the rack I walked out to her roses. I knew what was there. "He's in the roses," she had told me.

It was evening. I was washed in the warm summer twilight of childhood, in a town on a Great Lake's shoreline, on the banks of a broad river, on hilly land covered with houses and roads and shopping malls, shining with creeks and puddles and ponds. I looked down. There, at the base of those impossibly green bushes, were the shadows of my father's bones. I waited till the light was completely gone, then walked down into the basement.

It was cool there, and dark. I thought of caves, of minerals carried down and washed away. My father's tools were hung neatly on their pegs. I had never touched them. I took two screwdrivers with worn wooden handles. I reached up and grasped his spirit level, stained and dusty and, when I set it on his homemade workbench, still true. I looked at the tiny bubble catching light in fluid green as a winter southwest river. Later, I would go to the garage and find his axe and take it home to the mountains, to juniper, aspen, and pine. Axe and spirit level, work and prayer. And all those goddamn rocks.

Now, a month later, the spirit level sits above my southern window. To the north, the San Francisco Peaks hold wildflowers and prayer feathers and traces of last spring's snow. In the west, about this time of day, they are blowing up old ammunition at the abandoned army base. East, beyond my front door, the road moves out, past little rivers that run above the earth and below, curving by burned fields that sprout next fall's harvest, across that great gray water that has taken back acres of her own. I take down the level, tilt it east and west. I think of rock and water and green light, and am grateful that what brings me back to balance is just that. ■

Tilting toward home,
then back again,
toward home

MARY SOJOURNER, *a winner of* Sierra's *1993 nature-writing contest, lives outside Flagstaff, Arizona. She is working on a novel about the aftermath of the Vietnam War.*

The Last, Best Chance

How to save an endangered wilderness: any way you can.

BY PAUL RAUBER

It was the Northern Rockies version of Arafat and Rabin shaking hands on the White House steps: an "ecosystem protection summit" in Missoula, Montana, called last December 5 to broker a cease-fire among Sierra Club activists bitterly divided over the best way to protect the region's vanishing wildlands. The meeting tackled head-on the tactical dispute the Club has wrestled with for years: the old debate between incrementalists and visionaries on whether it's best to take the piece we can get today, or hold out for the whole pie.

Although the gathering went virtually unnoticed by the media, conservationists in the Northern Rockies ecoregion watched it intently. In a letter to the Club's Board of Directors, Earth First! founder and ecosystem-protection prophet Dave Foreman called the issue "as important as the Sierra Club's decision almost one hundred years ago to oppose construction of Hetch-Hetchy Dam in Yosemite National Park."

It's one thing to talk about the need to protect entire natural systems, but how do you go about it in practice? Opinions on the matter in the Northern Rockies have been mixed, to put it gently. The family feud pitted proponents of a flawed-but-achievable 1.6-million-acre Montana wilderness bill against backers of a glorious-but-unlikely five-state, 16-million-acre ecoregion protection bill. Behind the dispute lay 15 years of frustrated effort by Club volunteers and other conservationists. Unlike the rest of the West, Idaho and Montana are still without comprehensive state-level bills protecting the wilderness areas identified by the U.S. Forest Service in its Carter-era review of roadless lands. This is thanks largely to the obduracy of their extreme anti-wilderness congressional delegations, whose members have managed over the years to block passage of sweeping preservation legislation.

The result has been that strong bills are spiked by powerful congressmen, and weak bills are killed under pressure from environmentalists. The longer the impasse drags on, the less wild land is left to argue about: in the past ten years, more than a million acres of potential wilderness have been lost in Montana, primarily to logging roads built by the Forest Service. Roughly 5.5 million acres remain, 1 million of which could be lost in the

next decade. In Idaho, the agency plans 175 timber sales in currently roadless areas in the next five years.

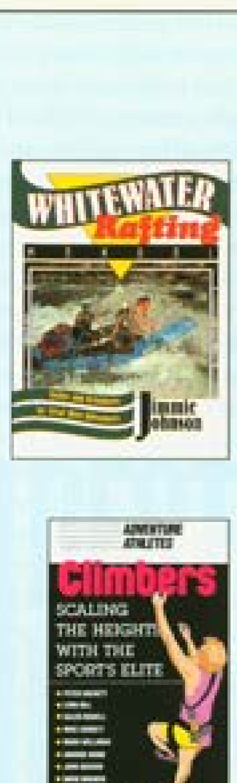
"The process for protecting wildlands is broken in the Northern Rockies," says Ed Madej, wilderness task-force chair of the Club's Montana Chapter. "Instead, we have been forced to rely on forest-plan appeals, timber-sales appeals, and lawsuits. The positive ways of protecting land have been stymied by extractive industries."

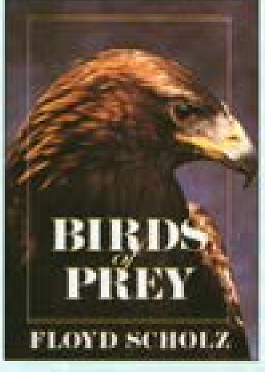
A chance for an acceptable statewide wilderness bill, however, seemed to be presented by the 1990 Census, which reduced Montana to a single congressional representative, leaving incumbents Ron Marlenee (R) and Pat Williams (D) to duke it out. While Williams' environmental record was short of impeccable, Marlenee was famous for his battle cry of "No wolves, wilderness, or welfare." Many in the Montana Chapter threw themselves into the Williams campaign, and conservationists may well have provided his narrow margin of victory.

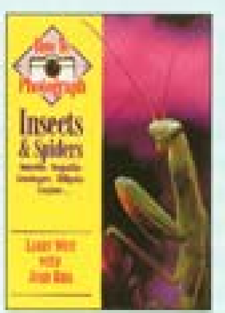
As a result (in the eyes of Williams' supporters, at least), his current bill, H.R. 2437, is the largest wilderness bill ever to be introduced from the state. Should it pass, it would increase the amount of wilderness in Montana by half, and rank among the five largest state wilderness bills ever. While the bill has not been endorsed by the Sierra Club, the Montana Chapter has worked closely with Williams and the appropriate congressional committees to try to remove several troubling provisions and to protect additional areas.

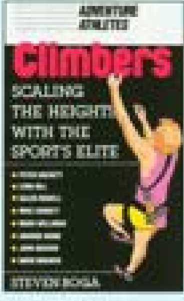
Williams was thinking big, but not big enough for everyone. There are, after all, 5.5 million acres of potential national-forest wilderness in the state. Though Williams proposes to save 1.6 million acres, with a further million protected in wilderness-study areas, the rest would be "released" to future logging, mining, oil-and-gas drilling, *or* wilderness designation.

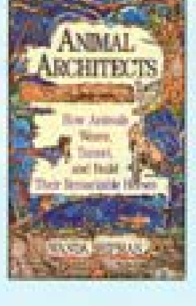
But why not preserve the whole thing now? The vehicle for this grander vision is the Northern Rockies Ecosystem Protection Act (NREPA), H.R. 2638. The bill is sponsored by Rep-

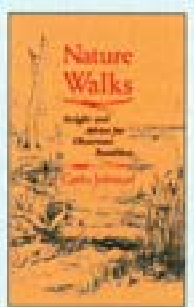


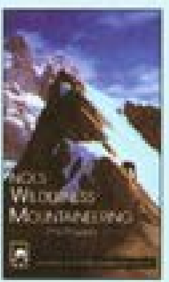


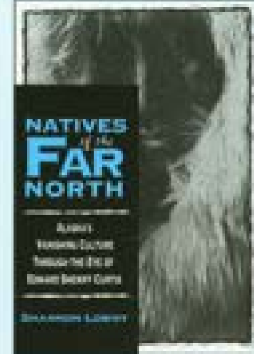


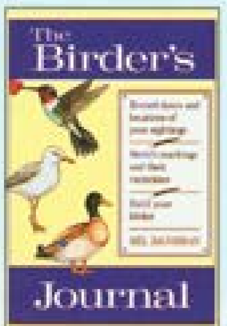












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resentative Carolyn Maloney (D-N.Y.) and 40 cosponsors (none of them, tellingly, from the five states affected). Backed by the Alliance for the Wild Rockies, the Bozeman-based Headwaters Group of the Sierra Club, former Club Executive Director David Brower, Dave Foreman, and an impressive list of scientists and public figures, NREPA promises "a new model" of wilderness protection, based not on recreation or scenery but on the science of conservation biology. The act would protect 16 million acres, mostly around the five "core ecosystems" of Yellowstone and Glacier national parks, Idaho's Salmon River, Hell's Canyon on the Oregon-Idaho border, and the Cabinet/Yaak/Selkirk area along the Canadian border. These areas would be linked with protected corridors to allow for genetic exchange between them, and would be surrounded by "buffer zones" of regulated human activity. The act, boasts Brooks Martin of the Headwaters Group, "uses the best of what we know about biology and our economy, and gives us the best chance of moving into the 21st century with an intact Rockies ecosystem."

The scope of NREPA is, in fact, very close to the "Wildlands Project" proposed by Foreman and conservation biologist Michael Soulé. "Despite the protection of over 40 million acres of wilderness areas and 18 million acres of national parks in the United States outside of Alaska," Foreman wrote the Sierra Club board, "we see true wilderness—biological diversity with integrity—in precipitous decline." He cites shrinking populations of grizzly bears, songbirds, and waterfowl, and the fragmentation of ancient forests. "When conservation biologists began to look at wilderness areas and national parks in the 1980s, they found that even the largest national parks were not large enough to ensure survival of many mammal species." Without large, interconnected wilderness preserves, Foreman and Soulé argue, the country is doomed to "biological meltdown."

Although Foreman calls NREPA "the future of wilderness preservation," he admits that there *are* objections to it: "Foremost is that it doesn't seem to have a snowball's chance in hell." He and other NREPA advocates base their hopes on a change in "political reality," which is why they have been so eager to earn the Sierra Club's backing. David Brower argues that if the Club and the rest of the "Big Ten" environmental groups were to back the bill, the resulting national political pressure would be enough to override provincial political concerns. This is what happened, says Foreman, in the fight over old-growth forests in the Northwest: "The Oregon and Washington congressional delegations—far more powerful than those of Montana and Idaho—are being forced to compromise today because Sierra Club grassroots leaders and others knew that the way to change political reality was 'endless pressure, endlessly applied.'"

Unfortunately, in recent years much of the grassroots energy in the Northern Rockies has been applied to arguing over the proper path to wilderness salvation. Those who supported a state-by-state approach found NREPA unrealistic, and argued that wild areas threatened with immediate development could not wait for "political reality" to change. Advocates of NREPA accused their critics of lacking vision, and of relying on the failed tactics of the past. The dispute threatened to sink chances for passage of *either* proposal; hence the summit in Missoula.

The Solomonic compromise reached after the 12-hour meeting was to embrace a multi-track strategy for preserving the region's wilds. This includes working to improve Williams' bill *and* endorsing NREPA (preferably with the addition of strengthening amendments); lobbying for a state wilderness bill for Idaho; working on recovery plans for wolf, grizzly, and salmon; and continuing to support federal reform of mining and grazing practices in the region. "Everyone agrees that a larger vision does not preclude incremental steps," says Larry Mehlhaff, the Club's staff representative in the region. "They aren't mutually exclusive. There are dozens of ways to protect the Northern Rockies; we're happy to pass any part at any time, as long as it doesn't hurt any other part."

▸ *For more information, see "Resources," p. 148.*

Firebugs

Build it in California's foothills, and it will burn.

Following last autumn's disastrous wildfires in Southern California, Governor Pete Wilson warned of "an army of arsonists lurking in our foothills." The governor was right. The arsonists are the developers and homeowners who built in a tinderbox, and the policymakers who allowed them to do so.

Southern California is a fire ecology in exactly the same sense that it is a land of sunshine. Its natural ecosystems—coastal sage, oak savanna, and chaparral—have coevolved with wildfire. Periodic burning is necessary to recycle nutrients and germinate seeds.

The indigenous Californians were skilled fire-farmers. They used the firestick to hunt rabbits, cultivate edible grasses, increase browse for deer, thin mistletoe from oaks, and produce better stalks for basketry. Their careful annual burnings usually prevented fire catastrophe by limiting the accumulation of fuel.

But aboriginal ecologists also understood that some areas are spectacularly prone to regular conflagration. What is now Los Angeles, for example, they called "Valley of the Smokes." Malibu Canyon is a huge bellows that seasonally fans hot, dry Santa Ana winds to near-hurricane velocities. Major fires here are frequent (five since 1930) and, as the board of inquiry into the disastrous 1970 Malibu blaze acknowledged, "impossible to control."

Modern Southern California, however, built on the belief that even the most elemental forces can be mastered, refuses to concede anything to the laws of nature. Yet as Stephen Pyne emphasizes in his magisterial pyrohistory, *Fire in America* (1982), South-

ern California's deadly foothill firestorms of the 20th century are, in fact, the ironic consequence of massive expenditure on fire suppression.

In a famous study, geographer Richard Minnich once compared the fire histories of eastern San Diego County and adjacent Baja California. Hundreds of millions of dollars have been spent on fire suppression in San Diego's increasingly urbanized backcountry, while a natural fire-cycle has been tolerated in Baja's wild hill areas. As a result, only San Diego County has experienced out-of-control firestorms.

Prescriptive burning (after the aboriginal model) has been practiced successfully in local national forests for decades. It is precluded in most Southern California foothills by the sheer density of housing and the threat of lawsuits from powerful homeowners' associations. They are the principal political constituency for the continuation of costly and quixotic efforts at "total fire suppression."

Since the end of World War II, at least 50,000 high-priced homes have been constructed in Southland foothills and mountains. More than communion with nature, these homes represent—as design critic Reyner Banham recognized—a search for absolute "thickets of privacy" outside the fabric of common citizenship and urban life. Hillside homebuilding, in these cases, has despoiled the natural heritage of the majority for the sake of an affluent minority. The beautiful coastal-sage and canyon-riparian ecosystems of the Santa Monica Mountains have now been supplanted by castles and "guard-gate prestige." Elsewhere in Southern California, tens of thousands of acres of oak and walnut woodland have been destroyed by bulldozers to make room for similar posh developments.

Despite a season of horrifying firestorms, dozens of new hillside tracts remain under construction. In the foothills above Monrovia, for example, several hundred venerable oak trees have been cut down for the sake of overscaled (and combustible) faux chateaux. In Altadena a favorite glen is being transformed into a "total-security" gated suburb complete with its own private school.

Instead of protecting "significant ecological areas" as required by law, county planning commissions in Southern California have historically been the malleable tools of hillside developers. Furthermore, studies have shown that property taxes on remote foothill homes are seldom sufficient to pay for the ordinary public services they require. Society as a whole is conscripted to carry the enormous costs of defending hillside developments from inevitable natural hazards. Over the last half-century, several billion dollars of general revenue have been expended on flood-control and firefighting efforts focused specifically on elite foothill society.

There has been no comparable investment in the fire, toxic, or earthquake safety of the inner city. Instead, we tolerate two systems of hazard prevention, separate and unequal. The *Los*

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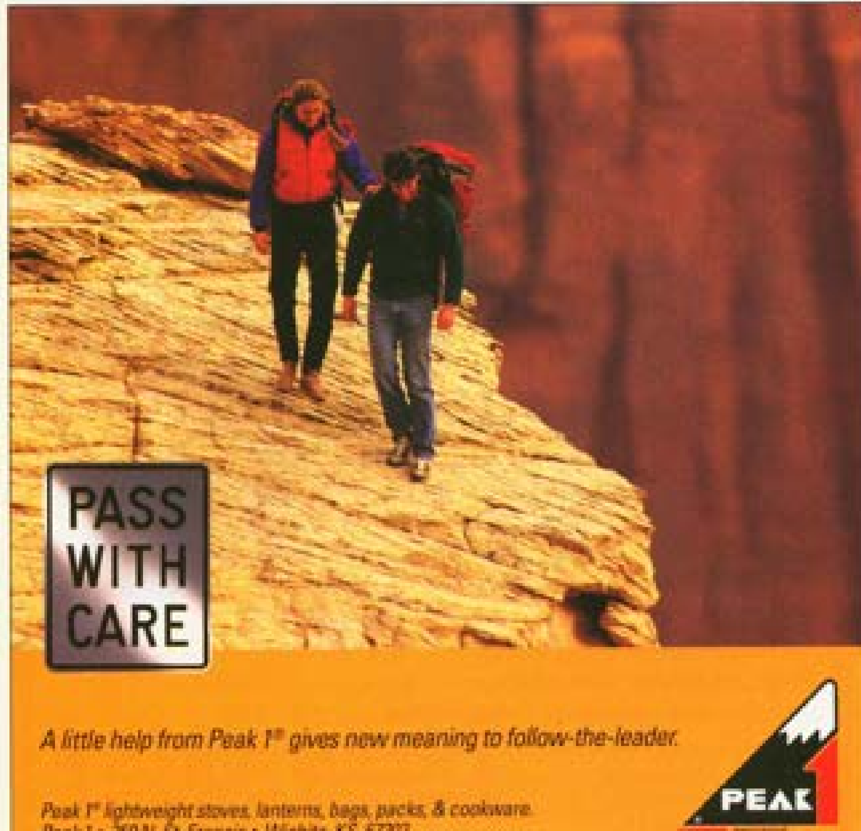


Angeles Times recently exposed the scandal of unenforced fire laws in mid-town MacArthur Park neighborhoods where dozens have died in tenement fires—many more, after all, than tragically lost their lives in this fall's firestorms.

But these underlying ecological and social-justice issues seldom surface in public debate about the wildfire problem. Following the lead of Governor Wilson, conservative politicians instead treat fire ecology as a criminal conspiracy of arsonists and environmentalists. Thus Representative David Dreier (R-Calif.) has introduced a bill that would impose the federal death penalty on arsonists, while his colleague Ken Calvert (R-Calif.) wants to radically amend the Endangered Species Act, which he blames for the incineration of several dozen homes in Riverside County.

According to Calvert and his supporters in the powerful Riverside Building Industry Association, federal regulations designed to protect the habitat of the Stephens kangaroo rat prevented homeowners from clearing tall brush. In fact, the U.S. Fish and Wildlife Service *encourages* the mowing of grasses surrounding homes for fire safety; the problem is that homeowners find mowing too troublesome, preferring simply to roto-till their ecosystem under.

Similarly, the tiny California gnatcatcher has been indicted for the Laguna Hills firestorm (in which 15 percent of the total remaining gnatcatcher population perished), while environmentalists have been characterized as "arson's fifth column" on Orange County talk radio. Such "green-baiting" is a useful diversion from any consideration of the social costs of hillside development. It is also the opening salvo in a major political offensive to unleash further pyromanic suburbanization. Local governments are now under tremendous pressure from developers to "clear a firebreak through cumbersome environmental regulations." Taxpayers are being asked to fi-

nance expensive fleets of water-scooping aircraft—the latest in a long line of supposed "technological fixes" for California wildfire—to protect new and rebuilt hillside homes.

It won't work. Unless the rest of the state is paved (90 percent of California's coastal sage has already been lost to the bulldozers), fires will continue to scorch it regularly, and the more we try to suppress *all* fires, the worse the inevitable infernos will be. At a minimum, the latest fire season dramatically demonstrates the need for an immediate moratorium on further hillside development. "Fire zoning" should be established to ensure that foothill homeowners pay a fairer share of the costs of protecting their own homes. Land-use restrictions in defense of endangered ecosystems should be reinforced, not deregulated.

Finally, environmentalists need to forge a more explicit common cause with inner-city residents. We should lobby for equal enforcement of the fire code in every part of the community, with harsh sanctions against criminally negligent landlords. The loss of human life and property to natural disasters is tragic wherever it happens, but our sympathy for the victims should not extend to letting them play with fire.

—Mike Davis

MIKE DAVIS *is the author of* City of Quartz: Excavating the Future of Los Angeles *(London: Routledge, Chapman & Hill, 1990).*

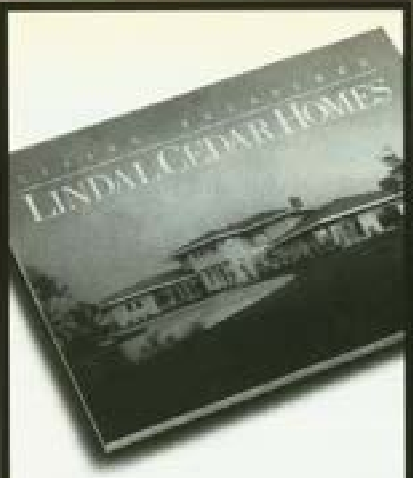
Key to Gridlock?

The free ride goes the way of the free lunch.

Every noble attempt to formulate a rational, environmentally sound transportation policy eventually runs over the same skunk: in most suburban areas and in many cities, nothing seems as cheap and convenient as driving a car. Costs to society and the environment aside, once you've bought your wheels and paid for insurance, the operating cost of a car is only about ten cents a mile. By comparison, bus passengers in Los Angeles shell out an average of 12 cents a mile. The unsurprising result is that often the only people taking public transportation are eco-saints and those too poor to buy a car.

Of course, driving a car is getting less convenient all the time. Seventy percent of metropolitan rush-hour traffic is now stop-and-go, a 30-percent increase since 1983. Billions of hours—100 million hours a year in the San Francisco Bay Area alone—are lost as commuters sit fuming in traffic jams.

And not only the drivers are fuming, as their idling cars pump pollutants into the air. In a 1989 study, University of California at Irvine economics professor Kenneth Small put the health costs of this "excess pollution" conservatively at $8.4 billion a year—and that doesn't include noise pollution, water pollution from highway runoff, and the contribution of all



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Some environmentally minded transportation experts think they have hit on the magic solution: "congestion pricing," a system of tolls that would vary according to the amount of traffic on the road. "What other transportation policy," asks the World Resources Institute, "would reduce congestion, raise economic productivity, decrease pollution levels, preserve drivers' freedom of choice, save governments the construction costs of increasing capacity, and, as an extra bonus, generate significant revenues in a way that imposes no excess burden on the economy?"

Congress was intrigued enough to fund five congestion-pricing demonstration projects at $25 million a pop. The first (and so far only) proposal to be funded is a study of tolls on the Bay Bridge between Oakland and San Francisco. At present, transbay drivers pay the same $1 whether it's rush hour or 3 a.m. (The only exception is for morning carpoolers, who scoot by for free.) With congestion pricing, bridge tolls might rise to $3 or $4 during the morning rush hours—enough, says Michael Cameron of the Environmental Defense Fund (EDF), to clear up congestion significantly on the customarily bumper-to-bumper bridge.

"The idea is to change the incentives," he says. "At ten cents a mile, if you can own a car, you do. And once you own it, you have no incentive to use anything else. Congestion pricing is designed to leverage up automotive operating costs so that other modes of transportation are competitive. The only way you're ever going to get more affordable alternatives is by charging more for the car."

Cheap as they are to drive, cars are enormously costly to society. When the bills are added up—for pollution, road construction, accidents, and warships in the Persian Gulf—the total is between $300 billion and $700 billion a year. Were these costs paid at the pump, gas would be $6 to $11 a gallon. "People driving cars are being bribed with their own money to do so," says Stanley Hart of the Sierra Club's national Transportation Committee.

But any method of removing subsidies for autos—a goal of the Sierra Club—raises a substantial political problem in that 86 percent of U.S. workers drive to work. Simply boosting the cost of commuting is not very attractive to anyone who wants to get re-elected—witness President Clinton's rapid about-face last year on the idea of imposing a substantial gasoline tax. "Charging people for what has been free," writes economist Small, "is no more popular in the United States than it is in Russia."

So if you're going to shift the transportation pricing structure to make autos bear more of their actual cost to society, the thinking goes, you've got to offer drivers a bone—like uncongested thoroughfares. Graduated tolls are believed to be capable of cutting peak traffic volumes by 10 to 25 percent, which nothing short of filling every other gas tank with sand could do. The most common ploy, adding extra lanes to existing highways, fails every time as it runs into the transportation-policy cognate of Parkinson's Law: traffic volume expands to meet maximum capacity. The experience of the Bay Bridge is instructive: when the Bay Area Rapid Transit (BART) system opened in 1972, 8,750 drivers switched to the new train. Almost immediately, however, their places were taken by 7,000 new drivers. Today jams on the bridge are worse than ever, even though 29,000 people ride BART in to work. There is already grim talk of adding a new span across the Bay.

The roadblocks to congestion pricing, proponents insist, are purely political. Technologically, they say, it's a cinch. Electronic sensors embedded in roadways can read electronic "tags" attached to each car, recording points of entry and exit, noting the time, and automatically debiting the driver's bank account. Such a system, tested in Hong Kong in the mid-1980s, had a 99.7-percent accuracy rate. Austria plans to install one this November near Salzburg.

Yet congestion pricing is no panacea; the environmental advantage of making commuting easier and faster for well-heeled drivers is easily overestimated. "Congestion pricing is not the most direct way to address air pollution and should not be judged primarily by its environmental benefits," cautions Small. Most of the applications for Congress' congestion-pricing demonstration grants, in fact, have involved schemes to allow single-occupant cars to pay to drive in multi-occupant-vehicle lanes.

The burdens of a system that rewards a new automotive aristocracy would obviously fall disproportionately on the poor, who tend to have less-flexible schedules and less cash for congestion tolls. Time is money, and congestion pricing would consign many poor people to longer commutes on surface streets, or long waits for peak driving periods to end. The idea's most direct political appeal, admits Small, is to "high-income people who greatly value their time." Ultimately, however, the poor and indeed all of society could benefit if the enormous potential proceeds from congestion pricing were put to work funding mass transit. According to an EDF study, a charge of five cents a mile would raise $4.5 *billion* a year in Southern California alone—an amount equal to that collected by all other transportation taxes and fees put together.

The social and environmental impacts of congestion pricing would depend almost entirely on how this revenue were spent. A progressive allocation of the tolls is fun to speculate about: rebates for low-income drivers, support for carpoolers, and serious money for non-automotive mass transit. But if decisions continue to be made as they are now, the effect of congestion pricing will be to create more room on the freeway for more drivers, and more money for highway departments to build more freeways. Depending on the political will behind it, congestion pricing could either reduce auto use, or simply rationalize it.

—*P.R.*

▸ *For more information, see "Resources," p. 148.*

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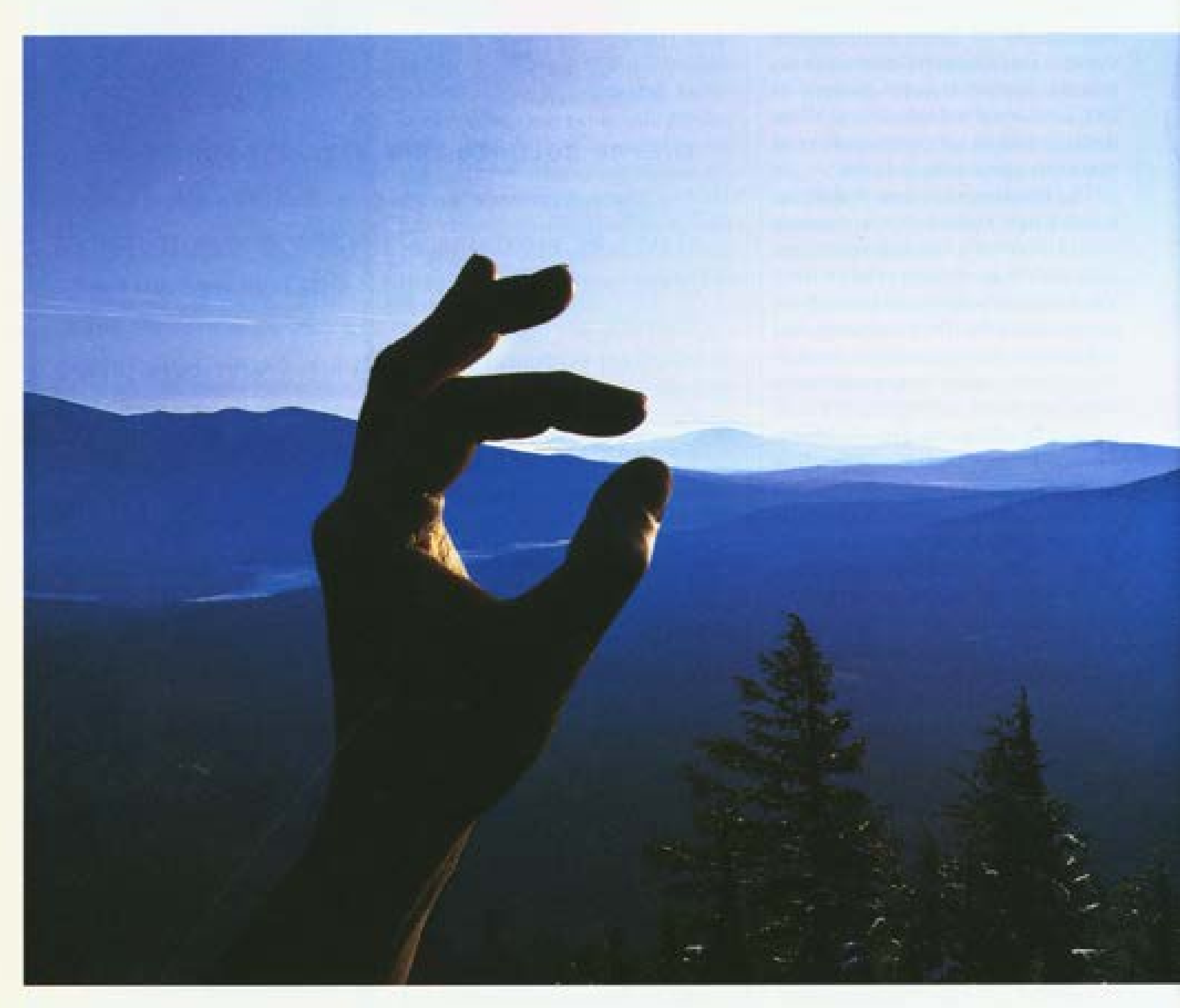

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THE BIG
PICTURE

THIS IS NO TIME TO THINK SMALL. THE SIERRA CLUB IS MOVING BEYOND TRADITIONAL POLITICAL BOUNDARIES TO EMBRACE 21 GRAND ECOREGIONS OF THE UNITED STATES AND CANADA.

In its first century, the Sierra Club earned a reputation for saving scenery—the kind of awe-inspiring landscapes that still adorn our calendars. Few worried about the "ordinary" hills, grasslands, woods, and valleys between the scenic gems. Partly because it was so easy to focus attention on the spectacular, only the spectacular was saved.

But beginning in the 1960s, the Club's agenda started to expand. Diligent work in the halls of Congress brought home prizes like the Clean Air and Clean Water acts. Although we were still inspired by picture-perfect vistas, our own perspectives were growing wider.

Today the Sierra Club's mission has more to do with planetary survival than with scenery. It is to learn how to live within nature's limits, and to communicate those lessons to our fellow citizens. Already we have found that it is not enough to protect the Yosemites of the world. We must also save the places in between, the places we—and most of the continent's other species—call home.

by Jane Elder

No one else can do this vital work for us—a fact sadly confirmed by the sympathetic but complacent Clinton administration. Building on the experience of our past, it is now up to us to drive the environmental agenda. It is time to look beyond political boundaries, beyond what is achievable today or even tomorrow. Now is the time to dream big—before we lose it all.

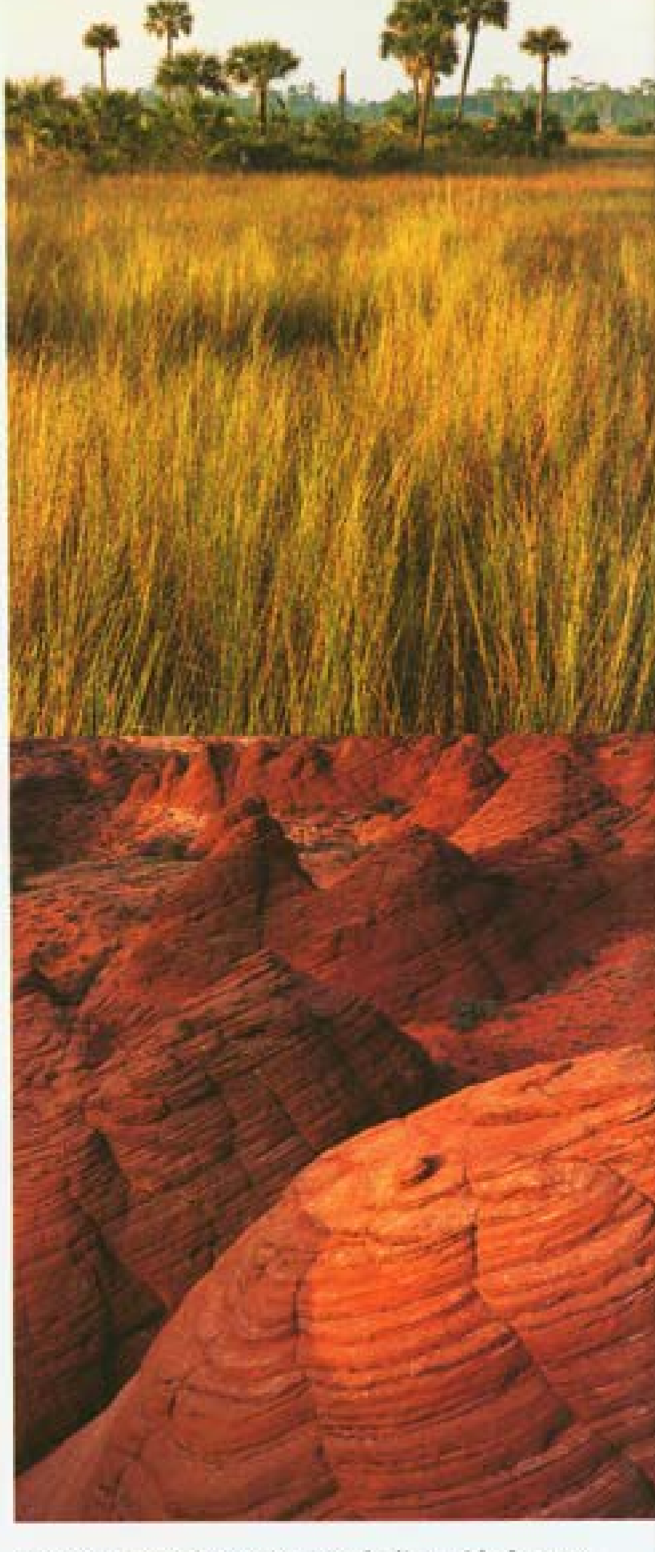
In this spirit, the Club has launched its Critical Ecoregions Pro-

gram, designed to protect and restore 21 regional ecosystems in the United States and Canada. The ecological underpinnings of the effort are not new. Nor are the basic outlines of our program changing radically: we will still be working to forge enlightened public policy at local, state, and national levels in the two countries in which most of our members live. But we will be doing so informed by a broader vision. We are moving beyond political boundaries, back to our ecological roots.

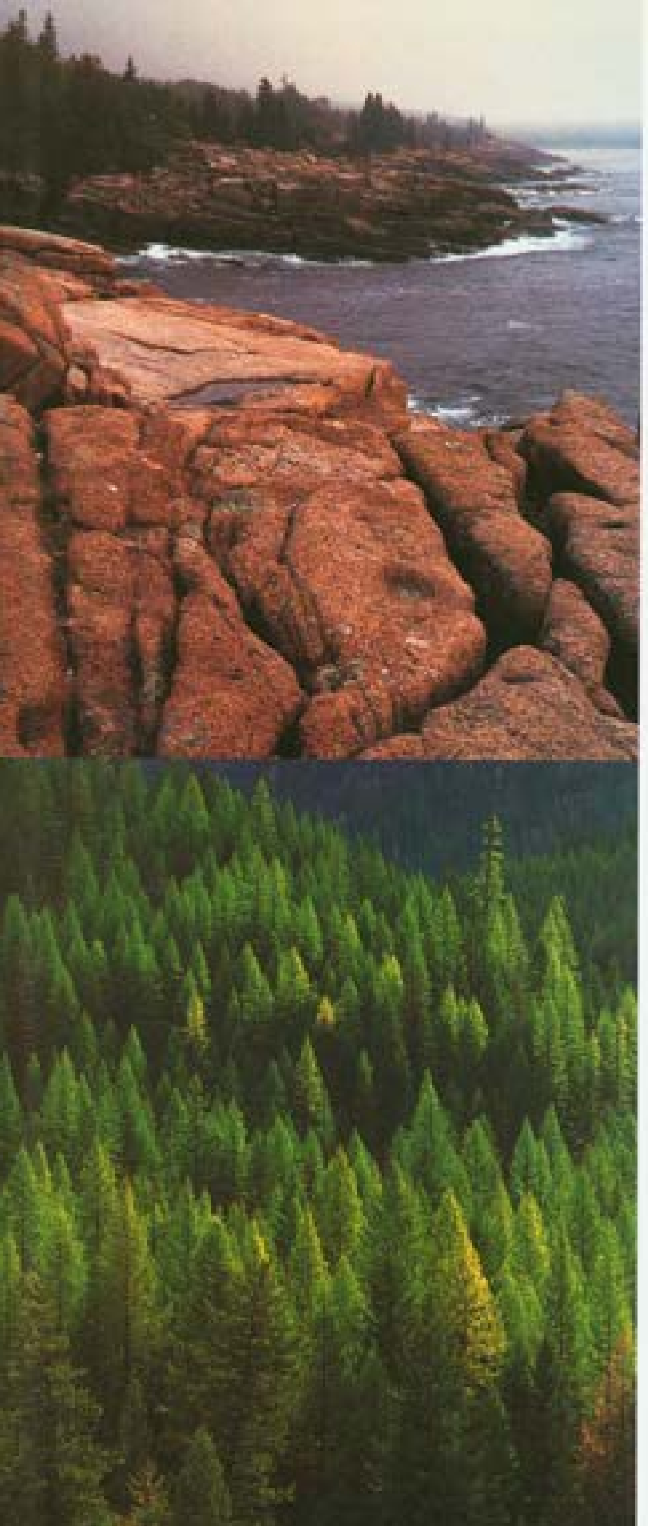
To stop pollution, for instance, we are developing strategies not just for certain communities or waterways, but for whole watersheds. To safeguard biological riches, we are designing protection for the public and private lands that are the core habitat for native species. Our scenic but all-too-small parks and wilderness areas cannot sustain wide-ranging species such as the salmon, cougar, condor, and grizzly. Without new approaches to conservation, these quintessentially wild creatures will soon be museum pieces. Nature simply doesn't respect the political compromises that our pollution laws and our park and wilderness boundaries represent—she just throws them back in our faces in the form of a nagging illness, an extinct species, or a general loss of natural elegance and health.

It's safe to say that every veteran environmentalist knows all this to be true. For me, a Sierra Club activist for the past two decades, the notion that environmental problems are interconnected hit home most powerfully the first time I saw a cormorant with a twisted bill. A Fish and Wildlife Service researcher brought it to a hearing on Great Lakes pollution more than a decade ago. There was no single culprit responsible for the bird's disfigurement, and no single fix that would save its fellows from a similar fate. Scientists suspected that the problem was widespread contamination of the Great Lakes. The chemicals that had found their way from zooplankton to fish to bird, increasing in concentration at each step, came from nearby factories and from the pesticide clouds sprayed over farm fields as far away as Central America. They came from the discharge pipes of paper mills and sewage-treatment plants. They lurked in a century's worth of industrial sediments at the bottom of harbors and bays, repeatedly released by dredging and storm surges. And, in the intricate ebb and flow of air and water molecule, predator and prey, our Great Lakes ecosystem distributed among all living creatures exactly what our polluting society had tried to sweep under the carpet. As John Muir cautioned us more than a century ago, everything—cormorants' bills, chlorine-bleached paper, and tonight's salmon dinner—is hitched to everything else.

With these insights, one of the Sierra Club's first "ecoregion campaigns" was born, long before the term was coined. Club activists were looking beyond their



own country and organization, dealing with the governments of both the United States and Canada as well as more than a hundred citizens' groups on both sides of the border. We were looking at pollution in ways that the EPA's neatly divided air/water bureaucracies had found difficult: air pollution that *became* water pollution once it settled on the Lakes (the largest source of new contamination in Lakes Michigan, Huron, and Superior.) Most important of all, we activists were setting the environmental agenda—mak-



ing good news happen, not just reacting to bad. By 1990, we could point with satisfaction to a new air-toxics section of the Clear Air Act. It wasn't perfect. We knew that the Lakes needed more. But it was a solid first step.

Here, and in the 20 other ecoregions across the United States and Canada, meeting all our goals will require the work of generations, something the Sierra Club's 100 years of experience allow us to plan for with confidence. We still haven't finished the work John Muir started to protect the Sierra Nevada, for instance, but our founder would be proud of the people working there today.

THE 21 ECOREGIONS WE'VE IDENTIFIED WILL SEND those who need strict definitions into a tizzy. Nature has messy boundaries, and systems that blend into each other—and so do our ecoregions. We define some by their water—the Great Lakes, the Hudson Bay/James Bay Watershed, the Mississippi Basin. In others, geological features predominate: the Colorado Plateau, Rocky Mountains, and Sierra Nevada. In still others, vegetation determines the boundaries: the Great Northern Forest, Great North American Prairie, Southwest Deserts. Some of the ecoregions are vast; some are relatively small; many overlap. All are landscapes in which we work, live, and play, and all need a clear vision and strategy to sustain them.

To articulate that vision, we're tapping the collective wisdom of our organization, whose half million members include many who have been working on environmental problems all their lives. We've established task forces for each ecoregion, drawing together activists with expertise in everything from prairie grasses to poultry wastes, from redwoods to redlining. And we've asked these task forces to develop strategies to save their entire ecoregion—nothing less.

Bold, creative approaches are emerging, from re-establishing wildlife migration corridors in Southern Appalachia to preserving the corridors that still exist in the Rockies and the Arctic. In the Great Lakes Ecoregion we're promoting a nontoxic manufacturing industry—that is, an industry without *any* poisonous emissions. The similarly sweeping goal of nontoxic agriculture is on our agenda in the Great North American Prairie. Not only the Prairie and the Lakes would benefit from the detox effort: cleaner inland watersheds could dramatically reduce the burden of poison that flows to both the Pacific and Atlantic coasts.

The Sierra Club's Central Appalachia task force has developed an unusual way of protecting the watersheds that provide critical habitat in the Hudson Valley and the Catskills—the same watersheds that supply drinking water for the New York City megalopolis. The group started with discussions about local zoning to control building near headwaters and other sensitive areas, but concluded that the real key is to restore livable cities. Only by ending urban blight and flight can the region halt the suburban and rural development that is carving up its remaining open space.

The task force's next step was to identify government policies that feed the cycle of suburban development and urban decay. They targeted the southeast Connecticut area and the midsize cities of Binghamton and Newburgh, New York—in which they'll try to reverse the trend. Yes, they'll still work on zoning

laws, and on protecting remnants of ecological purity such as New York's Sterling Forest; but ultimately, they decided, they've got to address the roots of urban decay. Everything, from a sparkling headwater stream high in the Catskills to an abandoned factory in Newark, is hitched.

In California, both the Sierra Nevada and Pacific Coast task forces have also recognized the perils of sprawling housing and highways. As alternatives, they're proposing a shift to denser, pedestrian-based communities. Such communities would consume less land, use less energy and water, and encourage the design of neighborhoods where people interact with each other instead of their garage-door openers. As Club activist John Hopkins explains it, "We're talking about changing the relationship between human communities and the landscape."

Across the country, I've watched as our leaders begin to build their work around a long-term vision, instead of just coping with the crisis of the moment. Ken Gersten, of the Sierra Club's Appalachian office, says that the program has helped him put daily battles in perspective: "I no longer just ask, 'How do we win this legislative campaign?' I ask, 'How do we save the earth?'"

An ecoregion-based perspective can also help us write better laws, policies, and regulations. The Clean Air Act, designed primarily to protect human lungs from smog, neglected to protect the Great Lakes Ecoregion from the airborne toxics that seeped into its cold-water food web. The generic, one-law-fits-all approach wasn't good enough. Only when another law we are working to improve, the Clean Water Act, protects the loons of northern Wisconsin, the salmon in Washington, and a baby in Baton Rouge, will it be good enough.

> "THERE IS NOT A FRAGMENT IN ALL NATURE, FOR EVERY RELATIVE FRAGMENT OF ONE THING IS A FULL HARMONIOUS UNIT IN ITSELF." —*JOHN MUIR*

On the other hand, sometimes studying similar problems in different areas helps environmentalists craft effective, broad-based solutions. As Barbara Boyle, field staff contact for the Club's Pacific Coast program, explains, "Our work on this ecoregion plan helped us realize that there are parallel solutions for cleaning up Puget Sound and San Francisco Bay."

Across the ecoregions, three themes resonate. From the Great Northern Forest to the Southwest Deserts, from the Arctic to the American Southeast, we share a vision for a planet rich in wildness, one that is healthy to live on, and one that sustains human communities in balance with Earth's living systems.

We seek an environment that will always retain the essence of the wild planet, whether it is the cougar prowling the Appalachian Mountains again, the loons calling across northern lakes, or the wolf running across the meadows of Yellowstone.

We seek an environment that is healthy for children in the inner city and the suburbs, on the reservations, or the farm. We want an environment healthy for all living things, free from chemical poisons that impede reproduction, undermine immune systems, and induce cancer.

Finally, we seek a world that sustains itself beyond our own generation. We want livable communities that don't destroy the environment upon which they depend. We are acutely aware of the need to limit our numbers and to use less materials, energy, and space. We seek jobs that don't poison us, communities designed for people, not cars, and just and equitable participation in the decisions that shape our living world. And in this endeavor, we seek to redress and correct the disproportionate environmental burden historically imposed on racial or ethnic communities and the poor.

In setting these goals, we have dared to dream great dreams. We see chestnuts blooming again in Appalachia, the Maine woods forever a living forest, the grizzly bear roaming the full range of the Rockies, a sea of grass waving on the plains, wild rivers still tumbling into James Bay, and oysters thriving once more in Chesapeake and San Francisco bays.

We don't have all the answers about how to get there. Our debates are vigorous and frequent. I recall an intense discussion among western activists over the definition of sustainability. Mark Pearson, the Rocky Mountain Ecoregion taskforce chair, asked: "Are we talking about European-style sustainability—where there's precious little wild left anywhere—or sustainability that also protects wild values?" Mark may have framed the underlying challenge for our next century's work. Can we indeed shape a future in which wild systems thrive in harmony with human society?

Sierra Club members share a passion for the natural world, and a desire to leave the world a better place for our efforts. So much has been lost already, so many choices already taken away. In the face of great odds, can we develop the visions and strategies that will protect the wild vitality of our planet, and sustain healthy communities far into the future? Above all, we must rise to this challenge. ■

JANE ELDER, *a Sierra Club Great Lakes activist and staffer since the 1970s, is now the director of ecoregional planning for the Sierra Club's Centennial Campaign.*

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21 ECOREGIONS OF T

ATLANTIC COAST

From the seacliffs of the Maritime Provinces to the barrier islands of the Carolinas and the mangrove swamps of Florida, a medley of species huddles on our crowded eastern edge. *Page 118*

GREAT NORTHERN FOREST

Pine martens and loons come face-to-face with loggers and realtors in the woods of New England and the Adirondacks. *Page 102*

CENTRAL APPALACHIA

Berkshires, Poconos, Alleghenies: between western Massachusetts and western Pennsylvania lie the glacially carved, bountiful hills and valleys of America's oldest chain of mountains. *Page 119*

SOUTHERN APPALACHIAN HIGHLANDS

The Ice Age left wonderfully intact the forested mountains of this ten-state region, a land of flowered hollows and flying squirrels. *Page 120*

AMERICAN SOUTHEAST

A shoreline stretching 2,000 miles from Florida to the mouth of the Rio Grande cradles an extended inland family of estuaries, swamps, and bayous. *Page 121*

INTERIOR HIGHLANDS

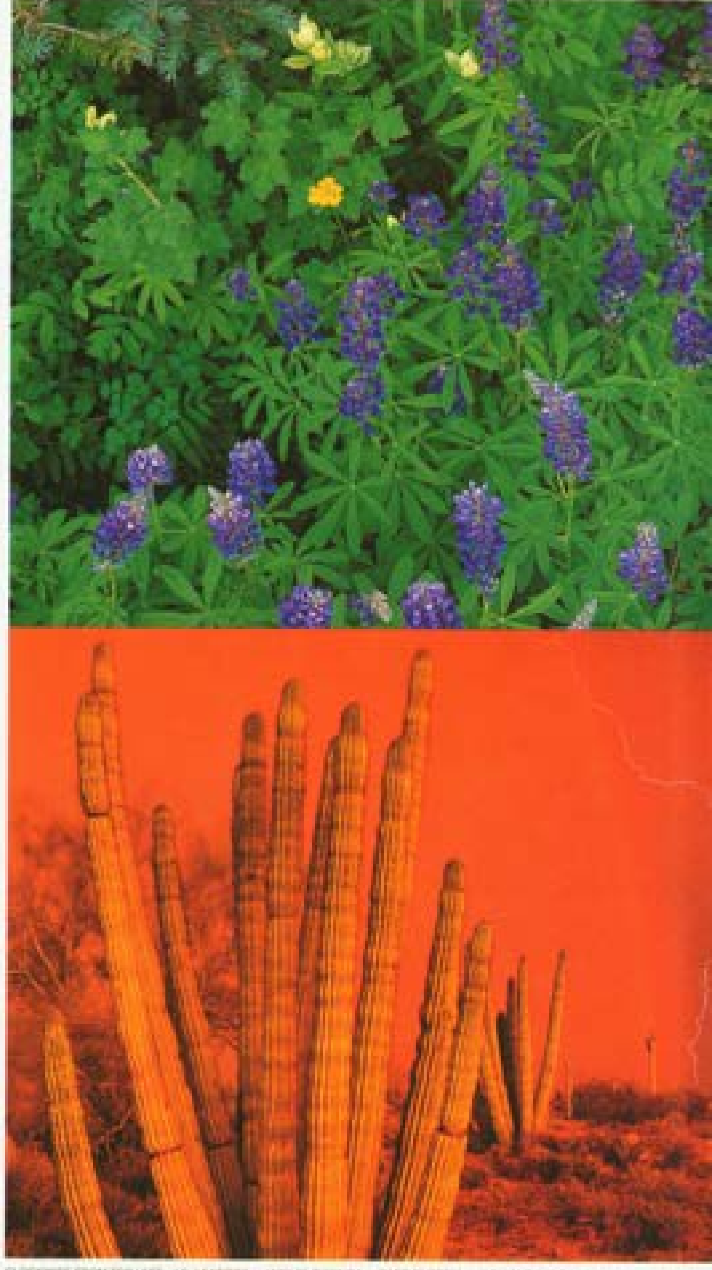
Black bears, wild turkeys, and mountain lions still roam the oak and hickory forests that shade the rugged ridge country of Missouri, Oklahoma, and Arkansas. *Page 122*

GREAT LAKES

Holding nearly one-fifth of the world's fresh water and more than 40 million of its people, this ecoregion is fertile, majestic—and fragile. *Page 123*

GREAT NORTH AMERICAN PRAIRIE

The never-ending plains that stunned the heartland's settlers have fared poorly beneath the plow, but in a few promising pockets, the flowers still come back each spring. *Page 74*



CLOCKWISE FROM TOP LEFT: J.C. LEACOCK · JACK W. DYKINGA · CARR CLIFTON · JACK W. DYKINGA

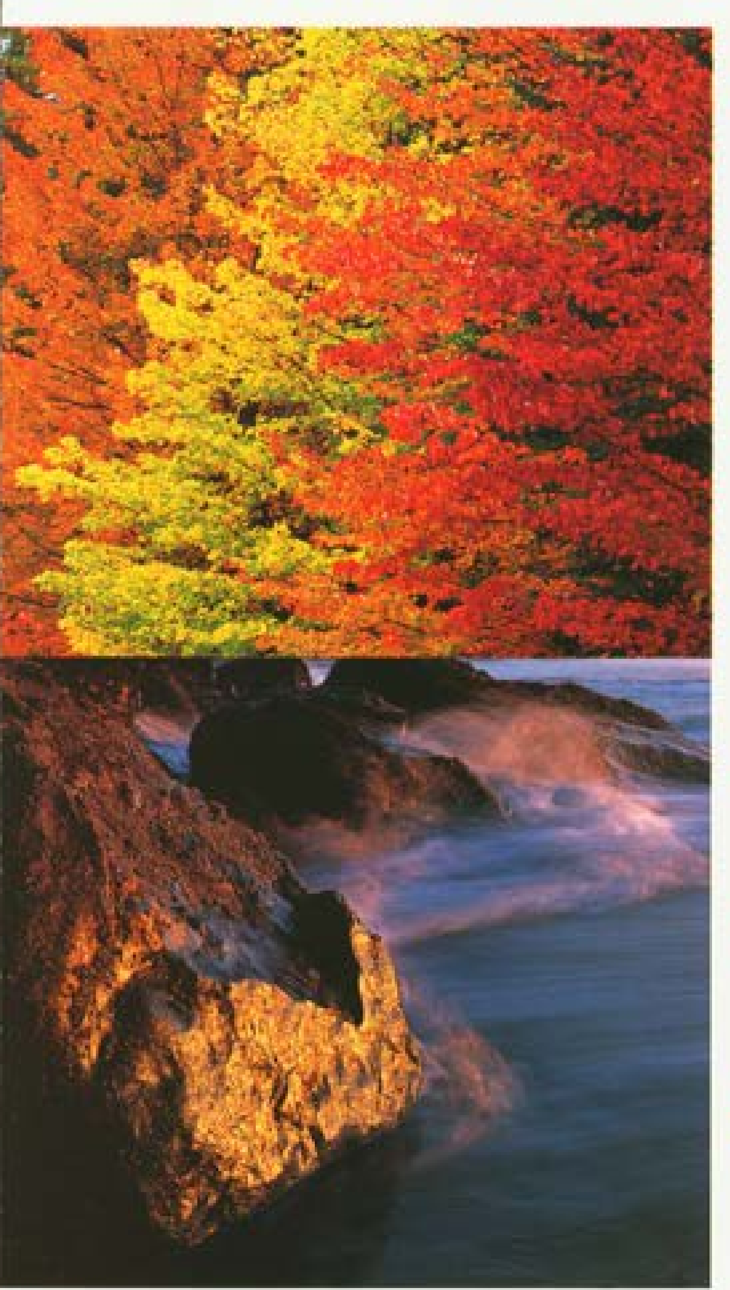
MISSISSIPPI BASIN

Through veins clogged by dubious improvements, the lifeblood of a continent flows past foothills, farms, and cities, bearing hope and (at times) despair. *Page 84*

ROCKY MOUNTAINS

A region more than the sum of its parks, where restless predators and alpine glories are the wild stuff of western dreams. *Page 124*

HE U.S. AND CANADA



GREAT BASIN/ HIGH DESERT
The spare, seemingly empty land between the Rockies and the Sierra plays lovely music for those who stop to listen. *Page 126*

SIERRA NEVADA
John Muir's sacred Range of Light enfolds azure lakes, granite canyons, and the largest trees on Earth. *Page 127*

PACIFIC NORTHWEST
Where the forest was king and salmon queen for millennia, the works of humans have brought down the monarchy in a few sad decades. *Page 128*

PACIFIC COAST
Traced by migrating gray whales, the Pacific Flyway, and Interstate 5, our western edge teaches us the meaning of land's end. *Page 64*

ALASKA RAINFOREST
The biggest bears, the fattest mosquitoes, and a colossal mistake: pulping the remnants of North America's mighty primeval forest. *Page 129*

BOREAL FOREST
Few humans inhabit the immense woods of the Far North, an unbroken green wreath extending from Alaska to Newfoundland. *Page 130*

HUDSON BAY/JAMES BAY WATERSHED
Cree, Inuit, and Naskapi; fens, marshes, and bogs: all depend on the vast sea that washes the northern shores of Manitoba, Ontario, and Quebec. *Page 131*

COLORADO PLATEAU
Sculpted into a fantastic redrock chaos, the area shared by Utah, Colorado, New Mexico, and Arizona is a product of wind, water, and time. *Page 92*

SOUTHWEST DESERTS
The sandy sea of three great deserts is punctuated by sky islands, rumbling rivers, and the patient tread of the timeless tortoise. *Page 125*

ARCTIC
No longer protected by climate and distance, the frozen reaches of the continent pose an icy challenge to environmentalists worldwide. *Page 132*

HAWAII
"The loveliest fleet of islands that lies anchored in any ocean," Mark Twain said of this archipelago, which has evolved in splendid—and vulnerable—isolation. *Page 110*

At Home on the Plan

21 Critical Ecoregions

- Alaska Rainforest
- American Southeast
- Arctic
- Atlantic Coast
- Boreal Forest
- Central Appalachia
- Colorado Plateau
- Great Basin/High Desert
- Great Lakes
- Great North American Prairie
- Great Northern Forest
- Hawaii
- Hudson Bay/James Bay Watershed
- Interior Highlands
- Mississippi Basin
- Pacific Coast
- Pacific Northwest
- Rocky Mountains
- Sierra Nevada
- Southern Appalachian Highlands
- Southwest Deserts

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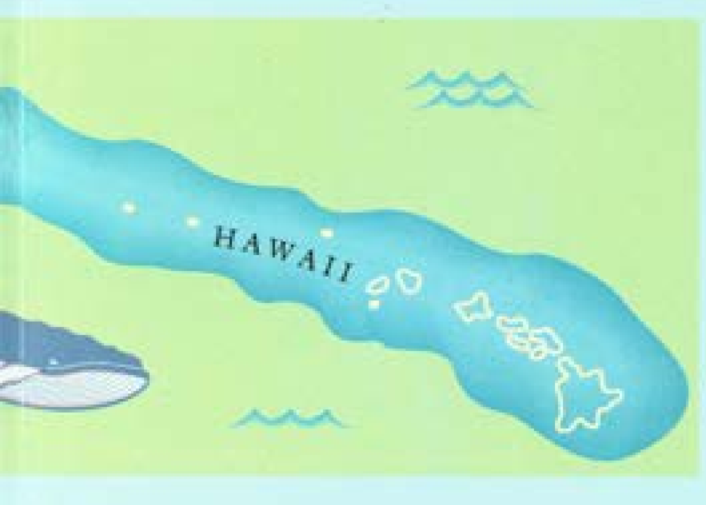
what it says on our birth certificates or e are citizens first of our landscapes—the rivers, plains, and coasts that make our eather, provide our food, hold our bones. egiance to our own particular ecoregion, and glories. For its second century of con- erra Club is adopting a strategy that re- yalty. We aim to restore the 21 ecoregions nd Canada to health and beauty. Why? ce like home.



MAP BY MAX SEABAUGH

ARCTIC
HUDSON BAY/JAMES BAY WATERSHED
GREAT NORTH AMERICAN PRAIRIE
GREAT LAKES
GREAT NORTHERN FOREST
CENTRAL APPALACHIA
ATLANTIC COAST
MISSISSIPPI BASIN
INTERIOR HIGHLANDS
SOUTHERN APPALACHIAN HIGHLANDS
AMERICAN SOUTHEAST
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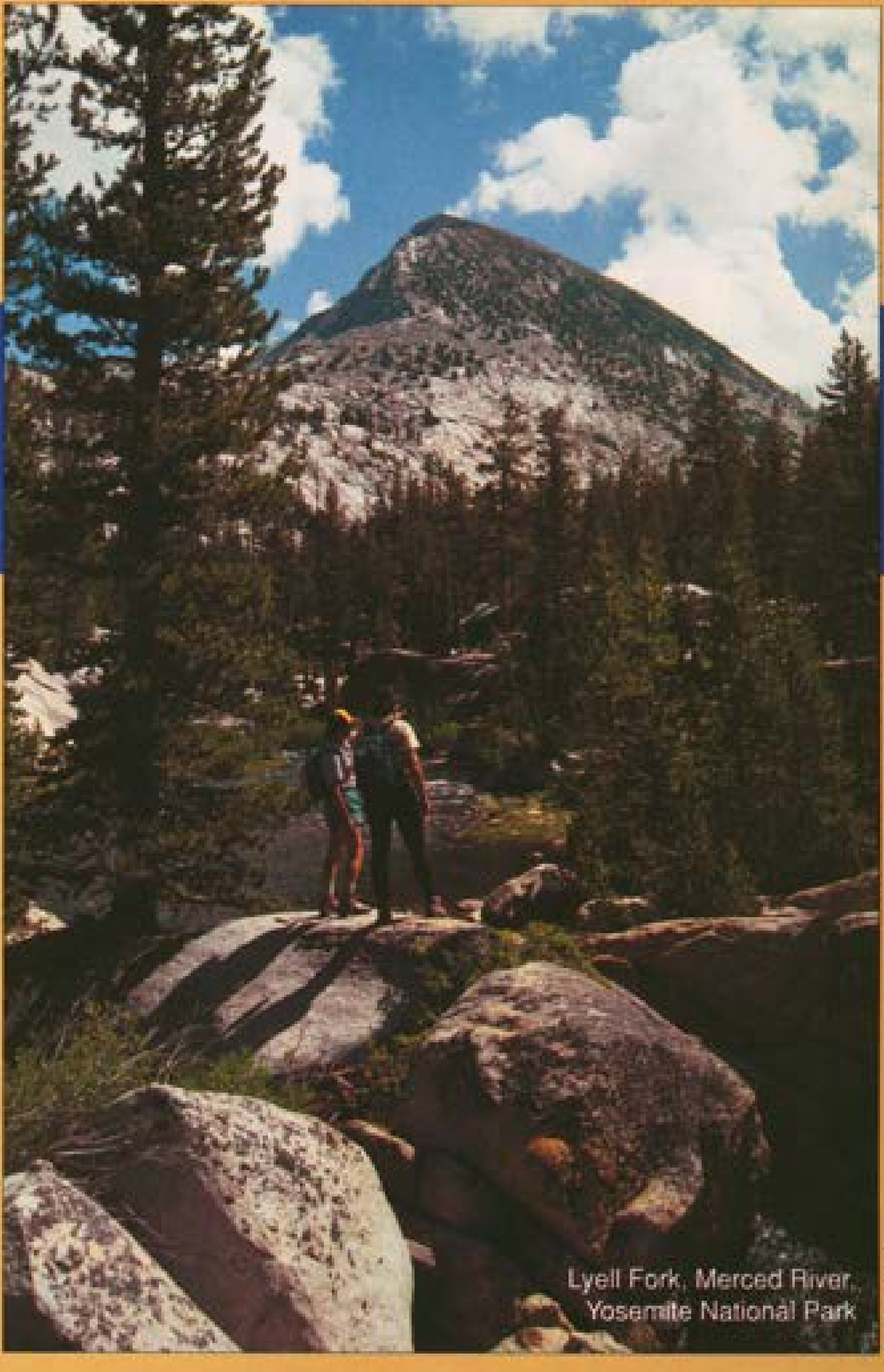

Lyell Fork, Merced River, Yosemite National Park

MARK TAYLOR

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#1

The Limits of Paradise

by John Daniel

PACIFIC COAST ECOREGION

THE PACIFIC OCEAN WAS THE FIRST LIMIT we North Americans came to, and the easiest to accept. You don't argue with an ocean. It's other limits, those we don't see as clearly, that trouble us now—limits on how we use the land, on what we take from it and ask it to take from us.

Last summer I drove the Pacific coast, from the temperate rainforests of British Columbia to the palms and freeways of Los Angeles. I traveled from one of the world's most elaborate developments of wild nature to one of its most elaborate developments of human culture. Two poles, but I found no neat gradient from north to south between them. Up and down the coast, it's clear which kind of development is prevailing.

The western coast of Vancouver Island grows a forest more exuberantly productive than any in the tropics—a dense, moist, silent exclamation of red cedar and hemlock and Sitka spruce, a culmination of at least ten thousand years of rain and sun and mild winters, ten thousand years of deepening soils that began with Pleistocene gravels. People have lived in the forest for millennia, yet outside their present villages the signs of their ancestral habitation are few. The only one I could find was a big red cedar with a scar in its side where a ten-foot plank had been split out hundreds of years ago. The tree has continued to grow unharmed, the scar now deep enough that I could stand inside it. In days of driving the Northwest coast, that cedar was the only evidence I saw of sustainable forestry.

A BEWILDERING ABUNDANCE OF LIFE STRUGGLES FOR BALANCE ON THE CONTINENT'S EDGE.

There was ample evidence of a different kind of forestry, a forestry not merely unsustainable but also vora-

cious. The northern and southern thirds of Vancouver Island have been reduced to more stripped earth than woods, laid bare in enormous clearcuts. In the Mackenzie Range, along Highway 4 in the south-center of the island, a government ministry has placed admonishing placards: "Our Forests Are Vital. Please Protect Them." Behind those signs, for mile after mile, the view is of mountainsides sheared in long, continuous tracts, burned over and scarred with landslides. Another commentary, less abstract and more attentive to facts, glares in red spray paint on a bridge rail: "World War III—the War Against the Earth."

The best of what remains of the island's rainforest lies in the Clayoquot Sound region, a domain of mostly undisturbed watersheds and islands being considered for designation as a United Nations biosphere reserve. A year ago, the provincial government announced a management plan that if fully implemented will allow logging of three-quarters of the Clayoquot rainforest. In the spirit of compromise, the government declared that forest fringes will be left intact along the shorelines—only the mountainsides, the scenic backdrops to one of the most dramatic coastlines anywhere, will be denuded. Questions of habitat and biodiversity aside, the government apparently believes that tourists will continue to throng to a coast whose mountains have been tonsured like medieval monks.

The assault on British Columbia's forests is for the most part quite legal. Multinational corporations enjoy what amount to perpetual timber leases on public lands, and Canada's conservationists have no basis for the kind of litigation their U.S. allies have used so effectively in the Pacific Northwest. They have shown in the past, however, that there are other ways to keep trees from turning into stumps. In 1984, loggers preparing to begin work on Meares Island, just north of road's end at Clayoquot Sound, were met on the water by a flotilla of nonviolent resisters and on the island by an equally nonviolent delegation of Tlaoquiaht Indians who told the loggers they were welcome if their chainsaws stayed in the boat. The Meares Island forest still stands. There and throughout Clayoquot Sound, a committed resistance is fighting against long odds as the timber corporations move in.

Meanwhile, across the Strait of Juan de Fuca and down the Northwest coast, no major watershed has escaped the bite of the saws. South of Olympic National Park, which preserves remnants of a spectacular rainforest, vast stretches of western Washington have been logged at least once. In my home state of Oregon, the Coast Range has been riddled with roads and clearcuts on public and private lands alike. And the redwood forest of California, home of the tallest living things, has been slashed from 2 million acres in the 18th century to fewer than 100,000 scattered acres today. The coastal Northwest wants to be trees, and forest does grow on much of the cut-over ground—mostly a thick woods of alders understoried with ferns. Alders are pretty enough, something like aspens, but the forest is dense, dark, and haunted. You can see the big stumps in there. You can feel the ghosts of the old-growth trees.

Clearcuts in the United States are smaller than the Canadian brand, which means they ruin a forest as much by fragmentation as by the mowing itself. Most of the damage doesn't show from the highways, so you have to do one of two things to appreciate it. Fly over, not too high, in a small plane. Or, as I did, traverse a forest on its logging roads. All across the Olympic National Forest I saw little but strips and patches of the original growth, as if it had been shaved by a psychopathic

barber with an erratic geometrical obsession. The upper slopes, some of them nearly as steep as cliffs, are banded with multiple roadcuts. Soil and stones have spewed downslope in landslides known as puke-outs—an ugly term for an uglier thing. It goes on for 40 miles. And every acre, I kept thinking, is public land, owned by us all, part of a system of forest reserves we once set aside—or thought we did—for protection against the timber barons.

Many of the butchered slopes up and down the coast have been replanted. On steeper ground, the plantations frequently fail, but elsewhere the young Douglas firs have taken hold, and eventually they'll grow into some poor version of a forest—genetically homogeneous, biologically sparse, dull to the eye and limited in use, the wood suited mainly for pulp. Weyerhaeuser Corporation, which owns a great deal of southwestern Washington, trumpets its replanting achievements in flashy signs—third-growth under way on some tracts, mixed-species stands on others—but its plantations, like the ubiquitous alder thickets, are sorry substitutes for the forests that once stood.

Weyerhaeuser and the other industry giants are the only winners in the Northwest timber wars. Having taken almost all of the old growth, many are shifting their attention to the Southeast, where it's quicker and cheaper to grow trees as crops.

The land itself has lost immensely, and so have timber workers. Pushed out of their jobs by automation, by log exports, by rampant, illegal overcutting in the 1980s and the resultant shutdown by lawsuit of the federal forests, they feel angry and betrayed as the region gropes its way to a new economy. On the byways, the back roads where pavement barely holds its own against brambles and alder forest, I saw the same hand-stenciled sign in front of home after home—"This Family Supported by Timber Dollars"—against a backdrop, usually, of hills scalped red-brown or healing with thickets of brush.

CLEARCUTS IN THE UNITED STATES RUIN A FOREST AS MUCH BY FRAGMENTATION AS BY THE MOWING ITSELF.

Those families blame their troubles on the federal government and on conservation groups. They are mostly right about the former and not entirely wrong about the latter. The Reagan-Bush Forest Service and Bureau of Land Management allowed far more cutting on the public lands than they should have, and Congress repeatedly subsidized harvests even higher than the agencies requested, thus breeding scores of small mills and logging outfits dependent on federal timber and an unsustainable cut. We conservationists brought the bad news, in the form of litigation, but we are despised for deeper reasons. We are seen as city dwellers, recreationists who use for pleasure the lands where timber workers live and try to support themselves. To suggest facilely, as some have, that they must retrain and relocate, or stay and adapt to a tourist economy, is to tell them that their communities and work skills are irrelevant. In fact, both are essential to the future of the forests. To restore the coastal watersheds will require major work—regrading and restructuring streams, reseeding slopes, reforestation. Not many conservationists know how to run a

quires one thing above all: to protect and restore their habitat. Endangered-species listings, which will multiply in the 1990s, are aimed at forcing just that, but they are triggered far too late in the process of habitat degradation, when species are already under the shadow of extinction. And, worse, they perpetuate a chronic delusion—that one species can be singled out, attended to, and "saved." It's impossible. Depleted salmon runs, like depleted populations of owls and murrelets, are symptoms of a major injury to the ecosystem, the watersheds, the air-water-soil-plant-animal complex that we call the land. If we can heal the land, by leaving it alone where it isn't hurt badly and restoring it where it is, fish and birds and trees will have a reasonable chance of prospering. And so will fishermen and loggers, so will consumers, *if* we accept tighter limits on our extraction and consumption, *if* we accept that the human economy must subject itself to the natural economy that makes it possible.

bulldozer or thin a young forest, but there are workers who do, and those workers need jobs.

LIKE LOGGERS AND MILL HANDS, COMMERCIAL FISHermen too are out of work these days. Salmon runs of all species have plummeted in coastal streams from Puget Sound to Southern California, largely for the same reasons that the spotted owl and marbled murrelet are in trouble. Salmon require watersheds where trees are undisturbed—where they shade the streams and eventually fall, forming pools and trapping gravel the fish need for spawning. Such pristine environments are exceedingly rare on the coast. A century of roading, clearcutting, and urbanization has raised water temperatures, silted the spawning gravels, and triggered violent washouts that have scoured some stream channels down to bedrock. Dams, mines, pollution, diversions for agriculture, and misguided hatchery programs have added further insults to the habitat.

As ghosts of big trees haunt the second-growth forests, ghosts of hundred-pound chinook haunt Washington's Elwha River, walled off by two impassable dams early in the century. (Those dams are scheduled for removal—a momentous act of healing, if Congress will appropriate the money.) A ghost run of some 400,000 coho throngs the lower Columbia River. Ghost chum salmon run the Klamath and the Sacramento, ghost steelhead in numbers up to 20,000 a year run the San Diego, the Los Angeles, and stream after other stream in Southern California.

To protect and restore coastal salmon runs re-

AS THE MIGRATIONS OF SALMON THREAD THE Pacific coastal region to the open sea, migratory birds weave it into air and join it to their nesting grounds far to the north and their winter range in warmer latitudes. The coast itself, from the Skagit River plain on Puget Sound down through San Francisco Bay and the remnant marshes south of Point Conception, guides one current of the seasonal river of birds we call the Pacific Flyway. Another current, a bigger one, follows the Great Central Valley of California, where settlers in the 19th century witnessed flights of ducks and geese that darkened the sky. The valley—a joining of two river drainages, the Sacramento flowing from the north and the San Joaquin from the south—originally contained millions of acres of marsh, lakes, vernal pools, and profuse grassland. John Muir, on his way to Yosemite in 1868, waded knee-deep in a wildflower savanna veined with riparian forests.

Sheep and cattle already were scouring the valley when Muir first saw it, and our century has seen its conversion, by means of the biggest irrigation projects ever engineered, into the richest agricul-

ALEX MACLEAN

tural region in the history of the world. Where Muir walked in flowers, I found myself among endless dead-flat fields of sugar beets, corn, alfalfa, tomatoes, and grains. The water that once raised wild blossoms and lured geese from the sky is now captured and conveyed in pumps, pipes, ditches, and concrete aqueducts. According to Gerald Haslam in *The Great Central Valley: California's Heartland* (University of California Press, 1993), more than one-fourth of the table food grown in the United States comes from these fields. The valley's agricultural production in a single year out-values all the gold mined in California since 1848.

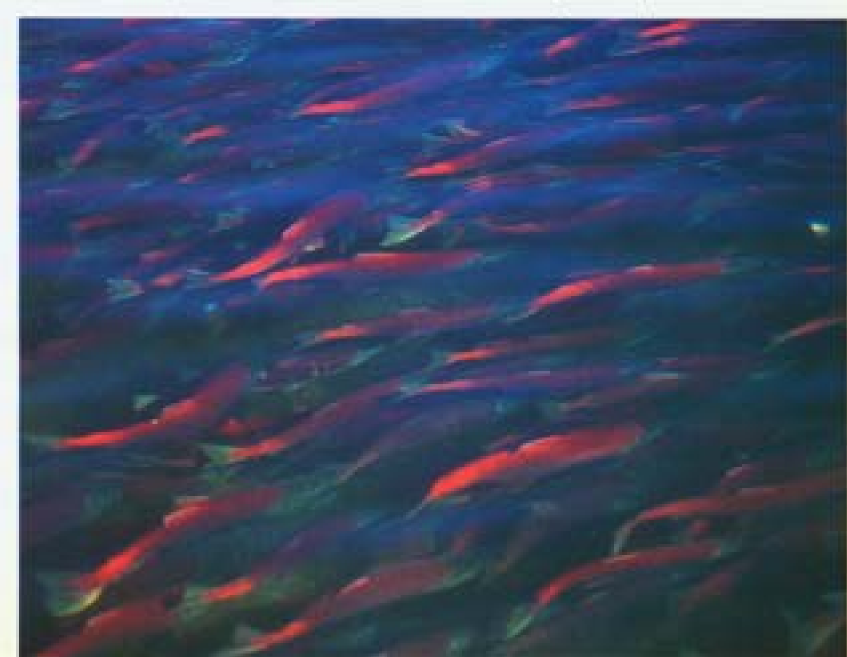
But that stupendous output has exacted stupendous costs. Waterfowl no longer fill the sky or lift from the earth in a storm of wings. Ninety-five percent of the Central Valley's wetlands have been drained or otherwise obliterated. Tulare Lake, at flood level once the largest body of fresh water west of the Mississippi, doesn't appear even as a dry lake bed on many road maps. The San Joaquin River, which used to conduct chinook salmon runs into all its tributaries, now disappears along part of its length most years, diverted and sucked dry for the thirsty fields. Water from the Sacramento River, whose valley has half the San Joaquin's arable land and twice its water, is stored, sent south in canals, and pumped uphill for hundreds of miles so that the drier southern valley can burgeon with grapes, surplus cotton, and rubber tomatoes.

Eighty percent of California's developed water supply is soaked up by agriculture. Federal legislation that the Sierra Club helped pass in 1992 designates wildlife, for the first time, a primary user of Central Valley water. Salmon runs in the Sacramento will benefit, but the law only begins to address the overall pattern of water rapaciousness in the valley. San Joaquin farmers have been pumping groundwater for decades, much faster—half a trillion gallons a year faster—than the aquifers can recharge. Emptied sediment chambers have collapsed, destroying aquifers, and surface land has dropped as much as 50 feet in some places. The farmers drill deeper, at greater expense. In the Salinas Valley, salad bowl to the nation, produce growers and a skyrocketing population are pumping subsurface water so fast that an advancing saltwater intrusion is about two miles away from a drinking-water source for the city of Salinas.

Salt threatens the valley in another way as well. Through decades of irrigation, natural salts and fertilizer residues have built up in the soil, reaching levels in some areas that have killed the land. Salinization is an inevitable consequence of irrigated agriculture. Ten years ago it had already ruined 650,000 acres in the valley. Another million acres could be lost by the end of the century. Like farmers as far back as ancient Mesopotamia, valley growers have tried to solve the problem by installing subsurface tile systems to drain off the saline wastewater, but such contrivances work imperfectly and only extend the compass of death. In the early 1980s, nests of dead embryos and birds with no eyes and other deformities began to appear at wastewater evaporation ponds in Kesterson National Wildlife Refuge, south of Turlock. Selenium, leached from the bountiful fields, was found to be poisoning the waterfowl. Wastewater throughout the valley—in natural pools, in the San Joaquin River, in the seasonally flooded fields of duck-hunting clubs—bears high levels of selenium and other toxic substances.

At Kesterson, as heads are scratched for a way to clean the place up, sirens shriek to scare off birds. If they don't scare us too, we're not as smart as the ducks and geese. The Great Central Valley, like the stripped coastal ranges to the north, has evolved into one colossal exercise in the breaching of limits. Birds and fish suffer first, but as our technological fixes fail to keep up with our hubris, human beings will suffer too. Some are suffering already.

THE NOTION THAT ONE SPECIES CAN BE SINGLED OUT, ATTENDED TO, AND "SAVED" IS A CHRONIC DELUSION.



Because mechanization and large-scale irrigation favor big corporate growers, small farmers are being forced off the land. Their numbers fell by half between 1950 and 1970, and are falling still, documenting once again Wendell Berry's axiom that unsustainable farming depletes people as well as soils.

Cancer and birth defects run high in the valley among farmworkers and small-town dwellers alike. One-third of all pesticides manufactured in the United States are used in the Central Valley, and many of them, like salt in the fields, don't go away. They're in crops, in water, and in the tule fog that hovers near the ground for weeks at a time in winter. Many growers would rather not use so many chemicals, but they're part of an agriculture system that relies on them, and we consumers tolerate invisible poisons better than we tolerate higher prices or blemished produce. A rice farmer I spoke with in the Sacramento Valley grows a small portion of his crop organically and would like to grow more, but the market isn't there. "When city environmentalists get on me about using chemicals," says Allen Garcia, "I ask them to think about what they buy and what they eat. They've got to help."

Rice farming, long a target of conservationist criticism because it requires so much water, is actually one of the brighter spots in Central Valley agriculture. It uses water where the water is—the relatively lush Sacramento Valley—and returns it to the rivers when its work is done. And rice growers like Garcia, in partnership with Ducks Unlimited and other conservation groups, are flooding their fields from fall to spring to re-create some of the wetland habitat the Central Valley has so thoroughly lost. Waterfowl feast on leftover rice and plentiful invertebrates, all the while breaking down rice straw with the action of their feet and depositing their own brand of fertilizer. "Those ducks are paying me dividends," chuckles Garcia. "We're showing we can produce a crop *and* enhance the environment." In a generally discouraging tour of the Central Valley, it gave me a singular lift to encounter a Gary Snyder–quoting rice grower with a Hispanic surname who cites Chinese farming lore 3,000 years old while leveling his fields—so they'll require less water—with laser technology.

But if bird habitat is expanding in the valley, pavement is expanding much faster. The human population here is increasing at two and a half times the rate of the rest of California. Stockton, Turlock, Modesto, and other valley towns are sprouting malls, parking lots, and tract-home developments in fields where crops once grew. Fresno, according to the 1990 Census, is the fastest-growing city in the nation. The valley is doing a good job of imitating Los Angeles, and it has developed Los Angeles air—a pale-brown pall of auto emissions and smoke from agricultural burning, efficiently trapped and held between the Coast Range and the Sierra Nevada. Thousands of acres of productive farmland are interred under asphalt each year. In the words of an old *vaquero* quoted by Gerald Haslam, "Someday we'll have to plow up the malls to plant something we can eat."

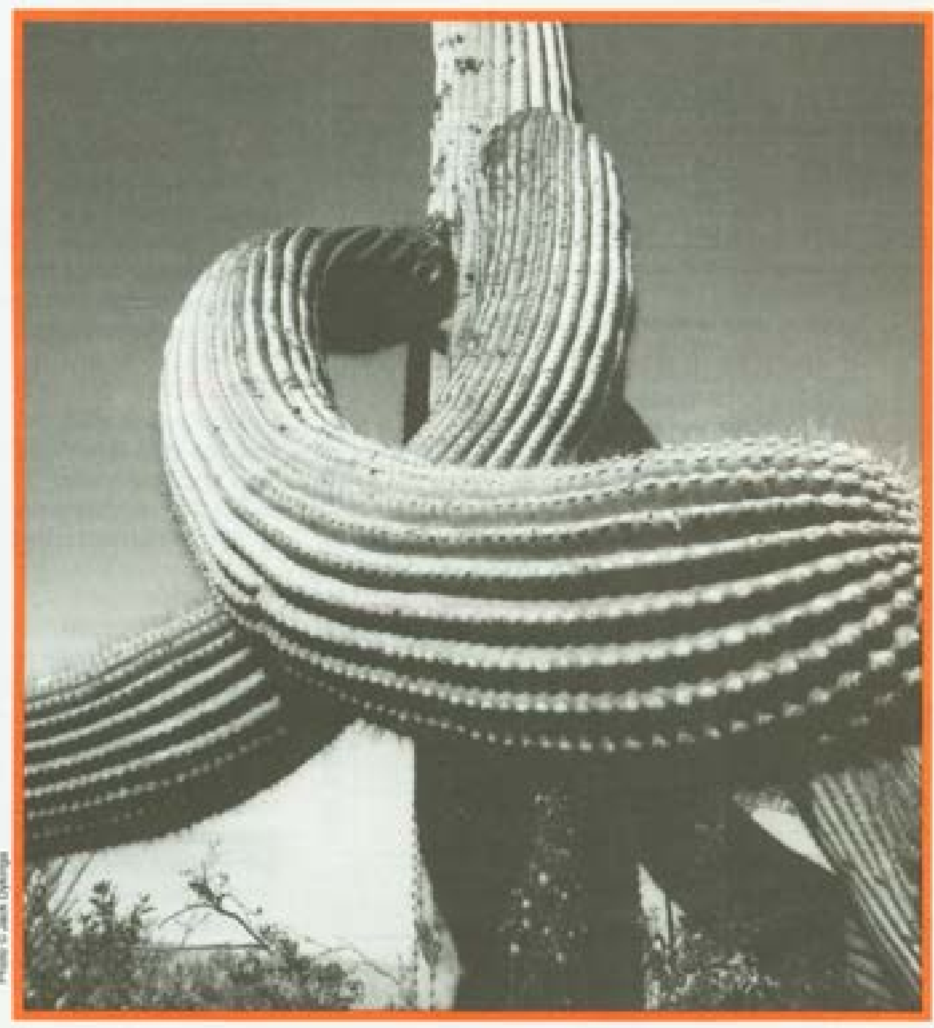
AND THAT BRINGS US, INEVITABLY, TO THE LOS Angeles Basin itself, 95 percent of which, I'm told, is paved, poured with concrete, or otherwise altered by humanity. I enter slowly, poking around the San Gabriel Mountains—where ponderosa pines are visibly sick from ozone in the air—then drive west and south, following the irregular front lines of suburban sprawl. Tracts of fresh pink stucco houses, newly opened for inspection and purchase, patch the scrubby hills. The slopes are furrowed with erosion gullies. An occasional small oil rig

FROM BAJA TO BRITISH COLUMBIA

THE SIERRA CLUB HERE seeks sustainable human

of Big Sur along the central California coast.
♦ **Superlatives:** The California floristic

Scenic Area in 1986. Also in 1986, it helped draft and pass California's Proposition 65,



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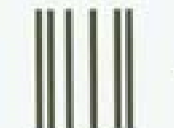

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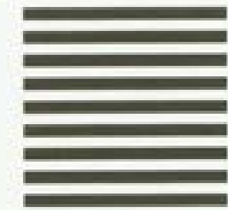

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FROM BAJA TO BRITISH COLUMBIA

THE SIERRA CLUB HERE seeks sustainable human communities with clean water and breathable air, and coastal rivers and watersheds that provide habitat for a rich array of wildlife.

♦ **The Land:** This ecoregion extends from the fjords of British Columbia past Puget Sound and the temperate rainforests of the Olympic Peninsula, along the rugged Oregon, Washington, and California coasts to the desert shores of Baja California. The Willamette and Great Central valleys, among the most fertile and productive in the world, lie between the coastal ranges and the region's eastern boundary, the Cascades and the Sierra Nevada.

♦ **Population:** 40 million.

♦ **Economy:** The agriculture, fishing, and timber industries are powerful political forces, but taken together they contribute less than 2 percent of the gross regional product. Dominant economic forces are aerospace manufacturing, high tech, and Pacific Rim trading.

♦ **Power Players:** California Senators Barbara Boxer and Dianne Feinstein (both Democrats); Speaker of the House Tom Foley (D) of Washington state; key environmental committee leaders including Oregon Senator Mark Hatfield (R), Washington state Representative Norman Dicks (D), and California Representatives George Miller, Henry Waxman, Norman Minetta, and George Brown (all Democrats); and (through the initiative process) the people of California.

♦ **One Hundred Fifty Years Ago:** Millions of salmon migrated each year through San Francisco Bay and up the Sacramento and San Joaquin rivers, and through the Columbia River and Puget Sound to the streams of the Northwest.

♦ **Nature Meccas:** The velvet rainforest and jagged peaks of Olympic National Park in Washington; the tule elk, heavy fog, and strong winds of Point Reyes National Seashore north of San Francisco; the dramatic beaches and moist redwood forests of Big Sur along the central California coast.

♦ **Superlatives:** The California floristic province, which extends from Oregon's Coos Bay to northern Baja California, contains one-fourth of all the plant species in both the United States and Canada. Half of these species are unique to the region.

♦ **Popular Play:** Sailing and kayaking in Puget Sound, San Francisco Bay, and the Gulf of California; surfing along the California coast; hiking and camping in the redwood, cedar, fir, hemlock, spruce, and chaparral of the Coast Range, Olympics, and Cascades; windsurfing in the Columbia River Gorge.

♦ **Enviroclimate:** An environmentalist stronghold in coastal cities such as San Francisco, Los Angeles, and Seattle. The Sierra Club has 180,000 members in this ecoregion. But in many rural areas, the timber industry and agribusiness control local politics, resisting environmental reforms.

♦ **Conservation High:** Most recently, passage of the Condor Range and Rivers Act in 1992, protecting more than 400,000 acres of wilderness, 83 miles of wild-and-scenic rivers, and 109 miles of wild-and-scenic-study rivers in the Los Padres National Forest in California.

♦ **Progress:** The Sierra Club played a major role in establishing North Cascades and Redwood national parks in 1968; Santa Monica Mountains National Recreation Area in 1978; and Columbia Gorge National Scenic Area in 1986. Also in 1986, it helped draft and pass California's Proposition 65, the nation's toughest toxics-control law.

♦ **Unprotected Treasures:** The region's wetlands, fecund havens for waterfowl, have already been reduced by 90 percent in California and by 30 percent in Oregon and Washington.

♦ **Biggest Threat:** A burgeoning population. California grew the fastest: up 25 percent between 1980 and 1990. The Puget Sound area may outpace California in the future, however: it is expecting a 40-percent increase over the next two decades, while the Golden State's expansion is slowing.

♦ **Celebrators:** Poet Robinson Jeffers' work was infused with the spirit of California's wild Big Sur country. "The seabeaten coast, the fierce freedom of its hunting hawks, possessed and spoke through him," said Loren Eiseley. "It was one of the most uncanny and complete relationships between a man and his natural background that I know in literature." Others singing this ecoregion's praises are Gary Snyder and David Rains Wallace; its photographers include Ansel Adams, Eliot Porter, Philip Hyde, and Cedric Wright.

♦ **Tells It Like It Is:** *The Last Redwoods* by Philip Hyde and François Leydet (Sierra Club Books, 1963); *Not Man Apart: Photographs of the Big Sur Coast and Lines from Robinson Jeffers* (Sierra Club Books, 1965); *The Wild Cascades, Forgotten Parkland* by Harvey Manning (Sierra Club Books, 1965).

♦ **To Learn More:** See Sierra Club Books' *The Sierra Club Guide to the Natural Areas of California* and *The Sierra Club Guide to the Natural Areas of Oregon and Washington*, both by John Perry and Jane Greverus Perry; *Olympic Battleground: The Power Politics of Timber Preservation* by Carsten Lien; and *The Intertidal Wilderness* by Anne Wertheim.

♦ **To Help:** Contact Barbara Boyle, Sierra Club Northern California and Nevada office, 4171 Piedmont Ave., Suite 204, Oakland, CA 94611, (510) 654-7847; or Cal French, Pacific Coast Task Force Chair, 1690 N. 2nd Ave., Upland, CA 91786.

ON OUR AGENDA

SIERRA ECOREGIONS CLUB

♦ Permanently protect the remaining ancient forests on federal land.

♦ Establish new wilderness areas in places such as Northern California's King Range and new marine sanctuaries at Santa Monica Bay and in Washington's San Juan Islands.

♦ Protect all remaining free-flowing rivers; restore all wild salmon and steelhead runs to levels that enable a thriving sport and commercial fishery.

♦ Remove toxic threats to urban communities and prevent new contamination.

♦ Significantly increase wetlands acreage.

♦ Revise water pricing and policies in ways that will encourage conservation.

♦ Ban oil-and-gas leasing along the entire Pacific Coast.

water in my motel shower comes from the Colorado River via Parker Dam, which means it derives from snowfields as far away as Colorado and Wyoming. And some comes from the Feather River drainage in Northern California, sent south in the California Aqueduct and launched nearly 2,000 feet over the Tehachapi Mountains to water the growing megalopolis.

Try as I might, though, I can't muster much regional pride about water issues. San Francisco and its neighboring cities are guilty themselves of plundering far places to assure supplies, and cities in the Northwest, with abundant water close by, take it for granted. In Portland the quality of our water is also an issue, because for 35 years we have tolerated extensive logging in the publicly owned watershed near Mt. Hood that supplies the metropolitan area. An old-growth watershed is a natural water-storage and filtration system. To clearcut in such a forest is insane in both senses—unclean and crazy—and may result in the need for a $200-million filtration plant to replace the one we had for free.

Equally insane is our frontier habit, north and south, of using coastal waters for a cesspool. The city of Victoria on Vancouver Island flushes 20 million gallons of raw sewage a day into the Strait of Juan de Fuca. Vancouver discharges a much greater volume, treated only at the primary level, into the Strait of Georgia. The rapidly growing communities of western Washington make their own contributions, with the result that 40 percent of Puget Sound's commercial shellfish beds are closed because of contamination. And down here on the south coast, beach closures are occurring in the San Diego area because of sewage dumped in the Tijuana River by its namesake city, which has a population of 2 million and is growing fast.

Toxic industrial discharges are a further insanity. The New River, shared by Mexico and San Diego County, carries enough solvents and heavy metals from *maquiladoras* (border-region assembly plants) to qualify as the most polluted river in North America. San Francisco Bay is subjected continually to chemical wastes from refineries, solvents

Continued on page 142

bows and rises, genuflecting to the prevailing god. I spend the night in Calabasas, northwest of Los Angeles, where rows of outsized homes strut their stuff like birds in breeding plumage. My motel, the Country Inn, stands amid housing developments and commercial strips that only a few years ago *were* country—beautiful country, golden hills studded with oaks. The country survives in a word on a sign, just as the great orchards of the Santa Clara Valley, south of San Francisco, survive mainly as street names such as Apricot Lane and Plum Blossom Drive.

The directory of services I find in my room contains a history of Calabasas, three sentences of which summarize nicely the history of greater Los Angeles. Note the two-word phrase that recurs like a mantra: "As with most other communities in California, the water supply has always been a huge concern. In 1958 the Las Virgenes Water District was founded, thus assuring the water supply. Continued growth of the area was an immediate result of the plentiful water supply."

The source of this particular plentiful supply isn't the ill-fated Owens Valley, 250 miles away on the east side of the Sierra, robbed fair and square in 1913 by the Los Angeles Water Department and turned from farmland to wasteland. Some of the

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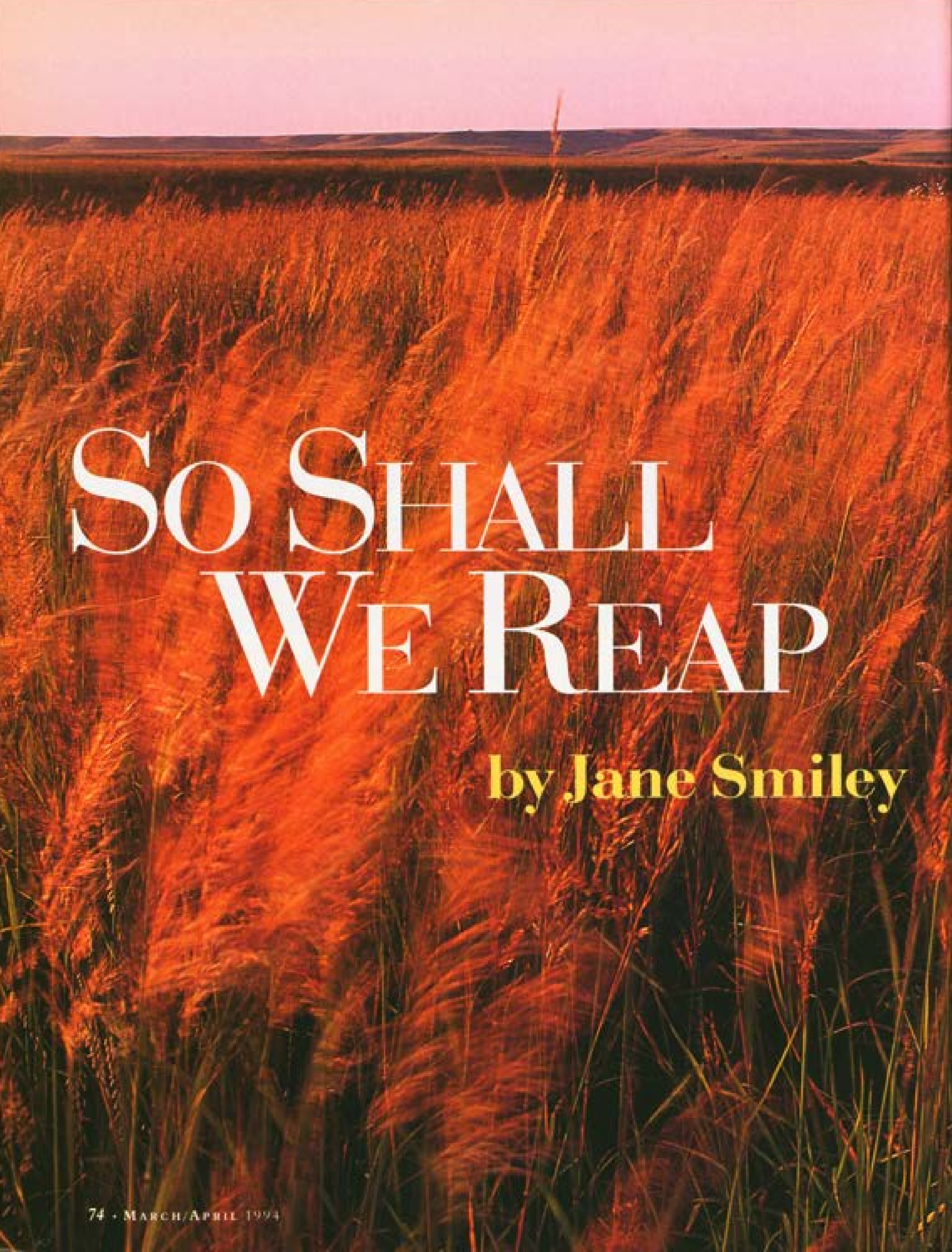

SO SHALL WE REAP

by Jane Smiley

ONE OF MY FAVORITE STRETCHES OF highway is Interstate 35 south of Minneapolis–St. Paul. There is always a moment when I realize that the dark, mysterious embrace of the North Woods is well and truly behind me. I look around at the brilliantly sunlit fields spreading in every direction, rich green burnished with late-summer gold, and I sense the continent shift eastward. I am out on the prairie now, and it feels important—not as if I got up this morning and drove for a few hours from our lake house, but more as if I've left one world and entered another. I like to think of this momentary feeling as a ghostly echo of what the European settlers of the 19th century felt when they first saw a sight unprecedented in their lives—pure terrestrial space, pure unmediated land, a vision of absolute largeness guaranteed to disorient, terrify, and inspire.

Of course, what I see bears almost no relation to what the first settlers saw. I see the wide double ribbon of the highway flowing silver-gray between squared-off fields of tasselled corn. I see a ten-foot windbreak of hackberry that curves along the highway for a quarter mile. I see a blue farmhouse to the right and a giant antique emporium to the left. Just past the antique store, I see a Lutheran church on a bluff, and then the Iowa state line, which runs beneath an overpass, over which three cars are passing.

A HEARTLAND OF SEEMINGLY LIMITLESS BOUNTY BEARS THE BURDEN OF DREAMS FULFILLED.

Mostly I see the crystalline blank blue of the sky, so large and all-encompassing that no single storm, no pile of cumulonimbus can fill it. Only the leading edge

PHOTOGRAPHS BY FRANK OBERLE

GREAT NORTH AMERICAN PRAIRIE

of a front, advancing in a sheet of platinum cloud-cover slowly but steadily from the Pacific to the Atlantic, can block so much sky, and that has the effect of bolstering my sense of enlargement—rain may soon begin, and is likely to pour down in torrents that seem impossible for my car, or the land, to withstand. This sky, these clouds, these cataracts, perhaps all this is something the early settlers experienced. Otherwise, the land around me is the result of those settlers' dreams—peaceful, productive, domesticated, ordered—as entirely delivered over to human purposes as any urban landscape in America.

Our relationship to the Great North American Prairie, especially the tallgrass prairie, is a paradigm, perhaps *the* paradigm of our relationship to Earth, for on the prairie we have had our way in almost everything, and every potential our ancestors saw for fertility, productivity, and European-style settlement has been fulfilled. The prairies have, almost resistlessly, given every gift. On the *tabula rasa* of millions of acres of flat land, we have finally worked out the logic of our technology, our religion, our moral beliefs, our social and economic priorities, and our appetites. If, as it sometimes seems, we have destroyed ourselves on the prairie, we have nothing, and no one, to blame but ourselves.

ABOUT FIVE MILES NORTH OF MY HOUSE IN AMES, Iowa, is a state-designated "prairie remnant," a 25-acre piece of land that escaped the plow. In mid-

September of a very wet year, the dominant color here is rich green. The five- or six-foot-tall stems of Indian grass are fully headed-out—tan seed heads wave and rustle in the stiff westerly breeze. Other vegetation, mostly partridge pea, with its small yellow flowers and vetch-like leaves, clusters and creeps around the base of the taller grasses, entirely covering the soil beneath. Behind the stand of grass is a grove of trees, a few evergreens and some oaks. A crow sits on the uppermost branch of a dead tree, steadying itself against the breeze.

Through a space between the trees, I can see the lowlands in the distance. The shadow of a cloud crosses the tasselled-out but yellowish corn, then darkens a gray patch of soggy ground that this year failed even to support the poor crop surrounding it. At the edge of the field, another stand of trees rises in sunlit, leafy humps. Against the trees stands a Happy Chef sign. The wind in the Indian grass and the surging and then ebbing sound of cicadas and crickets is almost as loud as the roar of wheels passing south on I-35. According to the historical marker, the distant trees shelter an old graveyard where the Swearingen family is buried, six members of which were overtaken in their covered wagon by a prairie fire on their way through this area in the 1840s. The prairie remnant is small, the cornfields in the distance are large, but it's hard not to notice, in this flood summer of 1993, that the grasses are thriving and the corn is weak.

These are the southern reaches of the prairie-pothole region, a huge area of small lakes (called potholes) and undulating low rises that aren't quite hills. Originally an estimated 6 million acres of tallgrass prairie and wetland, the pothole region resisted settlement 50 years longer than other parts of Iowa. Areas that have become farm fields used to be sheets of shallow water that ran for miles (the earliest settlers reported boating, or, in the winter, skating, from farm to farm). Although crisscrossed by numerous tributaries of the Mississippi and the Missouri rivers, this land was so new—only as old as the last ice sheet 11,000 years ago—that the rivers had not yet formed it, and most of them wandered, slow and wide, over the flat land.

To the first Europeans, the prairies looked, above all, inexhaustible. In addition to inexhaustible space, and inexhaustible soil fertility (the deepest topsoil in the early days was to be found in an area north of Marshalltown and in northeast Iowa, where it measured 20 to 25 inches), settlers found abundant wildlife. "Prairie-chickens [numbered] in countless thousands and their nests often covered acres of the prairie," writes Bohumil Shimek in *Iowa's Natural Heritage.* "The long-billed curlew, now unknown in Iowa, everywhere hovered over the prairie, an easy mark for every pot-hunter; great clouds of golden plovers, or 'prairie-pigeons,' swooped down seemingly out of nowhere, apparently to alight, but only to sweep away again like a turbulent wave; the white and the sandhill cranes danced merrily (and awkwardly) before their mates, and the borders of swamps and 'sloughs' were often lined with the nests of ducks of several species; pelican eggs could be collected in favored spots by the boat-load; and practically every

muskrat house supported the nest of a wild goose."

By and large, the prairie states were settled by European farmers whose native regions were mountainous, forested, stony, and cursed with poor soil or unfavorable weather patterns (not to mention absentee landlords, overcrowding, and social unrest). Story City, Iowa, for example, is still self-consciously Norwegian. Elkhorn, Iowa, is the home of the Danish Immigrant Museum. Until World War II, the public life of Manning, Iowa, was conducted entirely in German—a friend's Irish ancestors who settled nearby had to learn to speak German there just to get along. Czechs, Finns, Swedes, Luxemburgers, English, Irish, Dutch, and numerous other European groups are scattered over the prairie, mostly in enclaves of homogeneous nationalities and religions.

Each group of these settlers brought its own habits, manners, cuisine, and dress. Many of them also brought European-style agriculture, which was based on mono-cropped fields and animal power. In Europe, climate and poor conditions put a natural brake on what it was possible to grow. In his study of daily life in the Middle Ages, Fernand Braudel estimates that one wheat seed planted in a field in France would produce, at best, four grains, whereas today's wheat yields a minimum of 30 grains from a single planted seed. And much of Europe was best suited for pasturing animals or hunting, which meant that Europeans had grown accustomed to more meat and dairy products in their diet than many populations living in milder regions. Braudel estimates further that in the 15th century the average European ate meat five times a week. While this average fell considerably over the subsequent centuries, especially for the general population, the ideal remained, modeled in the feasting of the upper classes—course after course of fish, fowl, and meat, leavened with some pie crust or bread, accompanied by wine and ale, finished off with some fruit.

Along with their tastes and know-how, Europeans brought belief systems that were hostile to difference, diversity, and alien forms of knowledge, and that portrayed nature as separate from and subordinate to men. They brought the habit of supporting large cities, which entailed an emphasis on productivity as well as the continuous export of a locality's best goods, be they milk, meat, lumber, or children.

THE ENORMOUS SUPERSTRUCTURE OF AMERICAN SOCIETY RESTS ON THE TINY POINT WHERE FEWER AND FEWER FARMERS WITH LARGER AND LARGER MACHINES MINE AS MUCH FOOD AS THEY CAN FROM FIELDS THAT ARE LESS AND LESS WHAT THEY ONCE WERE.

Bent on reconstructing the lives they had left behind, the first settlers saw around them inex-

IT IS NOT "POLITICALLY CORRECT," OR "MORALLY RIGHT," OR EVEN "NECESSARY" TO HEED THE WARNINGS ABOUNDING IN THE SOIL AND WATER OF THE PRAIRIE. IT IS INTELLIGENT.

haustible emptiness, a daunting wasteland to which they could bring the familiar—farms, towns, cities, wheat, apples, cabbages, cattle, hogs, chickens, capital investment, import-export relations with the cities further east, and speculation. (Studies of settlement on the prairies make clear that townsite speculators came first, followed by merchants of building materials, clothing, and other supplies. Moderate mercantile success allied with considerable boosting through local newspapers brought in the railroad, and only then did the settlers begin to come, pioneers, perhaps, but customers first and foremost.)

Early leaders promoted Iowa as an agricultural paradise, where "a delicious fragrance fills the air, which impresses the mind with a sense of realization of its fondest ideal of the 'land of flowers.'" Even the climate, though bracing, was perfect: "Almost imperceptibly, these golden days merge into winter, which holds its stern reign without the disagreeable changes experienced in other climes, until spring ushers in another season of life and beauty. And so the seasons pass, year after year, in our beautiful and healthful Iowa," was how it was touted in a pamphlet printed by the General Assembly of 1872 in English, German, Swedish, Dutch, and Danish and widely distributed in the United States and Europe. The potential of native grasses was recognized—blue-joint grass rated a mention for being both nutritious and productive ("It often yields over three tons per acre"), but the great draw, in the view of those hoping to attract immigrants, was the way introduced plants and livestock throve in Iowa—wheat, oats, flax, buckwheat, barley, rye, onions, parsnips, carrots, beets, cabbage, lettuce, apples, grapes, morello cherries, cattle, hogs, sheep, horses—the catalog of the familiar was obviously meant to reassure settlers that they could bring their old lives with them. Even corn, "Irish potatoes," beans, and pumpkins were imports—native to the Americas, but not to the prairies. The promise was that all the immigrants had to do to realize a life just like the one they were leaving (but far more prosperous) was to clear away the native vegetation and bring in the plow.

Although the prairie-pothole region in Iowa was settled relatively late, by the late 1880s and early 1890s the hunger for land made it profitable to invest in the arduous undertaking of digging tile-ditches, laying tile, and draining off the waters. The act of the Iowa legislature establishing drainage districts in 1872 asserted that the drainage of surface waters would be *presumed* to be of public benefit. As Richard Bishop and Arnold Van der Valk remark in *Iowa's Natural Heritage*, "[T]his eliminated

much of Iowa's water storage capacity—our natural sponge. No longer would these temporary sloughs hold water for nesting ducks or retard runoff. Tile carried water as rapidly as possible to drainage ditches or creeks and on to rivers which flowed into the larger Mississippi and Missouri rivers." In some places, the surface watercourses were too shallow and slow to carry the drainage water, so the tilers devised drainage wells that sent the water underground, into the aquifer.

The land revealed by the draining of the marshes was unprecedented in its fertility. As the wildlife and the space that had been hallmarks of the prairies began to vanish by the end of the century, it appeared that they could easily be dispensed with, for the familiar could be planted in their place and prosperity itself would be inexhaustible.

The most important lesson of the flat, fertile lands is that appearances are deceiving.

WHILE THE AGRICULTURAL INDUSTRY NEARLY always promotes itself as a rousing success (usually in terms of one farmer feeding some mind-boggling number of other mouths), American farming on the prairies has had only one golden decade out of fifteen, and that was before and during the First World War, when, of course, agriculture in Europe was in collapse. Many historians assert that the effects of the agricultural depression of the 1920s and the Great Depression of the Dust Bowl '30s reach well into our era—serious bad times have been followed by moderately good times, but neither the policymakers nor the farmers have succeeded in putting back together the prosperity of the early years of this century.

Today it is clear that the prairies not only *look* different from what the settlers found, they *are* different. The last hundred and fifty years have seen the erosion of half of the original topsoil, topsoil the settlers rightly viewed as a priceless treasure. This erosion not only continues 60 years after the lessons of the Dust Bowl and the development of soil-conservation districts, techniques, and plans, but is happening faster than ever. The prairie has suffered a precipitous decline in genetic diversity of all types of plants and animals, and the rapid depletion of some of the world's largest aquifers. We have witnessed the failure of efforts to control the continent's great inland rivers, the chemical contamination of surface and underground water supplies, the rise of pests and diseases that depend on large stands of mono-cropped food plants to establish themselves (as well as the emergence of resistant strains of these pests and diseases), and the deterioration of rural life for the people who live here. These are not merely signs of mistakes in the application of farming methods to the prairies—they are evidence that those methods are inherently destructive and self-limiting. Of the successive geological epochs of life on the prairie, no doubt the couple of hundred years that humans have tried farming it with plows and other machines will be the very shortest.

But when I emerge from the North Woods and look around at the sunlit cornfields I feel what everyone who lives here feels—how tempting it is to go on with the familiar. There is water in some of the low spots, but the familiar order of the rows of corn and beans, the familiar pleasure of the highway urge me to overlook what I know is happening out here. The effort of embracing something new and alien seems too great today, too difficult, too hard to understand.

Over in Kansas, where the prairie is neither so rich nor so forgiving as in the pothole region of Iowa, Wes Jackson and his colleagues and students at The Land Institute are busy embracing something new. In fact they are doing a simple thing, though not an easy one—they are looking at the prairie and seeing, not an inexhaustible wasteland, but an ecological system of limits and balance. They are asking how the prairie plant community succeeds not only in maintaining itself, but in building its soil base, which ensures future success.

One way is evident at the prairie remnant north of Ames: the most profound difference between the cornfield beyond and the stand of Indian grass nearby is an obvious, physical one. While there is bare soil between the rows of corn, in the prairie remnant the Indian grass and its leguminous companion plant, the partridge pea, cover the soil completely, matting it over and rooting thickly into it. They protect the soil from the impact of rain and wind, and the soil, in turn, protects the roots and seeds of these plants from fires (commonly caused by lightning) of the sort that killed the Swearingen family in the 1840s.

The paradox of the prairie is that though many prairie grasses are related to domestic grasses such as corn and wheat, they are perennials rather than annuals. They put the energy they receive from the sun into deep roots and herbaceous growth rather than setting large seeds. It is the concentrated energy of seeds that humans have heretofore valued in their food crops, but another deception of appearance is that the energy carried in the seeds is mere surplus and can be exported to, say, Chicago, without degrading the ecosystem that produces it.

Prairie perennials grow in small patches that are interspersed with many other sorts of perennials, protecting each other from infestations of insects and diseases and preventing a boom-and-crash cycle in the populations of individual species. Another surprising effect of mixed growth is "overyielding." When planted alone in large stands, potential perennial food crops produce considerably less than they do when planted with others. Land Institute researchers Judith D. Soule and Jon K. Piper report that when wild senna (a grass) and Illinois bundleflower (a legume) were planted in alternate rows, their yields increased by 51 percent over three years, but when they were planted alternately within the same rows, their yields increased 161 percent, and these yields remained stable.

Here in the prairie-pothole region, it may seem as though we have plenty of time and plenty of soil; if we cannot go on exactly as we have for the last century, it does seem as though we can tinker a little bit and buy time. According to Iowa's Department of Soil Conservation, the worst farming practices (fall plowing, planting up and down hillsides, leaving no crop residue on the surface) would use up eight inches of topsoil (which may have taken 7,000 years to create) in 36 years. Contouring, terracing, giving up fall plowing, and leaving crop residue on the surface all year long would make that eight inches last 2,224 years, which seems like more than enough to let our generation off the hook of reconceiving agriculture. Unless, of course, you consider that on a natural prairie there is not only no loss of topsoil, but a net gain.

Agriculture, according to British historian Clive Ponting, is inherently a boom-and-crash operation. When all goes well, the human population dependent upon the crops booms, but when the growth in the human population begins to overstress the surrounding ecosystem, a crash is inevitable. In *A Green History of the World* (St. Martin's Press, 1991), Ponting quotes archaeologist Leonard Woolley, who excavated the Mesopotamian city of Ur, writing in 1936, "Why, if Ur was an empire's capital, if Sumer

LAND AS BIG AS THE SKY

THE SIERRA CLUB SEEKS a thriving American heartland spared from additional plowing and draining. Club activists are working to preserve the small amount of native prairie that remains, to institute farming practices that will not deplete this fertile land, and to organize the people of the region to ensure its bountiful future.

♦ **The Land:** The varied grasses of the Great North American Prairie grow from central Canada to the Mexican border and from the Rockies to Indiana, covering more than a million square miles. Before the plow and the cow, the tallgrass prairie dominated the humid east and the shortgrass prairie the arid west, with the mixed-grass prairie in between. Within the ecoregion's boundaries are 16 national grasslands and five national parks, but no federally protected native tallgrass prairie.

♦ **Population:** 33.5 million.

♦ **Economy:** Although mining and oil-and-gas development lurk in the corners of the ecoregion, agriculture rules the Great Plains. Traditional rural life is on the wane, however, as mechanization and agribusiness consume family farms and the land itself succumbs to shortsighted agricultural practices.

♦ **Power Players:** Senator Tom Daschle (D-S.D.), member of the Agriculture, Nutrition, and Forestry Committee; Representative Kika de la Garza (D-Texas), chair of the Agriculture Committee.

♦ **Well-Known Fact:** Sixty years ago dust clouds blackened the midday sky above the mixed-grass prairie (during one storm the dirt blew to the decks of ships 300 miles off the Atlantic coast). This was the site of the Dust Bowl of the 1930s, a result of years of excessive cultivation coupled with drought and overgrazing.

♦ **Little-Known Fact:** The source of drinking water and irrigation for Plains residents from Nebraska to Texas, the Ogallala Aquifer is one of the world's largest—as well as one of the most rapidly dissipating. Every year farmers pump 6 million acre-feet of water from the Ogallala, which recharges at an annual rate of only 185,000 acre-feet. If current irrigation practices continue, agribusiness will deplete the Ogallala Aquifer in the next century.

♦ **Nature Meccas:** It's still possible to stand beneath waves of bluestem in the rolling grass oceans of the Osage Hills of Oklahoma and the Flint Hills of Kansas, where conservationists hope to protect a viable tallgrass prairie. Good times are to be had in the Badlands of North Dakota's Theodore Roosevelt National Park, where Teddy himself found solace in the spectacularly chaotic pinnacles, spires, and buttes. In Oklahoma's Wichita Mountain National Wildlife Refuge, visitors can see descendants of the 25 million bison that once roamed the plains.

♦ **Superlatives:** From March to October, at least a dozen different species of wildflowers bloom in the prairie each week, ever taller to stay eye-to-eye with the rising grasses. Almost half of the United States' migratory waterfowl, including snowgeese, whooping cranes, and sandhill cranes, pass through the prairie-pothole region of the Northern Plains.

♦ **Progress:** In one of its most recent victories, the Sierra Club successfully lobbied to designate sections of the Niobrara and Missouri rivers as part of the National Wild and Scenic River System. In previous years Club activists helped stop the siting of nuclear-waste-storage facilities in Kansas, North and South Dakota, and Wyoming, and worked to enact federal legislation to force the cleanup of uranium mining and milling wastes; helped prevent construction of the Oahe Diversion Project in South Dakota; campaigned to protect Cheyenne Bottom in Kansas, a major wetland on the Central Flyway; and contributed to the passage of ballot measures in Missouri to increase funding for the purchase of tallgrass prairielands as state parks and preserves.

♦ **Unprotected Treasures:** North Dakota's Little Missouri National Grassland is under siege by oil-and-gas developers, and although only 5.3 million of the original 17 million acres of wetlands remain, the state's prairie-pothole region is still being drained for conversion to cropland.

♦ **Biggest Threats:** Despite federal "sodbusting" regulations, virgin grasslands continue to be plowed; groundwater supplies are dwindling; and federal and state officials see the region's unpopulated open spaces as the perfect places to stash toxic and nuclear trash.

♦ **Celebrators:** Writers Kathleen Norris, Willa Cather, Ole Rolvaag, Ray A. Young Bear, and William Least Heat-Moon.

♦ **Tells It Like It Is:** *Where the Sky Began: Land of the Tallgrass Prairie* by John Madson (Sierra Club Books, 1982).

♦ **To Learn More:** The Land Institute can be contacted at 2440 E. Water Well Road, Salina, KS 67401, (913) 823-5376. Readings include *A Prairie Grove* by Donald C. Peattie (The Literary Guild of America, 1938); *Soil and Survival: Land Stewardship and the Future of American Agriculture* by Joe Paddock, Nancy Paddock, and Carol Bly (Sierra Club Books, 1988); and *Wildflowers of the Tallgrass Prairie* by Sylvan T. Runkel and Dean M. Roosa (Iowa State University Press, 1989).

♦ **To Help:** Contact Kirk Koepsel in the Sierra Club's Northern Plains Office, 23 N. Scott, Room 25, Sheridan, WY 82801, (307) 672-0425; or Mike Martin, head of the Prairie Ecoregion Task Force, RR2, Box 170, Derby, KS 67037.

ON OUR AGENDA

SIERRA ECOREGIONS CLUB

♦ Establish a system of national parks and monuments including the Flint Hills of Kansas and the Sand Hills-Niobrara Valley of Nebraska.

♦ Reform U.S. Forest Service policies regarding grazing, oil-and-gas development, and coal mining on the national grasslands.

♦ Implement agricultural policies that mandate erosion control, groundwater protection, crop diversification, and biological pest control.

♦ Enact waste-storage programs in every state and province to protect them from becoming dumping grounds for nuclear, toxic, and solid wastes.

♦ Protect waterfowl nesting and breeding grounds in North Dakota and Manitoba.

was once a vast granary, has the population dwindled to nothing, the very soil lost its virtue?" Ponting goes on: "The answer to Woolley's question is that the Sumerians themselves destroyed the world they had created so painstakingly out of the difficult environment of southern Mesopotamia." In the early years, the wheat-and-barley surplus afforded the independent city-states armies, bureaucracies, and war. After awhile there were no virgin fields to be plowed, and all crop production de-

clined, rendering the Mesopotamian cities vulnerable to external conquest. "What is remarkable," Ponting writes, "is the way that the political history of Sumer and its city-states so closely follows the steady decline of the agricultural base." Subsequent civilizations in the region were never able to solve the agricultural puzzle—intensive interference with the water system of the area, through irrigation, always produced a short period of prosperity followed by agricultural collapse and conquest by outsiders.

The application of technology to agriculture on the North American prairies has not, so far, exempted our culture from the biological forces that have destroyed earlier civilizations. It is clear, rather, that big machines and strong chemicals have speeded them up.

There is some movement in the agricultural world toward a more sustainable way of raising food. The Sierra Club, in particular, has worked hard to shape federal agricultural policy so that it reflects environmental concerns. One area of particular success has been the "swampbuster" and "sodbuster" provisions written into the 1990 Farm Bill, which penalize farmers for conversion of wetlands to fields, as well as for plowing steep, highly erodable ground. Other parts of the bill provide more funds for research into sustainable agriculture, promote soil conservation, and regularize the introduction of organic produce into the marketplace. These steps, of course, are important, especially in contrast to some previous federal policies that supported real agricultural evils, such as planting corn year after year on the same fields. But they are only the beginning of coming to terms with what the prairie is and how we can best live with it as well as upon it.

PERSONALLY, I LIKE BREAD, CHICKEN, A GOOD STEAK, corn on the cob, and a melting pork stew made with yellow potatoes and flavored with onions and allspice. I've never tasted the seeds of Eastern gamagrass (a perennial that can cross with corn), Illinois bundleflower (a perennial, nitrogen-fixing legume), leymus (a member of the wheat-barley-rye family), or Johnsongrass (a relative of sorghum), all of which are being studied at The Land Institute as potential food crops. Not only that, I rely as much as anyone on the export of prairie energy in the form of large seed-grains like corn, wheat, and soybeans. I live in a town. I am a part of the expensive superstructure that weighs upon the soil and depends entirely on the gifts of nature for its existence. For most of human history, the superstructure was like the top of a pyramid. Every soldier, artisan, administrator, and person of leisure was surrounded by the many peasants whose agricultural work supported him or her. In our time, the pyramid is inverted. The enormous superstructure of American society rests on a tiny point—the point where fewer and fewer farmers with larger and larger machines mine as much food as they can out of fields that are less and less what they once were.

The scope of what has been almost entirely lost in the prairie-pothole region is glaringly obvious at the Kalsow Prairie, on a little dirt road north of Manson in Pocahontas County. This 160-acre

Continued on page 140

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DOWN IN THE FLOOD

by Andrei Codrescu

When you fly over the Mississippi floodplain between the river and Lake Pontchartrain into the port of New Orleans, the little patches of land that float on the water look like afterthoughts. It doesn't seem as if people could live on these tiny, tufted islands. But, in fact, the land is a first thought, not an afterthought. The land is the first thought of the big river as it moves the soil of prairies and mountains, of Yellowstone, Denver, and Pittsburgh into the Gulf of Mexico. Everything that lives here, including myself, is its aftermath.

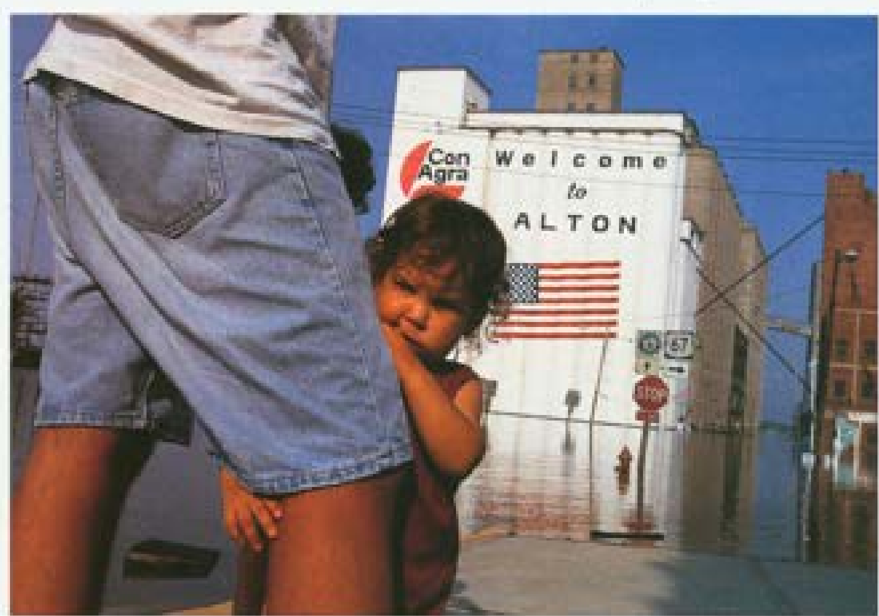
In this ecoregion of the Mesechabe (the Choctaw name for the Mississippi), water is our medium. We live in it, we talk of it, we are thought by it, we see the world through it. My world is made of water, a fact that makes me feel both transitory and humble. It's an ambiguous blessing, best expressed by John Keats' epitaph in Rome: "Here lies one whose name was writ on water." Keats was an English Romantic for whom water was the medium of oblivion. He understood with melancholy precision the awesome power of our original matrix. Americans, however, are optimists. We are a nation of engineers, not poets, and are baffled when nature mocks our engineering.

DESPITE THE WORKS OF HUMANS, THE "STRONG BROWN GOD" FLOWS WHERE IT WILL.

When I was a boy growing up in the mountains of Romania I read *Life on the Mississippi* by Mark Twain and got chills of wonder spelling the name of the mighty river. I suffered alongside the young pilot the arduous task of learning every bend, every tree, every comma, colon, and dash in its book. I grew dreamy and daring with the innumerable stories it spawned. The Mississippi, since its first recorded sighting by Hernando de Soto in 1542, has given us a flood of stories exceeded only by the volume of its waters. One

might say, paraphrasing Herodotus, that American literature is a gift of the Mississippi. So is Louisiana, where I live now. But this magnificent river, which runs through the imaginations of all the children of the world, is not one of us. In fact, it is mad at us.

The flood of 1993, the largest in the river's recorded history, also flooded our national consciousness. Talk of the river rose steadily past the estimates of financial damage to unsettling questions about the nature of our relationship with this "strong brown god," as T. S. Eliot called it. There is little doubt now that the mighty works of the Army Corps of Engineers to contain the river for new farms and growing cities have been a failure. Mark Twain, who learned the book of the river by heart, said so right from the start: "Ten thousand river commissions, with the mines of the world at their back, cannot tame that lawless stream, cannot curb it or confine it, cannot say to it, 'Go here,' or 'Go there,' and make it obey; cannot save a shore which it has sentenced; cannot bar its path with an obstruction which it will not tear down, dance over and laugh at." No one listened. Since 1927 the Army Corps of Engineers has built, dredged, and dug $25 billion worth of levees, dams, and channels along the Mississippi and its tributaries. There are 20 locks and dams on the river between Minneapolis and Hannibal, Missouri, Twain's boyhood town. And we spend $2 billion each year for flood control. The damage from last year's flood alone cost $15 billion.



THE TOWN OF HANNIBAL, POPULATION 18,004, was waiting for the river to crest at 32 feet on July 11 when I pulled in. It was the middle of the night and I felt as if I had been riding on water all the way from St. Louis. The slick black stretch limo provided by the producers of ABC-TV's *Nightline*, for whom I was doing a story, glided like a hearse on the deserted road. I felt the presence of the river on all sides as my long coffin advanced noiselessly to the heart of the flood. I rolled down the window and the smell of the water rushed in, a thick, muddy smell heavy with summer. Everything felt swollen, outsized. The half-moon moving in and out of the clouds was puffed up like a wineskin. Its light fell now and then on billboards touting the "World Famous Mark Twain Cave," "Sawyer's Creek Amusement Park," "Clemens Landing," "Mark Twain's Country and Music Show," "Pudd'n Head's Crafts and Antiques." I felt quite absurd, a late-20th-century fleck of dust inside an oversize container, going to gather news of water in a tourist trap. I could hear Twain's mocking, knowing laugh as he surveyed these simulacra of his image. The river, he knew, didn't care. It was going to rise and rise until it had had enough, then it would draw back, leaving behind swarms of pests, stranded snakes, broken hearts, bankrupt farms, and a thousand stories. Not to mention tons of sand, in sandbags or out of them, that no one I talked to knew what to do with after the flood. I slept uneasily for a few hours, feeling the water lapping at my bed.

In the early morning, the lobby of the Hannibal Holiday Inn was swarming with National Guardsmen there to help the town's citizens and the Army Corps raise the levee. They were also there in case evacuation orders came and they were needed to protect the Mark Twain industry in downtown Hannibal from looters. "Haven't seen this many uniforms since Somalia," my producer said. Indeed. There was that familiar air of occupation that always gives me the creeps. I knew what the good Guardsmen were there for, but I grew up seeing enough uniforms to give me a permanent phobia. Last time *I* had seen this many was in Detroit during the riots of 1967. They were armed then, and had orders to shoot.

I caught some of their talk: "I saw a house floating by right near Route 79." "This guy was runnin' in a risin' crick, holdin' a beer over his head." "Three kids who were fishing saved a guy sinking in his car." "People are taking turns sleeping, watch-

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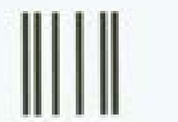

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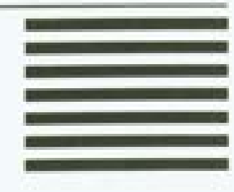

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ing for the flood." Doubtless such nuggets will form the body of legend in the future. On the levee, which had been raised from 33 to 35 feet, spectators were already gathering. It was a somber crowd, mostly families with children. They gazed over the wide waters, at the half-submerged silos, at the closed bridge flooded at Quincy on the Illinois side. A sign sticking out of the river futilely ordered its waters to "STOP." I saw only a few logs and a barrel go by, and remembered Twain's story of the "haunted barr'l," a supernatural object that dogged the crew of a boat until one of them had to be thrown overboard to pacify the waters.

The bridge to the Illinois side was flooded out, and the Highway Department wasn't letting anyone on except poets. From it I could see a sorry bunch of people packing everything they had into a peeling motorboat: mattresses, chairs, an oblong mirror that didn't fit anywhere, and boxes of clothes. My heart went out to them. The poor of West Quincy back on the Missouri side were unprotected by levees, unlike the well-off guardians of the tourist relics in Hannibal. Most of them had no flood insurance, either, and the issue was an open wound. "It's expensive. We was in church this morning and the preacher told about Noah and said, 'He insured himself,'" an old black man remarked while he helped load his neighbors' belongings onto a boat. That morning the congregation had prayed, sung "Amazing Grace," and got ready to leave their homes.

A father standing with his 14-year-old son told me, "I brought him to see history. When I was a boy my father brought me to watch the flood of 1951." Someone standing nearby piped up, "My father brought me to watch in 1973." Some other people joined in and, one by one, they recalled the major floods of their lifetimes. That was their history. In New Orleans, where I live, the conversation turns often to hurricanes. People remember each one and mark the past by their gales. In California it is earthquakes. In Europe, when I was growing up, folks remembered their wars, big and small. At family gatherings, the oldest people would sing World War I songs until they fell asleep. Then it was the turn of World War II, until only the youngest were still awake, laughing at their elders but knowing in their bones that their own dark hour wasn't far off. History is an unrelenting chain of disasters in the memories of individuals. Sure, people remember happy occasions too, but they are usually ones that mark the conclusion of some great disaster. V-E Day. V-J Day. If we have happy memories, they are usually private. What we share with the world is an unbroken lament.

But catastrophes aren't all sorrowful. They make us feel insignificant: we are in awe of great forces like raging rivers and quaking earth, events that show us just how puny we are. Such swift lessons in humility are joyful occasions, actually, despite, or perhaps because of the pain. Deep down we all doubt the illusion of control we pretend in our lives. We suspect our own arrogance and feel guilty about it. When we stand corrected by larger instances we experience pleasure. History is composed exclusively of the stories of our

IT'S EASY TO SEE THE FLAWS IN THE THINKING OF THESE RIVER FARMERS AND SETTLERS, BUT NOT SO EASY TO LOOK INTO THEIR FACES AND DISMISS THEIR PAIN.

humbling. We watch the floodwaters, secretly hoping to drown.

Still, only the Quincy side had been profoundly humbled. On the Hannibal side, after gazing at the river, people went visiting Twain's house and Becky Thatcher's cottage, ogled Tom Sawyer's still very white fence, the most admired scam in American history, and went to Mark Twain's Diner for lunch, where the onion rings are as large as pilots' wheels but composed of sheer grease. After lunch, they went back to look at the river some more and argued about the height, some of them opining that it had gone down an inch, others that it hadn't.

I asked a young boy what he wanted to be when he grew up. "A mechanic," he said. I quoted Twain to him: "When I was a boy, there was but one permanent ambition among my comrades in our village . . . that was to be a steamboatman." "Well," the boy confessed, "I been fishing and boating on the river, but when I grow up I wanna build engines." Another boy, a serious-minded youngster with the face of an old farmer already etched in his baby fat, pointed to the flooded silos: "Big catfish in there. See where the current swirls? That's a cave, right under there." He had other things to say because he knew how to read the river, but his father interrupted: "I was flooded out four years in a row. I sold the farm last year. I work for the Army Corps now." It was ironic, to say the least. "What did you grow?" I asked him. "Soybeans and corn." I wondered if he knew the long history that had led to his farming, the vast engineering that had nearly turned the Mississippi into an interstate highway, destroying sandbars, wetlands, fish and wildlife. Where his farm was, there had once been a floodplain that had been the river's home. The straitjacket of levees and dams that had allowed him to farm was paid for with far more than his crops brought in. Actually, he understood only too well. "I have never taken the river for granted," he said, "and I teached my son never to take it for granted. But a man's gotta make a living."

It was an argument I would hear more of in the next few days. One of the better-spoken folk was a farmer from the Illinois side of the river, whose land now lay under nine feet of water. "These are fertile plains. Asking us not to farm them is like putting a Thanksgiving feast in front of you and saying, 'Don't eat.'"

"Well, that's the problem," I said, too quickly. "People think of nature as a meal." "Yes," he replied, "but when you're hungry, you eat." There it was, in simple form, the argument that has been made since the Dust Bowl, leading to the federal government's 1944 Pick-Sloan Program to harness the Missouri River. The rich soil along the Mississippi and its tributaries was too precious a resource to overlook for the sake of the larger picture. The Big

Muddy is food. "A man that drunk Mississippi water could grow corn in his stomach if he wanted to," wrote Twain. It's easy to see the flaws in the thinking of these river farmers and settlers, but it was not so easy to look into their faces and dismiss their pain. The people who'd come to gaze at the river, despite official warnings to stay away, were not driven by idle curiosity. The river was in their bones and in their dreams. They were soberly drawn to its rage.

In Quincy, people worked around the clock filling sandbags. During a break, I asked a young shirtless man with a snake tattooed on his muscular arm what Mark Twain would have thought of their efforts. "He woulda said: 'Let it rip!' He woulda got a bottle of gin, settled on a hill, and watched the water come!" He spat toward the levee, crushed his cigarette butt under his foot, and got back to work. That was the heart of the matter. He knew, like everyone else, that his desperate industry was doomed to failure. He proceeded against the odds nonetheless. On Friday, the levee broke and the water rushed in, covering 14,000 acres, including the entrance to the Bayview Bridge, the only passable bridge along a 200-mile stretch of river from St. Louis to Burlington, Iowa. On the hill with his gin bottle, Mark Twain shook his head.

Medical authorities issued warnings against touching the water, which had been contaminated by flooded sewage-treatment plants and gas stations. People lined up to get shots at the hospital. There was talk of a possible strike at the treatment plants in St. Louis, a move that would threaten the city's water supply. The timing was opportunistic, but surprisingly not many folks found it objectionable. "People's got to eat," came the refrain, usable, it seemed, in all contingencies. On the other hand, everybody grinned when someone announced that the casino boats were still open. "The dice are rolling!" a man said triumphantly, as if losing money at this sober time somehow proved the strength of the human spirit.

In New Orleans it is said that "each glass of water from the Mississippi was drunk six times." And it's water that glows in the dark. Mark Twain's Mississippi has undergone the taming and toxic effects of civilization for more than a century now. Spills, poisons, and floating garbage have choked its constrained flows. Twain reports that one of his friends called the river "the great sewer." That was more than one hundred years ago. What he would call it now is anyone's guess. It is testimony to the strength of its being that the Mississippi is still alive at all after the numberless tons of fertilizer, chemical compounds, and who-knows-what poisons that are dumped in it. Where I live, mounds of radioactive gypsum wash right into the water courtesy of "Cancer Alley" between New Orleans and Baton Rouge. A friend of mine argued before the city council to stop the storing of gypsum along the river. The councilmembers claimed that our filtration pumps remove all the chemicals from the water. It took a very long time to explain to the city fathers that radioactivity is not a chemical.

SO FAR OLD MAN RIVER HASN'T JUMPED HIS TRADITIONAL CHANNEL TO MERGE WITH HIS BELOVED, BUT IT'S ONLY A MATTER OF TIME. AND WHAT'S TIME TO A RIVER IN LOVE?

The gypsum hasn't been moved, and New Orleans keeps drinking Mississippi River water. Some of New Orleans, that is—many of us drink bottled water instead. In the last mayoral election, the losing candidate said, "Uptown you drink Kentwood, downtown you get cancer." But how safe is Kentwood or any other bottled water when the water

AMERICA'S WATERSHED

THE SIERRA CLUB SEEKS a Mississippi River system restored to environmental wholeness, whose waters are drinkable from its source in Minnesota's Lake Itasca to the Gulf of Mexico, free of sewage and toxic pollution, nourishing once again sustainable communities of native plants and animals as well as of humans.

♦ **The Land:** The Mississippi Basin Ecoregion links seven river basins that together drain two-thirds of the continental United States: 1,231,000 square miles in 33 states and three Canadian provinces, the fourth-largest drainage basin in the world. Only a tiny percentage of it is preserved in national parks and wilderness areas—just one-tenth of one percent in Illinois, for example.

♦ **Population:** 100 million-plus.

♦ **Economy:** The Basin depends equally on heavy industry in the urban centers (Pittsburgh, Chicago, St. Louis, Denver, Memphis) and agriculture in the vast, fertile floodplain of the Mississippi's tributaries. On the decline are the heavy-manufacturing, rust-belt industries of the Ohio River watershed; on the rise along the lower Mississippi are plantation-style tree farms and the vile petrochemical complex known as Cancer Alley.

♦ **Power Players:** The U.S. Secretary of Defense, overseer of the Army Corps of Engineers; Representative Harold Volkmer (D-Mo.), sponsor of a bill to return critical riverine areas to wetlands; Senator Bennett Johnston (D-La.), the oil industry's best friend in Congress.

♦ **Well-Known Fact:** Wetlands along the rivers purify its water, provide wildlife habitat, and act as a brake on seasonal water-level fluctuations. Channelizing the rivers means polluted water, fewer critters, and the inevitability of massive floods.

♦ **Little-Known Fact:** In 1990, Mississippi Basin farmers applied 21 billion pounds of fertilizer and 283 million pounds of pesticides.

♦ **Two Hundred Years Ago:** Europeans looking for gold found instead vast hardwood forests, a thriving human culture, and a wealth of wildlife: monstrous-looking paddlefish and alligator gar, sun-darkening flocks of waterfowl, countless buffalo, grizzly, beaver, and antelope.

♦ **Nature Meccas:** The Upper Mississippi Wildlife Refuge spans four states and is a major stopover on the Mississippi Flyway for Canada geese, bald eagles, and tropics-bound songbirds. In Indiana, the Charles Deam Wilderness exemplifies the rolling oak and hickory ridgelands that once extended as far as south-central Minnesota.

♦ **Superlatives:** The astonishing volume of the waters that pour together at the Great Confluence of the Mississippi, Missouri, and Illinois rivers. The Sierra Club is working to protect the area as a new national reserve.

ON OUR AGENDA

SIERRA ECOREGIONS CLUB

♦ Amend the Clean Water Act to establish a Mississippi Basin Initiative (similar to the existing Great Lakes Initiative) that will set uniform cleanliness standards from the system's headwaters to the Gulf of Mexico.

♦ Mandate double-hulls for river barges transporting hazardous materials.

♦ Improve soil-conservation practices to prevent erosion and toxic runoff.

♦ Place a moratorium on hazardous-waste incinerators.

♦ Designate new wilderness areas, wild-and-scenic rivers, parks, and refuges, and expand existing ones.

♦ **Popular Play:** The way to see the region is by canoe, from the rivers of Minnesota and Wisconsin to the Louisiana bayous.

♦ **Progress:** Over the last two decades the Sierra Club has succeeded in listing the Louisiana black bear as an endangered species; winning groundwater protection for Nebraska, Minnesota, and Wisconsin; passing statewide wilderness bills in ten states; and developing volunteer "swamp squads" in Illinois to protect wetlands.

♦ **Unprotected Treasures:** The bottomland forests of the lower Mississippi basin, whose indiscriminate clearing for agriculture destroys a unique wildlife habitat, accelerates erosion, and diminishes fisheries.

♦ **Biggest Threats:** Heavy metals, toxic chemicals, inadequately treated sewage, and pesticides flushing into the river system; vital riverine wetlands destroyed through agricultural draining and suburban sprawl; poor farming practices leading to the loss of a million tons of topsoil a year to erosion; and continued construction of locks, channels, and dikes on the upper Mississippi, despite their proven destructiveness.

♦ **Celebrators:** Mark Twain in *Life on the Mississippi* and *Letters From the Earth*; Jonathan Raban in *Old Glory, An American Voyage*.

♦ **Tells It Like It Is:** *The Control of Nature* by John McPhee (Farrar, Straus, and Giroux, 1989); *Father of Waters* by Norah Deakin Davis and Joseph Holmes (Sierra Club Books, 1982).

♦ **To Learn More:** The Sierra Club's Mississippi River Basin Program publishes a lively quarterly newsletter called *The Mississippi Times*, available for a minimum $15 donation from 214 N. Henry, Suite 203, Madison, WI 53703, (608) 257-4994.

For something completely different, try "The Journal of Surregionalism," *Meschabe*: "Our practice is the ecology of imagination. Our destination is utopia. Our vehicle is a streetcar named desire." Andrei Codrescu is an associate editor. Rates are $3 per copy, or five issues for $15, from 7725 Cohn St., New Orleans, LA 70118.

An international conference on "Sustaining the Ecological Integrity of Large Floodplain Rivers" will be held in La Crosse, Wisconsin, from July 12 to 15. A companion workshop, "Restoring the Ecological Integrity of the Upper Mississippi River System," will be held on July 18 and 19. For more information, contact the Environmental Management Technical Center, National Biological Survey, 575 Lester Ave., Onalaska, WI 54650, (608) 783-7550.

♦ **To Help:** Contact ecoregion program director Bill Redding at the Club's Midwest field office, 214 N. Henry St., Suite 203, Madison, WI 53703, (608) 257-4994, or the volunteer chair of the Mississippi Basin Task Force, Hank Graddy, at P.O. Box 88, Versailles, KY 40383, (606) 873-1340. The Sierra Club's Midwest office also serves as the headquarters for the Mississippi River Basin Alliance, a coalition of organizations and individuals dedicated to the ecoregion's restoration.

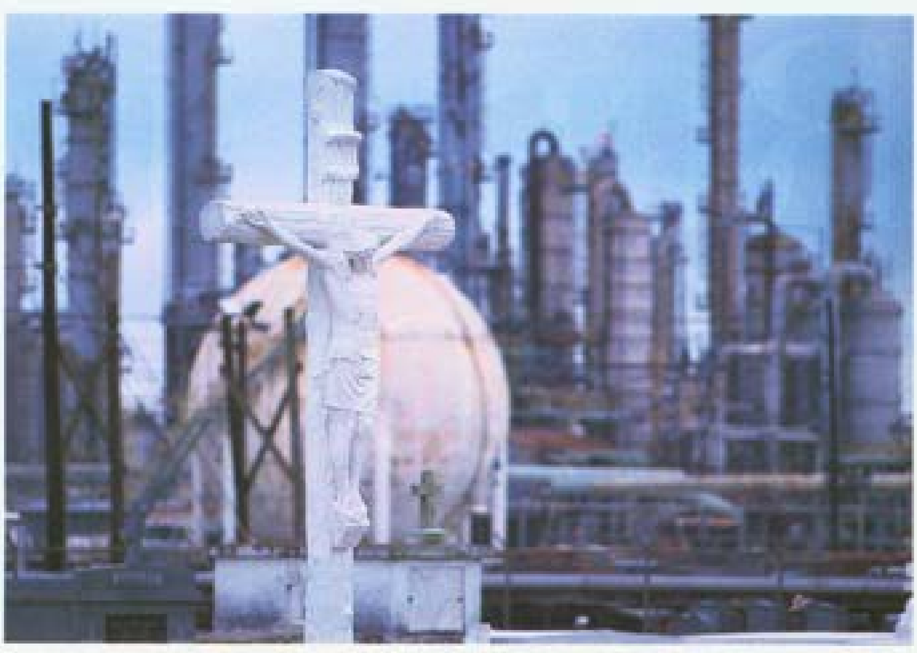
table floats so high we bury our dead above ground? And gypsum is but one of the names of the river-killers that enter the stream via, among others, Dow Chemical, B.F. Goodrich, E.I. Du Pont, Union Carbide, Hooker Chemicals, Texaco, Exxon, Uniroyal, Freeport McMorran, Rubicon Chemicals, a string of well-lit, smoking cities that glow in the night like a party of devils along the Mississippi.

In fact, the Mississippi River between New Orleans and the Gulf of Mexico is engineered more extensively than any other part of the river for the purpose of keeping those industries in business. One would think that by the time the abused river gets to New Orleans, there would be little fight left in it. Walking toward the river on certain streets in New Orleans, you lift your eyes and see a huge commercial vessel looming over your head. The river, bound by the levee, is above street level. It is a strange feeling, but it is nothing compared with standing on the huge lock at Old River in southern Louisiana, the spectacular Army Corps of Engineers project intended to contain Old Man River's passion for the younger, swifter Atchafalaya. So far he hasn't yet jumped his traditional channel to merge with his beloved, but it's only a matter of time. And what's time to a river in love? The course of the Atchafalaya to the Gulf is 145 miles, half the distance the Mississippi takes to get there. Looking into the roaring waters of the Mississippi dropping 12 feet into the Atchafalaya (in quantities regulated by the Corps), I had the feeling that the Old Man would get his way. After traversing the better part of the continent, suffering the indignities of dams, levees, and poisons, the Mississippi still has the strength of desire. John McPhee, writing about the merger of the two rivers in *The Control of Nature*, said, "For the Mississippi to make such a change was completely natural, but in the interval since the last shift Europeans had settled beside the river, a nation had developed, and the nation could not afford nature."

In 1993, it seems, the nation cannot afford the consequences of meddling with nature either. The billions of dollars the floods cost will mean nothing if we don't learn the essential lesson: let the river take its course.

Whenever I told someone in Hannibal that I was from New Orleans, they wanted to know what would happen when the big water got to my house. I told them that I had heard an Army Corps general say that the dams and levees would probably take care of it. But that was only part of the story. The Ohio River, which joins the Mississippi at Cairo, Illinois, usually carries more water than the upper Mississippi and contributes more of the combined flow. But the Ohio was below normal levels, which meant that the amount of water flowing past New Orleans was well within the channel's capacity. In the end, it was the arrangement of the waters themselves that would dictate the situation, the general's pride notwithstanding.

"Won't nothing change until Mr. Twain comes back," one of the black folks in West Quincy loading up his belongings on the boat told me. Twain, who believed in God as much as he believed in sandbagging "the great Mississippi, the magnificent Mississippi," would have been mightily amused to hear himself transformed into a sort of messiah. He



would not have been amused by the state of the river in 1993. But then, it had already shown him the future: "When I was a boy, I looked into the river and I saw my reflection. And I said, 'Who's that?' My mother said, 'Samuel Langhorne Clemens.' In 1882 I returned to Hannibal, a celebrated writer and lecturer and steamboat pilot. And I looked into the river again. And I saw the reflection of an old man. And now, I look into the river and I see no reflection at all. We all come and we all go, but not the river . . ."

As I flew over the shimmering water back to my city, which, like Venice, is doomed and thus feels keenly its transitory beauty, I said a silent thank you to the old writer. He'd been preparing me since childhood for life on the Mississippi. ■

Red Ledge Province

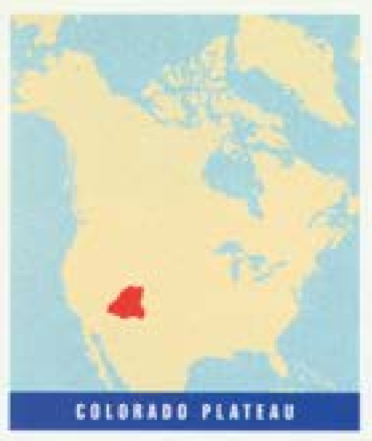
by Page Stegner

LET US CONCEDE AT THE OUTSET that a few thousand words are hopelessly inadequate to the task at hand. The Colorado Plateau encompasses some 130,000 square miles of southern Utah, northern Arizona, northwestern New Mexico, and western Colorado, and is a physiographic "province" (a major landform differing geologically from everything surrounding it) extending from the Rocky Mountains to the Great Basin, from Arizona's Mogollon Rim to the Uintas of Utah. Or, if one wants to think vertically, it rises from a low point at the 1,200-foot base of the Grand Wash Cliffs above Lake Mead to a high point at the summit of 12,633-foot Mt. Humphreys in the San Francisco Peaks outside Flagstaff—a zonal ascent from Sonoran to alpine, with a broad spectrum of biotic diversification along the way.

In truth, the Colorado Plateau doesn't fit one's conception of a plateau at all. Composed of several miles of stratigraphic layers laid down by the comings and goings of ancient seas, it remained structurally intact while its neighboring provinces to the north and east (Rocky Mountain Province) and to the west (Basin and Range Province) were warping, faulting, tilting, and uplifting, leaving it surrounded by highlands like an immense, heart-shaped la-

IN THESE SILENT SANDSTONE CANYONS WE ARE SURROUNDED BY THAT WHICH HAS INSPIRED THE VERY IDEA OF WILDERNESS.

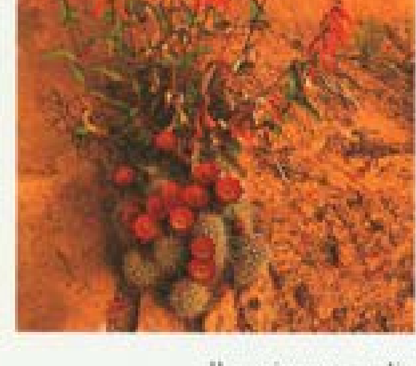
PHOTOGRAPHS BY TOM TILL



goon. Unfortunately, that image doesn't satisfy either, since it, too, implies something flat, and our basin (née plateau) contains the colossal river canyons of the Green, Colorado, Little Colorado, San Juan, Dolores, Escalante, and Dirty Devil—as well as nearly 50 other major tributary side canyons. In short, 10 million years of erosion have cut the province into myriad plateaus.

And it goes as high as it goes deep. Stretched out along its southern rim are the lofty volcanic peaks of Mounts Logan, Trumbull, Humphreys, and Taylor. At its center the Henrys, Abajos, and La Sals rise more than 11,000 feet in three outbursts of isolate peaks—laccolithic domes, actually, volcanoes that never vented their spleens through the sedimentary overlay.

Mountains and canyons notwithstanding, the region is generically classified as "desert," since most of it receives less than 10 inches of rainfall a year. Desert is about as useless a term as plateau. What kind of desert? Sonoran, Mojave, or Great Basin? (Mainly Great Basin, with some Mojave and Sonoran species along the Colorado River.) And since when are alpine life zones found in a "desert"?



No, it can't be done. Give it up. No geophysical inventory is going to do justice to the territory. On the other hand, we ought to give at least *passing* notice to a few of the topographical features commonly observed—all those badlands and slickrock mesas, those benches, basins, reefs, rims, dikes, salt valleys, hogbacks, upwarps, monoclines, saddles, buttes, craters, arches, bridges, ridges, cliffs, towers, needles, rincons, palisades, pinnacles, spires, seeps, washes, creeks, gulches, ravines, chasms, gorges, and dunes scattered about out there, hither and yon. And, of course, we should note that the Colorado Plateau is not just morphology and geology. It is climate, ecosystem, and human history (though only a paltry 12,000 years of the last), and for many of its biotic communities, including the hominid, it is threatened habitat. None of these subjects can be reduced to a simple definition either. One might as easily but superficially synthesize the states of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, and New Jersey—which together occupy a smaller area.

ROBERT FROST ONCE REMARKED THAT ALL ART IS synecdoche, and it seems to me that all one can do in a literary translation of the Colorado Plateau province is apply the same principle—punch a couple of test holes here and there, take some samples, let one or two cows represent the herd. Because I am a native, if expatriated, son of Utah, it seems prudent to collect my specimens in territory I know a little something about—though, admittedly, claiming to represent somebody else's live-in turf is always dangerous.

To that arrogant end I find myself one fine spring afternoon motoring south toward I-70 on Highway 6 at the base of the Book Cliffs, a 1,000-foot-high, 250-mile-long unbroken escarpment (the longest such in the world) that describes an east/west arc between Price, Utah, and Grand Junction, Colorado. It is a clear, cloudless day, 80 degrees, and I can see a hundred miles to the south where the snowcapped peaks of the Henrys poke through the horizontal seam between slickrock and sky. In the ditches along the highway, orange globe mallow blooms in stark contrast to the cheerless, gray Mancos shale of the surrounding desert.

The Book Cliffs, and the Roan Cliffs behind them, mark the abrupt termination of the Tavaputs Plateau, a gargantuan, two-mile-thick block of sedimentary uplift that flows gradually southward from the Uinta Basin to the San Rafael Swell and the Grand Valley of the Colorado River. It also defines the northern boundary of the biological heart of Utah's Plateau region. Here is where an estimated 75 percent of all plant and animal species on the Colorado Plateau can be found. What better place to take samples?

In the tiny town of Green River, not much more than a pit stop on the way east toward Grand Junction, Colorado, or south into the canyonlands, I stop at Ray's Tavern for a burger (indisputably the world's best) and a quarter-ton of french-fried cholesterol. On the wall behind the bar are action photographs of hair-ball runs through who-knows-what stretch of rapids on who-knows-what river—certainly not scenes from the local whitewater attraction, the Desolation/Gray Canyon section of the Green River. For more than 90 miles the Green has carved its way down into the tertiary sediments and Cretaceous shales of the Tavaputs Plateau before emerging from a slot in the Book Cliffs to flow mellifluously out through the San Rafael Desert, barely registering a 3 on the oarsman's panic scale.

But on a wilderness (i.e., roadless-area) scale the area registers a 10. "Crags and tower-shaped peaks are seen everywhere," wrote geographer John Wesley Powell as he passed through in 1869, "and away above them, long lines of broken cliffs; and above and beyond the cliffs are pine forests, of which we obtain occasional glimpses as we look up through a vista of rocks." The rocks and the vistas have not changed a whit in the 125 years since Powell first saw them, though were he to float the river today he might be surprised to discover guest lodges along Range Creek, a light-duty road through Horse and Little Horse canyons, oil-exploration wells in Tusher Canyon, drill pads on the Beckwith Plateau, a pipeline in Jack Canyon, and an Avon raft in every good campsite from Sand Wash to Swasey's Rapid.

The flora and fauna have actually been more damaged than the scenery, but the Book Cliffs/Desolation Canyon wilderness still provides habitat for an incredible diversity of wildlife—cougars, black bears, elk, deer, bighorn sheep, coyotes, bald eagles, and peregrine falcons; large numbers of songbirds, ducks, and shorebirds (the Green is a major migratory route); Colorado squawfish, humpback and bonytail chub, catfish, and trout in the tributary creeks.

(Not to mention venomous reptiles falling from the sky. A few years ago, on a river trip with my wife, we were bombarded somewhere in the vicinity of Firewater Canyon by a young golden eagle that launched itself from a high ledge directly above our raft . . . with four feet of writhing, twisting, supremely teed-off rattlesnake in its talons. And then proceeded to lose altitude. There was an indeterminate period of flapping wings and serpentine squirming, and then the eagle accepted reality, let go, and the snake came pinwheeling down. We did not anticipate much from it in the way of an attitude adjustment when it found itself on the floor of a Hypalon raft, so we bailed. As in out. Fortunately the Green, unlike the Colorado, is not a cold river to swim.)

A reincarnated Powell would also note that since

IT COMES AS NEWS TO ALMOST NOBODY THAT THE BUREAU OF LAND MANAGEMENT AND U.S. FOREST SERVICE HAVE LONG BEEN DISMAL CUSTODIANS OF THE PUBLIC LANDS.

his day the Tavaputs Plateau has become habitat for a new phylogenic oddity, the deadly and ruinous *Homo sapiens modernus*, a flat-footed, two-legged off-road mammal that comes each season by the thousands to blast away at the deer population. There are a couple of them nursing brewskis right here in Ray's Tavern, sporting T-shirts from the Roadkill Cafe ("You kill it, we grill it").

A lot has changed in the Desolation Canyon area since 1936, when Bob Marshall, founder of The Wilderness Society, identified it as the fifth-largest desert wilderness in the United States, and approximated its size at 2.4 million acres. Over the ensuing years more than 60 percent of the region has been deflowered by coal, oil, and natural-gas developers, but it is *still* one of the largest roadless areas in the Intermountain West. Unfortunately, of the million acres that remain free from these despoilers, only 48,000 acres enjoy some degree of protection. And given the Bureau of Land Management's relentless opposition to "locking up" the wilderness in Utah, the prospects of any substantial augmentation are still slim to uncertain.

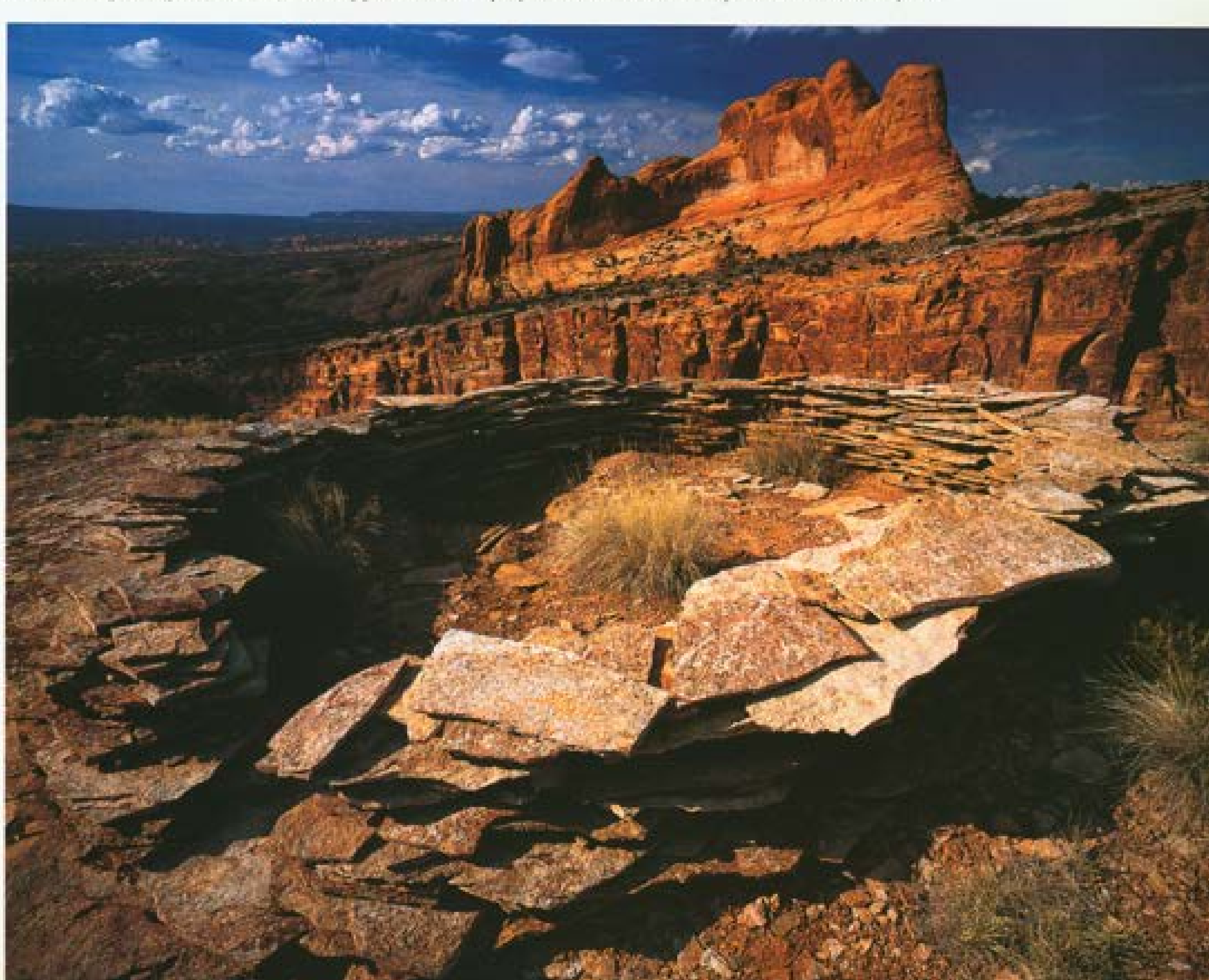
Two-thirds of Utah is federal property, of which about 22 million acres are administered by the BLM. It is certainly news to almost nobody that the BLM and its counterpart, the U.S. Forest Service, have long been dismal custodians of the public lands. The BLM in particular has disregarded the obvious intention of Congress to save a reasonable amount of what little public domain remains unleased, undeveloped, and unexploited. It has done everything in its power to subvert preservation legislation in all of its forms. It has illegally manipulated the process of inventorying land for wilderness study in order to eliminate areas of conflict with timber, mining, and energy interests. It has issued oil-and-gas leases in critical habitats adjacent to national parks—as well as drilling and road-construction permits *within* areas under consideration for wilderness designation. It has arbitrarily withdrawn Wilderness Study Areas without public hearings when private interests have indicated a desire to develop the resources contained therein, and it has attempted to justify its actions with specious excuses and cockeyed record-keeping.

When the BLM completed its review of the Book Cliffs/Desolation Canyon wilderness in 1980—as mandated by the Federal Land Policy and Management Act of 1976 (FLPMA)—it could identify only 362,000 acres in five Wilderness Study Areas that it felt might qualify for inclusion in the National Wilderness Preservation System (that is, land possessing "opportunities for solitude or a primitive and unconfined type of recreation" or containing "ecological, geological, scientific, or other features of educational, scenic, or historical value"). Ordered by the U.S. Department of Interior's Board of Land Appeals to try again (92 percent of the sites it had thrown out were judged to have been improperly omitted), it managed to add 180,000 acres in the Book Cliffs area, found ways to *delete* acreage in other areas, and ultimately *came up with even less.* Quite simply, the BLM recommended against WSA status for virtually every patch, plot, and divot with a potentially developable mineral reserve. And even when it did favorably recommend an area, as in the Book Cliffs, it violated FLPMA by permitting oil and gas companies to perform seismic drilling and to punch exploratory wells inside its own WSA boundaries.

To conservationists, the BLM's method of inventorying wilderness and recommending areas to be permanently protected was a joke, an in-your-face statement of contrary, Sagebrush Rebellion values. The Utah Wilderness Coalition (in which the Sierra Club is active) urged that 718,600 acres be set aside in the Book Cliffs/Desolation Canyon area. The final BLM proposal, after the U.S. Bureau of Mines prevailed upon the agency to exclude a sizable expanse containing coal deposits, was a mere 299,995 acres. A very bad joke. In fact, it inspired renewed opposition and coordinated efforts, like the current Sierra Club Colorado Plateau Ecoregion campaign, to preserve, restore, and protect the province's air, water, and biological diversity.

THE QUESTION OF WHETHER CANYON COUNTRY CAN SURVIVE THE ADMIRATION IT EXCITES HAS BECOME MORE THAN ACADEMIC.

ABOUT 40 MILES SOUTH OF RAY'S TAVERN—AFTER another stage-set promenade (snowcapped La Sals and Abajos for backdrop) across plains of blackbrush and narrow-leaved yucca toward distant ramparts of salmon-colored mesas, down through the canyon that separates Arches National Park from Canyonlands National Park—I cross the bridge over the Colorado River into . . . Moab? I don't recognize it. Maybe I never really noticed it before. The town seems to have multiplied. I don't remember all those T-shirt and gift shops, western-wear stores, antique and collectible galleries, Indian-crafts outlets, artisan co-ops, deli/bakeries, bookstores, ORV rentals, bike rentals, rafting companies, helicopter tours, realtors. I count seven realtors. There must be two dozen places to eat and at least as many places to stay, though every one I cruise by has a "no vacancy" sign prominently displayed. It turns out Hollywood is in town (with



Robert Duvall, a 13-ton off-road camera crane, and God knows how many supernumeraries) making a $40-million movie about Geronimo, who never came anywhere near Utah.

The Moab of memory offered five or six motels and your choice of two eggs any style, patty melt, prime rib. Now you can start your day with an olive-pesto cream-cheese bagel and a double decaf latte (organically grown beans, of course); lunch on penne pasta with shiitake mushrooms; perk up mid-afternoon with a biscotti and a capuccino; dine on eggplant parmigiana, Szechuan stir-fry, or, if your taste runs south of the border, Pigs in a Poncho. And now you don't have to listen to old Conway Twitty songs while you eat: Moab has National Public Radio on 89.7 FM, 24 hours a day.

In other words, Moab has been "discovered." It sports a growing in-migrant culture of nouveau buckaroos and buckarettes, and a transient population of what locals sometimes refer to as sweat freaks and sprocket-heads, who in their Air Mowabb cross-trainers and Cavriana sunglasses like to get out in the rocks and stumps and bumps and dirt for a day or a lifetime getaway. Moab itself is still an admirably ugly town of junked cars and immobile homes, and its spotty attempts at gentrification seem almost satirical; but the country all around is as dramatic as you can find anywhere in the world (which is why the moviemakers are here), a great, silent land of brooding stone, secluded, wide open, mostly unregulated, and certified USDA choice by *Outside* magazine, travel advisor to the trendy. Add all the RVs, ORVs, ATVs, foreign visitors on world excursions, and plain folks spending their kids' inheritance and you have a space problem. The question of whether canyon country, fragile despite its rocky demeanor, can survive the admiration it excites becomes more than academic.

Consider a few statistics gleaned from Utah's national parks. In 1982 the number of visitors recorded at Arches was 339,415; in 1992 it was 799,831—more than a 100-percent increase in 10 years. The number of tourists who passed through Canyonlands in 1982 was 98,310; by 1992 it had quadrupled to 396,911. During the same period Bryce's annual visitations increased from 704,796 to a whopping 1,477,324; Zion's from 1,361,750 to 2,687,848; Capitol Reef's from 323,458 to 729,324. And the same pattern is true for Natural Bridges, Cedar Breaks, and Rainbow Bridge national monuments and the Glen Canyon National Recreation Area. A lot of old-time Moab residents aren't very enthusiastic about the snowballing trend toward uncontrolled recreation (not to mention relocation) in their own backyard.

And understandably. Bill Hedden, a member of the Grand County Council and longtime resident of Castle Valley, recounts for me an afternoon last spring when he was returning to town on Scenic Byway 279, which runs along the Colorado River. "I came around a bend a few miles from home and there was some guy standing up on a bluff driving golf balls into the river. There were campers jammed into every conceivable site where you could pull off along the banks, jet-skiers were out there in the current competing with rafters, hot-air balloonists competing with helicopter flights over the canyon—it was nuts."

Consider another statistic. In 1982 there were only 250,000 mountain bikes in the United States. Today they number 25 *million*, and the ghastly fact is that a good many of them are piloted by gonzo/abusive riders attracted to Utah's slickrock trails. Ever since *Outside* honored Moab as its "favorite mountain-bike spot," the area has been completely overrun. In 1989 some 26,000 mountain bikers rode the Slick Rock Trail up above the Moab dump. A year later it was 50,000. In 1992 the numbers nearly doubled again, and when the numbers get *this* big even the most ethical and environmentally conscious mountain bikers (of whom there are

STILL RUGGED AFTER ALL THESE YEARS

THE SIERRA CLUB SEEKS permanent protection for the Colorado Plateau's wildlife habitat, its limitless vistas, free-flowing rivers, native woodlands, and untouched wilderness.

♦ **The Land:** This is desert canyon country. The Colorado River and its tributaries, the Green and the San Juan, have done much of the carving. Along the margins of the Plateau, high, volcanic tablelands rise to more than 11,000 feet, supporting spruce forests, aspen groves, and well-watered meadows. Stands of old-growth ponderosa pine cover mid-elevation slopes .

♦ **Population:** About 785,000, of whom a sizable number are Native Americans (Ute, Kaibab-Paiute, Navajo, Hopi, Havasupai, Hualapai, Zuni, and Pueblo).

♦ **Economy:** The extraction of uranium, coal, oil, and gas, along with grazing, electricity production, and logging are the mainstays. A lucrative service industry has emerged to accommodate a growing influx of recreationists.

♦ **Power Players:** Representative Maurice Hinchey (D-N.Y.), sponsor of H.R. 1500, the Utah BLM Wilderness Bill.

♦ **Seven Hundred Years Ago:** The Anasazi people, who had flourished in the Four Corners area for hundreds of years, began to abandon their adobe pueblos and cliff dwellings, for reasons that remain unclear.

♦ **Nature Meccas:** Bits and pieces of the dazzling puzzle that is the plateau have been afforded varying degrees of protection, notably Grand Canyon, Zion, Canyonlands, Bryce Canyon, Arches, Mesa Verde, and Petrified Forest national parks.

♦ **Superlatives:** Unprotected canyons near Kanab in southern Utah hold the last relict riparian areas in the state, lush with hanging gardens, tall rushes and grasses, oak, maple, and Douglas fir. Near them is a fragile expanse of coral-pink sand dunes dotted with green islands of ponderosa pine.

♦ **Popular Play:** Many rafters are drawn by some of the continent's wildest whitewater. Thousands of backpackers, dayhikers, car campers, mountain bicyclists, and rock climbers explore the terrain each year.

♦ **Enviroclimate:** Some residents—notably miners and ranchers—resent "outside interference," and environmentalists and local wilderness advocates have been hanged in effigy or received death threats. Yet eight out of ten Utahns agree it's important to designate additional wilderness in their state.

♦ **Conservation High:** In 1956, the Sierra Club, led by David Brower, defeated a proposal to dam the Yampa River at Echo Park in Dinosaur National Monument. In 1968, Brower and the Club prevailed in a campaign to stop dams in the Grand Canyon.

♦ **Conservation Low:** In 1963 "the place no one knew"—Glen Canyon—was flooded behind a hydroelectric dam, creating the eyesore called Lake Powell. The Sierra Club had traded Glen Canyon, sight unseen, to save Dinosaur.

♦ **Progress:** The Sierra Club recently played a lead role in developing the Utah Wilderness Coalition's model 5.7-million-acre Utah BLM wilderness proposal, and convinced former Representative Wayne Owens (D-Utah) to craft legislation containing most of the proposal's ideas. The Club also helped secure a BLM recommendation for wilderness designation for 75,000 acres in western Colorado, and it successfully appealed a BLM decision to deforest woodlands in Utah's Henry Mountains. Recently the Club initiated a dialogue with the Utah Mountain Bicycling Association to establish mutually agreeable policies and standards for mountain-bike use and to begin a joint rider-education effort.

♦ **Biggest Threats:** Mining, oil-and-gas drilling, logging, and ranching continue to degrade the ecoregion. Air pollution obscures scenic vistas. Dams reduce fish populations on the Colorado and other rivers. Roads for logging and tourism carve up ecosystems. Hazardous wastes, including radioactive tailings from uranium mines, contaminate water supplies. Vandals and pothunters plunder Anasazi ruins. Off-road vehicles rip up the terrain.

♦ **Celebrators:** For many, the first name that comes to mind is Edward Abbey. With *Desert Solitaire*, the irascible iconoclast left such an indelible literary mark that many now refer to the region as "Abbey country."

♦ **Tells It Like It Is:** *Wilderness at the Edge: A Citizen Proposal to Protect Utah's Canyons and Deserts*, prepared by the Utah Wilderness Coalition, available for $23 ($100 hardback) from Utah Wilderness Coalition, P.O. Box 11446, Salt Lake City, UT 84147.

♦ **To Help:** Contact Lawson Legate, regional representative, Sierra Club Southwest Office, 2273 S. Highland Dr., Suite 2D, Salt Lake City, UT 84106-2832, (801) 467-9294; or Sierra Club Colorado Plateau Task Force Chair Rudy Lukez, 1851 Garfield Ave., Salt Lake City, UT 84108-2940, (801) 467-9454.

ON OUR AGENDA

SIERRA ECOREGIONS CLUB

♦ Enact legislation to protect 5 million roadless acres in Utah; press for BLM wilderness areas in Colorado and New Mexico.

♦ Confer federal wild-and-scenic protection on remaining free-flowing rivers.

♦ Shift the region's economy away from resource exploitation to sustainable development.

♦ Reform the Mining Law of 1872 to prevent the proliferation of new mines and reclaim abandoned mines.

♦ Restrict or halt the importation of hazardous and radioactive waste from areas outside the Plateau.

♦ Eliminate timber sales that threaten old-growth ponderosa pine stands; do away with subsidized timber sales in all national forests.

♦ Protect the Grand Canyon by restricting development on its boundaries; restore its quietude by limiting the number of aircraft overflights.

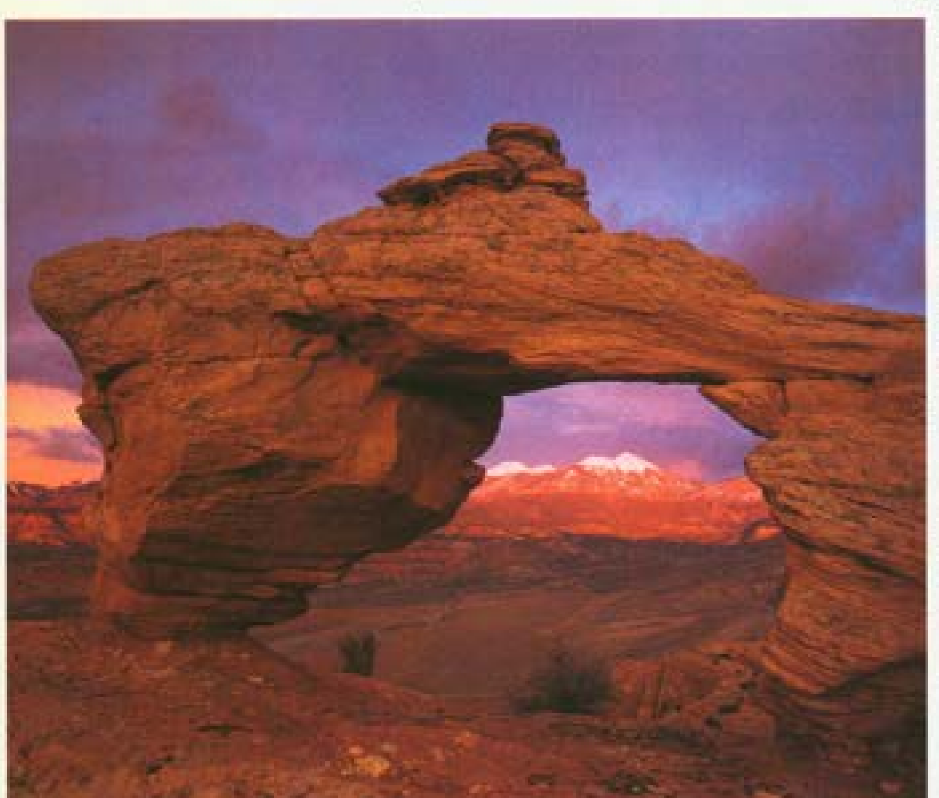
♦ Reform the U.S. Department of Agriculture's Wildlife Services program (née Animal Damage Control) to prevent the wholesale slaughter of livestock predators.

♦ Require federal and state agencies to evaluate the environmental impacts of all proposed development activities.

♦ Protect riparian areas from livestock by requiring herd rotations, fencing, and temporary range closures.

many) cannot avoid an adverse impact on their surroundings.

It may seem to the uninformed that this nonmotorized, nonpolluting use of the backcountry is more benign than metal-mashing Jeep safaris, drilling rigs, and movie companies with 13-ton boom cranes. Perhaps it is, but in the opinion of this writer, not much, at least around Moab. Damage to fragile ecosystems by the gonzo/abusive types in particular—what one commentator refers to as the "stormtroopers of the fat-tire battalion"—has been appalling. Ken Davey, columnist for the *Canyon Country Zephyr*, recently observed that "dozens of square miles near the Slick Rock Trail along Sand Flats Road have been destroyed, and they will stay that way for generations."



Consider the cyanobacterial crust (also known as cryptogamic crust) that accounts for three-quarters of the living ground cover on the Colorado Plateau. It's that black stuff you're tramping through over there that looks like a lumpy lawn of dead moss, but it's not dead, and it may have taken 75 years to establish itself in the area just trashed. Cyanobacteria occur in the desert most commonly as filaments surrounded by mucilaginous sheaths, which when wet push through the soil to create a complex network of fibers (*Microcoleus vaginatus*) and hold it all together, resisting erosion by wind and water. Cyanobacteria swell to ten times their normal size when saturated by rain, storing water essential for vascular plants and crustal organisms, and they also contribute critical amounts of nitrogen to the desert ecosystem. Crush them with a boot or a hoof and they're history. Crush them with a tire and you hasten the process of desertification by adding a continuous track even more susceptible to erosion.

The unchecked growth in tourism around Moab, of which mountain bikes are only part, has had other environmental consequences. Davey laments that on any weekend during the spring, choking smoke from campfires fills the Colorado River Canyon along Scenic Byway 279. And so many people crowd the river corridor, he says, that not even portable toilets can handle their waste. An article in *High Country News* in November 1991 pointed to the stench of human excrement and the accumulation of garbage along the Colorado River and quoted Southern Utah Wilderness Alliance attorney Scott Groene: "At first people thought, yeah, great, tourism—it's great, it's clean. But now people are running around out of control, looking for a place to camp, pushing into sensitive areas. The desert bighorn barely survived the uranium boom; now the mountain bikers may finish them off."

Perhaps the invasion of Moab would be of little more than local concern if it were not symptomatic of a pattern occurring all over the Colorado Plateau. It is manifestly clear to some that unregulated tourism could become as big a threat to the ecological integrity of the land as range mismanagement, mining, logging, road building, toxic wastes, or coal-fired power generation, all of which are, of course, already wreaking tremendous environmental havoc.

There are, to be sure, numerous organizations dedicated to fighting these threats, and they span the philosophical/political spectrum from Earth First! to the Sierra Club to The Nature Conservancy. But there are no single or simple solutions. Eric Thompson, owner of the Castle Valley Inn and Bill Hedden's neighbor, strongly supports the principle of public-lands regulations and user fees to pay for the enforcement of those regulations, but like Hedden he argues that unless those fees are returned to the districts where the use occurs, and not dumped into a general fund to be reallocated by central agencies of the state and federal government, nothing much is going to be solved. Bureaucrats from Salt Lake City and Washington, D.C.,

Continued on page 144

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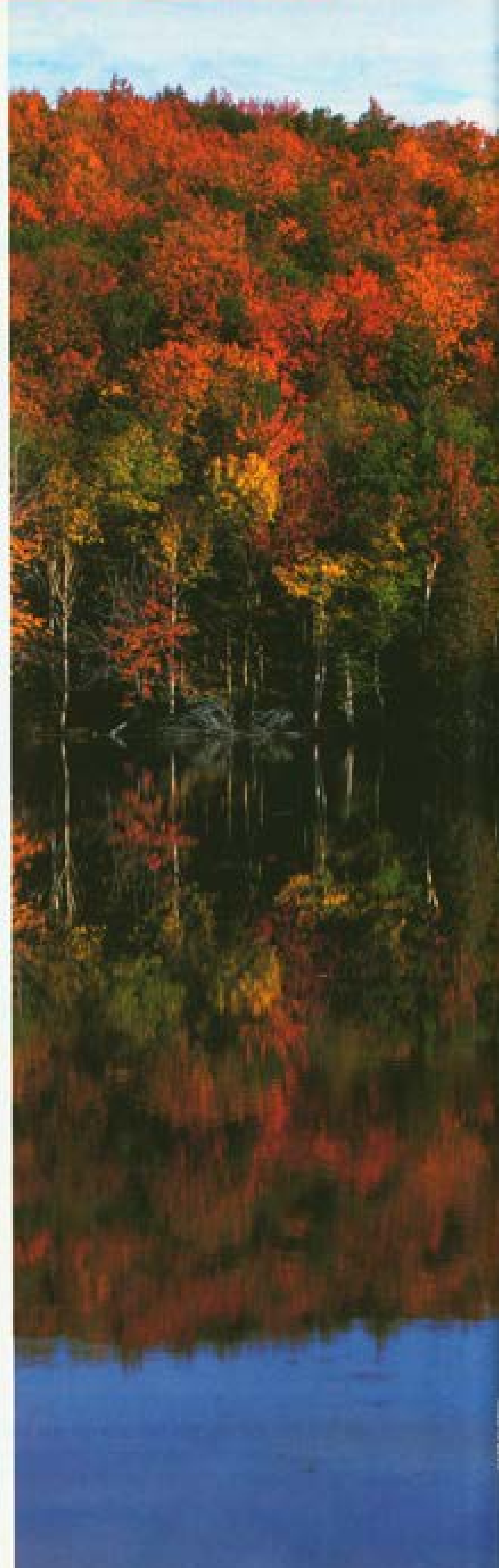
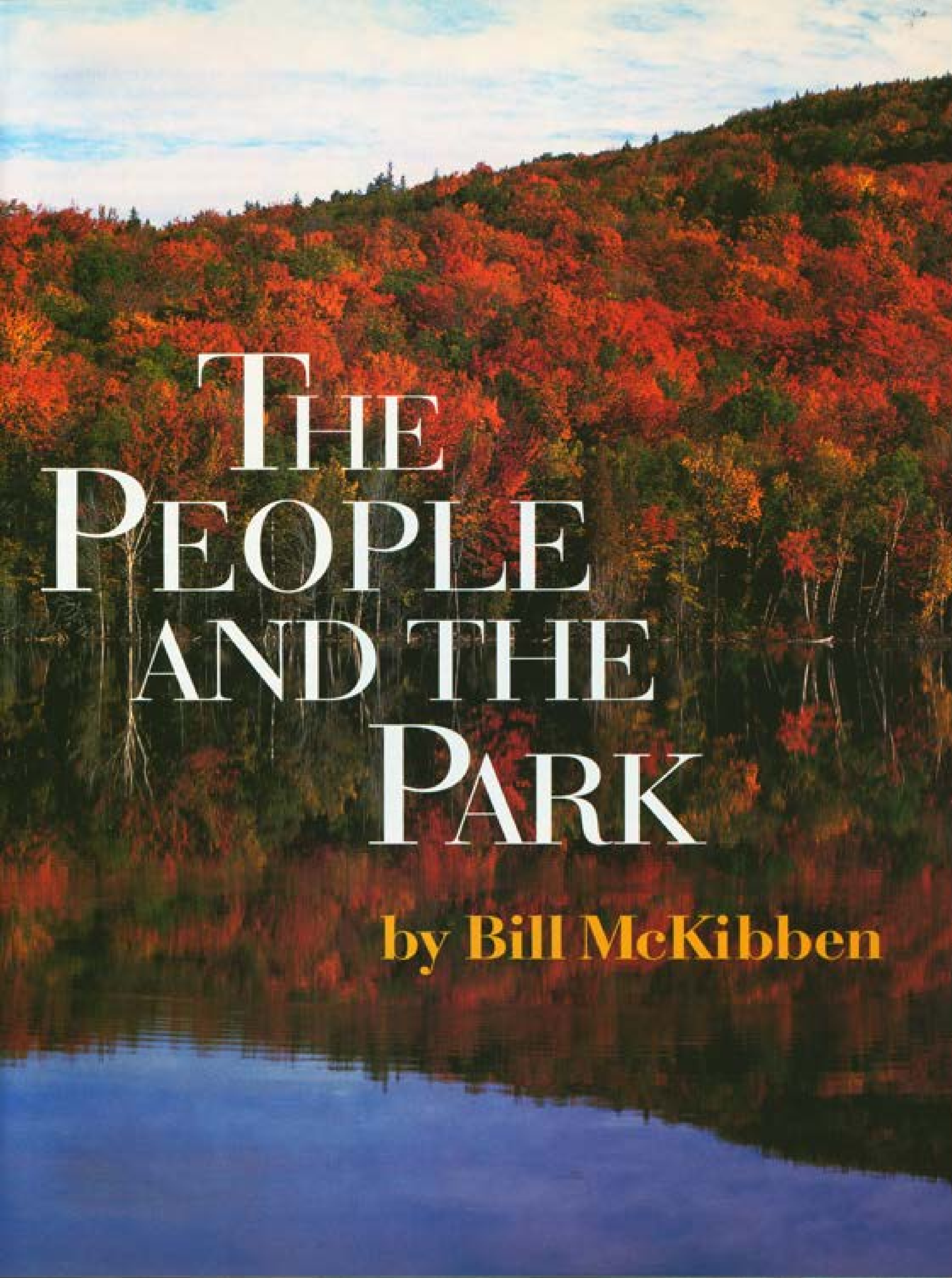
JOHN RUGGE CAME TO THE ADIRONDACKS to paddle a canoe, but he stayed on to pull the region out of a crisis. In 1974, Rugge, a newly minted doctor from the Yale School of Medicine, was passing his days on the riffly stretches of the Hudson below Riparius, writing his now-classic *The Complete Wilderness Paddler.* Then word came that nearby Chestertown had lost all three of its physicians. As in many other rural towns, suddenly the sick had nowhere to go. Rugge was asked to fill in, but he realized that solo country medicine would be rough. "You've got the grim choice of either never leaving or, when you do, having no one to care for your patients." Instead, Rugge helped the town set up a municipal health center, supported by a city hospital 40 miles away. From the day he opened the door it was crowded—12,000 visits that first year.

When other towns in the region began to lose their doctors, residents again turned to Rugge. This time he linked doctors together in a nonprofit group practice that covered thousands of square miles and joined isolated mountain villages to the most modern medicine. The operation was a success—so much so that it attracted the attention of the U.S. Senate Finance Committee, charged with redrafting the Clinton health-care proposal. Rugge's clinics were the only rural health-care providers committee staffers visited.

IN THESE POPULATED WOODS, CRISIS AND COMPROMISE MAY GIVE RISE TO THE PEACEABLE KINGDOM.

A windowless doctor's office in a former supermarket may seem an odd place to begin an account of the Adirondack Mountains. Better, perhaps, to describe the view from one of the high summits, a foreground of




THE PEOPLE AND THE PARK
by Bill McKibben

rock and an empire of green stretching out on every side. Bigger than Yellowstone, than Yosemite, than the Grand Canyon, than Glacier—combined. The biggest park in the Lower 48, six million acres, half of them "forever wild" under New York's state constitution.

Or you could start by looking at the Adirondacks on a map of the nation, where they stick out like a green thumb, the only really large splash of wild land east of the Mississippi and north of the troubled Everglades. Just two hours from Montreal, four from Boston and Manhattan, the Adirondacks are a wild gem set in a ring of asphalt, a truly timeless place in the most speeded-up corner of the planet.

Maybe the view from a trail would be the best place to begin. The Northville-Placid Trail, say, 130 miles through the lonely heart of the park, day after day of hiking through darkening forest and spreading beaver marsh. Climb to one of the low mountains and what do you see? More low mountains rolling off into the blue distance—seven, eight, nine ridges. The trail cuts around the High Peaks, the one charismatically craggy patch of the Adirondacks, wandering instead through some of the other five-sixths of the park. Not high rock, but fern and moss and drainage after rill after pond, past the thousand scattered lakes of the Adirondack interior. Just like all the places that once made up the real world, and that have been paved over or cut down almost everywhere else. Americans are good at saving chunks of granite and glacier, but this is an ecoregion, a whole and self-sufficient place.

The view from John Rugge's office, though, is as appropriate a place to start as any of these. The real story of the Adirondacks, like the story of Rugge's clinics, is one of crises surmounted—resolutions tailored to local needs that can then serve as models for other communities.

The first and most dramatic crisis in the Adirondacks was the wholesale ecological destruction of these hills once lumbermen discovered them in the mid-19th century. The cutting that continued over the next decades at times matched the ferocity of any in the Amazon basin or the Oregon coast. But the state addressed the problem forthrightly in the late 1800s, and as it bought and protected land in the decades since, this crisis has begun to ease.

The second and more insidious problem has affected the land the state did *not* buy. (While the "Blue Line" establishing the park's boundaries was drawn around all the lands legislators felt *should* be acquired, today only half is publicly owned.) Long used mainly for timbering, the park's private lands began to face the threat of development and sprawl that would have inexorably turned this range of mountains into, at best, a range of resorts. This crisis rages still, but innovative zoning and land-use regulations imposed in the early 1970s have at least laid the groundwork for grappling with the issues.

The third crisis, hardly yet addressed, is the predicament of the small towns that dot the park, the islands of people in a sea of wilderness. The communities languish—poverty, unemployment, poor housing, and limited education all beg for the kind of genius that has secured health care for residents of the Hudson Headwaters.

These crises reflect the central tension of the Adirondack story, the tension that makes it one of the most important conservation stories in the United States. Ten percent of this nation's land is treated as "virgin," protected from our lusts by parks or wilderness. Ninety percent is available to the highest bidder, its integrity at best a second thought after our material desires have been satisfied. Only in the Adirondacks do so many people—a hundred thousand or so—live intertwined with such large areas of protected wilderness. Only here have there been large-scale attempts to regulate lives with that wild nature uppermost in mind. It is a marriage, and like all marriages, hard work. One constant danger is that people will start to blot out the wilds; the other is that living within ruled-and-regulated nature will prove impossible, and people will be slowly driven into poverty, and either turn abusive or just leave.

The Adirondacks are unique for their level of

protection, but the tension here, creative as well as destructive, is typical in much of the rest of the world. After all, people live in and around nature across Africa, across the Russian east, through Central and South America, across the western reaches of this continent. If formulas can be found here to solve the similar tensions that affect these places, real hope exists that people and nature can learn to live side by side. If not, then a few island Yellowstones won't be enough to maintain the glory of the world we were born into. The cold, grand Adirondacks are a laboratory in which we can work out the chemistry of the centuries to come.

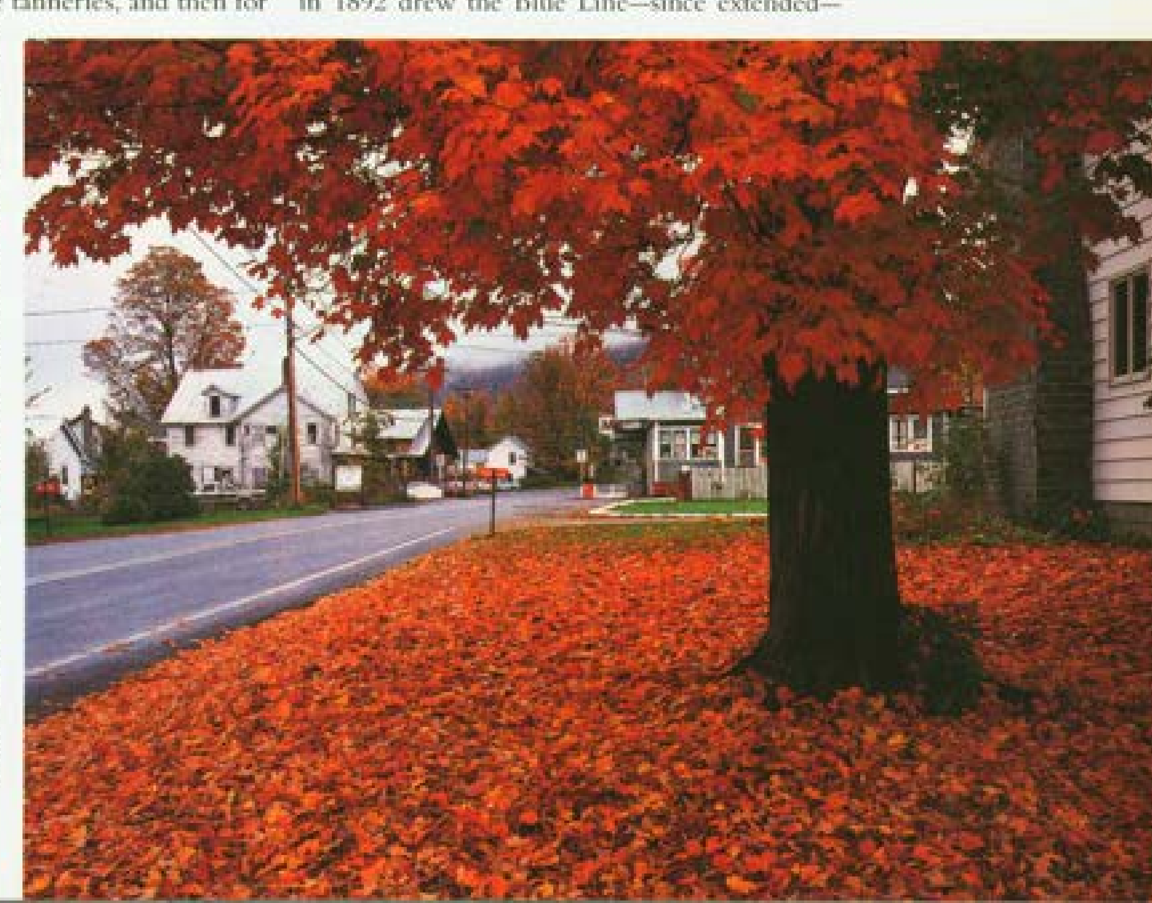
ONLY IN THE ADIRONDACKS DO SO MANY PEOPLE LIVE COMPLETELY INTERTWINED WITH SUCH LARGE AREAS OF PROTECTED WILDERNESS.

THE FIRST CRISIS, THE CUT-AND-RUN PERIOD OF Adirondack history, came almost simultaneously with the discovery of the region's grandeur. With most eyes focused on westward expansion, the rugged and harsh Adirondacks had been bypassed by two centuries of European inhabitants. (The source of the Hudson River, in the heart of the range, wasn't discovered until 1872.) But when outsiders finally arrived, they descended in a horde, half of them waving saws and the rest fishing poles. The loggers came first for the tall pine, and then for hemlock bark to feed the tanneries, and then for spruce, ideal for making paper.

At the same time, tourism soared. A popular Boston cleric, W. H. H. Murray, launched the Adirondack boom—and in some ways the whole idea of ecotourism. In an 1869 volume entitled *Adventures in the Wilderness,* Murray glorified "the magnificent scenery which makes this wilderness to rival Switzerland," as well as the bracing air that he claimed added 65 pounds to the frame of a former invalid. He neglected to mention the blackflies, but no mind—people came by the thousands, searching out rustic guides to take them fishing and hunting. They soon demanded hotels as well as tents and campfires, and for some decades there was no more fashionable spot in the country; the now-tiny hamlet of Blue Mountain Lake even boasted the first hotel on Earth with electric lighting.

Alone, either of these two economic dynamos could have determined the future of the Adirondacks. But they were bound to clash—the loggers were chewing up the vistas, the peace and quiet, the very sense of wildness that the vacationers were seeking. And there was a wild card thrown in: the first stirrings of the scientific conservation movement, born from a book, *Man and Nature,* written by Vermont lawyer George Perkins Marsh in 1864. Marsh argued that cutting forests could change local climate and runoff patterns: as snow melted on the denuded slopes, spring floods would each year be greater; by midsummer, with nothing to hold the water, streams would dry up. As a result, the Erie Canal, in those decades the prime artery of New York's prosperity, might face catastrophe.

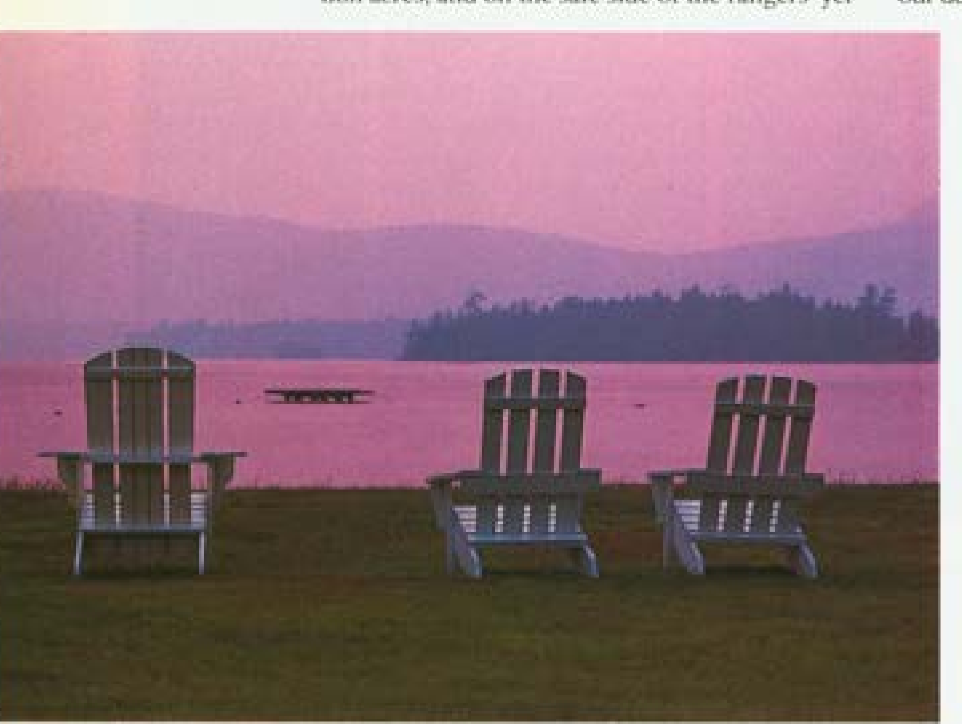
Alarmed, the state legislature created the Adirondack Forest Preserve from state lands in 1885, and in 1892 drew the Blue Line—since extended—



around the much larger block of 2 million acres of public and private lands it deemed essential for the watershed's survival. The intellectual centennial of the park is this year, however—it was in 1894 that the state amended its constitution to make its Adirondack holdings "forever wild," not to be "leased, sold, or exchanged or taken by any corporation, public or private, nor shall the timber thereon be sold, removed, or destroyed."

This unprecedented and radical language did not end clearcutting in the Adirondacks, for of course it covered only the land the state actually owned. Much of the most devastating logging would occur on private lands after the turn of the century. But the state gradually expanded its holdings to the present total of nearly half the park's current 6 million acres, and on the safe side of the rangers' yellow blazes, the woods began to grow again. They are not identical to the virgin forests the loggers first found; as forest biologist Edwin Ketchledge points out, the heavy conifer logging meant the mixed hardwood-evergreen forest has turned in many places to stands of sugar maple, American beech, and yellow birch. "Under this new canopy, however, spruce, hemlock, and fir are reappearing. In a couple of centuries conifers and hardwoods will be re-established in their primeval mix."

SIGNS FOR VENTURES LIKE THE "FOREVER WILD DEVELOPMENT CORP." BEGAN APPEARING ON NEARLY EVERY COUNTRY ROAD.



So the Adirondacks can boast that they are a second-chance wilderness, a model of what can happen in a once-trampled temperate region if people simply step away for a time. Moose are now wandering back into the Adirondacks, and eagles nesting once more above the lakes. Not much of this land is old growth, but it will be soon.

Less tangible, but just as important, is the very idea of wilderness that emerged from these mountains and spread, 75 years later, across the nation. Yellowstone had been spared in the 1870s for "public use, resort, and recreation," but "forever wild" was preservation for nature's sake, intoxicating to many who passed through these woods. Bob Marshall, the first to climb all 46 of the Adirondacks' 4,000-foot peaks, was on the summit of one in 1932 when he told local conservationists, "We simply must band together—all of us who love the wilderness. We must mobilize all our resources, all of our energies, all of our devotion to the wilderness."

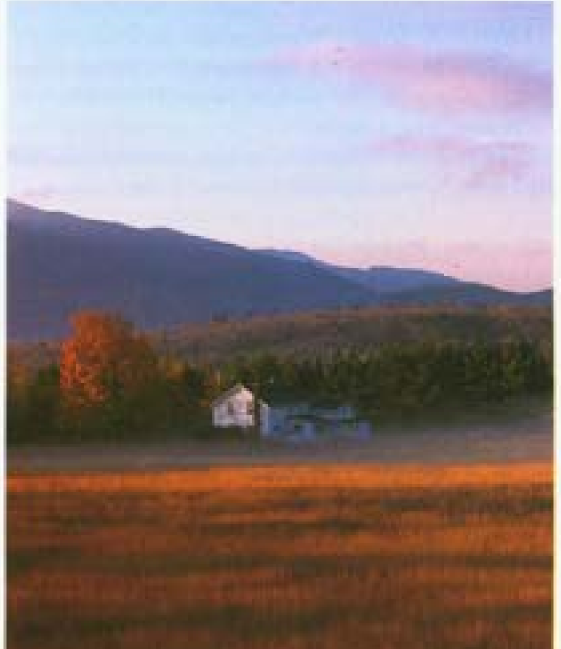
Howard Zahniser, appointed executive director of Marshall's new organization, The Wilderness Society, journeyed to the Adirondacks in 1946 to help battle dams being proposed for the Moose River plain. From a cabin on the edge of the Siamese Ponds Wilderness he formulated many of the arguments and speeches that finally, in 1964, led to the passage of the federal Wilderness Act. "You have a wonderful phrase here, 'forever wild,'" Zahniser told New York conservationists in 1957. "If nationally we can do this . . . I think we can expect to have these areas of wilderness persist on and on. I know it is a daring thing for a man whose life lasts 40, 50, 60, 70, or 80 years to be talking in terms of eternity, but that is indeed what we are doing."

And so the Adirondacks weathered the first assault on their integrity. Not perfectly—there are still private lands the state needs to add to its "forever wild" holdings in order to round out big chunks and provide wildlife corridors. The proposed Bob Marshall Great Wilderness would cover 400,000 key acres, allowing enough roadless area for wolves to return. But the momentum of destruction on the public lands is long since broken, and the example of wilderness safely set. Along any trail in the park, nature has resumed its course. The beaver, nearly extirpated, is back in record numbers—as many as 18,000, all busy damming and flooding, turning path to mire, turning forest to wetland, turning time to timelessness.

MAPS OF THE LAKE BAIKAL watershed line the walls of George Davis' study in the village of Wadhams, and pictures of him with beaming Mongolians hang above his desk. When talk turns to the Adirondacks, it is usually in the past tense, for Davis—hounded by midnight phone calls and arson threats, and boosted by a MacArthur grant—now works elsewhere. But his story opens a window on the next crisis to hit the park, 75 years after the first: the threat to the integrity of the half of it that remains private.

For many decades, cold weather, distance, and blackflies had conspired to preserve the land—indeed, the population of the park slowly shrank through the 20th century as farms grew into pine and the great lodges were abandoned, their tourists lured elsewhere. The biggest tracts of land sat comfortably dormant in the portfolios of a few rich families and large timber companies.

But in the mid-1960s, public fancy started to shift back toward the rustic. Meanwhile, the state was at work on the Northway, a highway that would cut travel time from Manhattan to Lake George, near the park's southeastern border, from eight hours to four. Soon an Arizona developer proposed a 20,000-unit housing subdivision in the midst of what had been wild land. At about the same time, a committee headed by Laurance Rockefeller proposed making the Adirondacks—or at least their core—a national park. That would have provided ironclad protection to those 1.7 million acres—and also ended the evolution of the Adirondack idea. Inside the national park: unspoiled. Outside: up for grabs, just like the rest of the continent. Then, driven by both environmental vision and state pride, Laurance's brother Nelson, governor at the time, appointed a commission to make recommendations on how to protect the entire 6-million-acre park. Which is where Davis comes in.



Then a graduate student at Cornell, Davis signed on as the commission's first employee. His job, as natural-resource specialist, was to hike, snowshoe, and paddle the Adirondacks. By the early 1970s, when the legislature decided to create an Adirondack Park Agency to zone the private lands of the park, he was the best qualified to do it.

Davis' staff mapped all the private land in the park on a series of colored acetate overlays, each assessing soil, slope, biological resources, wetlands, critical wildlife habitats like snake dens or deer yards, and even "public resources" like views. When the overlays were stacked together, some areas were still clear, but more were dark. "In many places a lot of small impacts added up to a lot of damage," says Davis. The overlays became the basis for choreographing the future of the park, which—by the time political compromises were made in Albany—was basically divided into "hamlet areas," where development was encouraged, "rural use areas," which required 8.5 acres per dwelling, and "resource management areas," the backcountry still

WILD WOODS OF THE EAST

THE SIERRA CLUB SEEKS clear skies, clean water, thriving rural communities, and blocks of undeveloped land vast enough to sustain all of the Northern Forest's native wildlife species.

♦ **The Land:** 26 million acres stretching from New York's Adirondack Mountains up through the woods of New Hampshire, Vermont, and Maine—the largest contiguous blocks of forest land remaining in the eastern United States. Eighty percent is privately owned, mostly by large timber corporations; less than 20 percent is within the bounds of public parks and forests; only 3 percent of the total is owned by the federal government.

♦ **Population:** Almost 1 million permanent residents; 70 million people within a day's drive.

♦ **Economy:** The region depends on forest products and tourism, each built on the premise of a healthy forest. But since 1989 more than 3 million acres of forest land have been sold, threatening the stability of both industries.

♦ **Power Players:** Senator Patrick Leahy (D-Vt.), chair of the Senate Agriculture Committee, which oversees the U.S. Forest Service; Senator George Mitchell (Maine), Democratic majority leader; Governor of New York Mario Cuomo (D).

♦ **Little-Known Fact:** The northern boreal and central hardwood forests intersect here, creating a varied tapestry of aspen, oak, beech, white pine, sugar maple, paper birch, and many other species.

♦ **One Hundred Thirty-One Years Ago:** Henry David Thoreau wrote in *The Maine Woods* of a walk near the village of Lincoln: "It was but a step on either hand to the grim, untrodden wilderness, whose tangled labyrinth of living, fallen, and decaying trees only the deer and moose, the bear and wolf can easily penetrate." Later, on "an obscure trail" up the northern bank of the Penobscot River, "the evergreen woods had a decidedly sweet and bracing fragrance; the air was a sort of diet-drink, and we walked on buoyantly in Indian file, stretching our legs."

♦ **Nature Meccas:** For years the Northern Forest has provided East Coast urbanites with such popular retreats as the Adirondacks, the White Mountains of New Hampshire, the Green Mountains of Vermont, and Baxter State Park in Maine. The highest point in the region is Baxter's 5,268-foot Mt. Katahdin, the northern terminus of the 2,020-mile-long Appalachian Trail.

♦ **Superlatives:** Moose, lynx, pine marten, mink, and beaver have somehow managed to coexist with a large human population.

♦ **Popular Play:** Hiking and ski-touring; canoeing the region's 60,000 miles of lakes and rivers; fishing its cold, sparkling trout streams.

♦ **Enviroclimate:** Hot. In some areas even mild-mannered activists have been victimized by arson or vandalism. As the late curator of the Adirondack Museum Bill Verner put it, "We are living through the creation of the Adirondack Park, and sometimes it can be agonizing."

♦ **Progress:** Sierra Club activists have steadfastly lobbied to strengthen the Adirondack Park Agency. In 1983 they helped establish the Finger Lakes National Forest in New York. In 1984 they also won a fight to expand Green Mountain and White Mountain national forests, and in 1990 they celebrated establishment of the 12,000-acre Caribou/Speckled Wilderness in the White Mountain National Forest.

The Club is a member of the Northern Forest Alliance, a coalition of 25 conservation organizations that has worked over the past three years to help guide the efforts of the Northern Forest Lands Council, which is currently developing recommendations for Congress, state legislatures, and local governments on the future of the region.

"Thinking about people as an integral part of the solution expands the horizon of possibilities," says Ecoregion Task Force Chair Lowell Krassner of the Club's new holistic approach to conservation in the region. "Thinking about the warblers that migrate from the Northern Forest to South America links us to the rest of the planet."

♦ **Biggest Threats:** New second-home colonies far outpace the ability of local communities to handle the traffic, pollution, and other urban problems they bring. Meanwhile, timber companies after short-term profit have shifted from sustainable logging to massive clearcuts, destroying habitat and damaging watersheds. Antiquated paper mills continue to release toxic chemicals into the air and rivers.

♦ **Celebrators:** Poet Robert Frost, authors Henry David Thoreau and John McPhee, and Supreme Court Justice William O. Douglas, who declared, "We must multiply the Baxter Parks a thousand-fold in order to accommodate our burgeoning populations."

♦ **Tells It Like It Is:** Edward Hoagland's *Walking the Dead Diamond River* (Random House, 1973) foretold many of today's harshest realities.

♦ **To Help:** Contact Chris Ballantyne, Sierra Club Northeast Office, 85 Washington St., Saratoga Springs, NY 12866, (518) 587-9166; or Northern Forest Task Force Chair Lowell Krassner, 24 Beacon St., South Burlington, VT 05403.

ON OUR AGENDA

SIERRA CLUB ECOREGIONS

♦ Preserve the biodiversity of the Great Northern Forest by restoring and sustaining habitat for the full array of native plants and animals.

♦ Maintain sustainable economic activity, including traditional farming, tourism, and recreation, while establishing sound forestry policy for the thousands of people whose jobs depend on the Northern Forest.

♦ Restore and protect air and water quality. Start by enacting legislation to reduce the sulfur-dioxide and nitrous oxide emissions that send acid rain from industrial America to these wildlands.

♦ Preserve and protect wilderness, watersheds and their wetlands, lakes, and wild rivers. Win wild-and-scenic-river designation for such New England waterways as the Penobscot, Connecticut, Machias, and St. John.

♦ Protect large tracts of undeveloped land while sustaining the unique qualities and character of Great Northern Forest rural communities.

in timberland and now permitting only one dwelling every 42 acres. "The law was pretty good, with the exception of developable lake frontage," says Davis. The new rules ended up requiring only 1.2 acres per dwelling along accessible lakeshores, "which is pretty much the opposite of the way you'd want to do it, since the lakeshore is most vulnerable biologically."

Still, the scheme was revolutionary, and Nelson Rockefeller managed to ram it through the legislature over the protests of Adirondackers, many of whom felt that they had gone in one second from proud mountain independents to vassals of a state-appointed agency. For a year or two the opposition was intense—a pile of manure was left one night outside the APA, and "one of our staff was slugged by a little old lady," says Davis. Each year, though, "things got a little calmer, as people—most of whom lived in the hamlets, or had no plans for grand subdivisions—discovered 'Hey, I'm not hurt by this.'"

The crisis on the park's private lands had not passed, however. The big developments died, but the chipping away continued. A thousand single-family homes a year have gone up in the park over the past 20 years—a 42-percent increase over the two previous decades—and the pace accelerated in the mid-1980s. Signs for ventures like the "Forever Wild Development Corp." appeared on nearly every road; ski chalets grew like mushrooms after a rain. In the late 1980s, paper giant Diamond International, trying to pay the interest on a classic Reagan-era leveraged buyout, sold 80,000 acres of prime land to a Georgia speculator. Another Adirondack land rush was under way—and so, in a matter of months, was another governor's commission. This time it was sponsored by Mario Cuomo, but the chief architect was still George Davis.

The commission's report, released in 1990, was as visionary an environmental document as a government agency has ever produced, offering 245 recommendations, from state acquisition of the Bob Marshall Wilderness to removing junked cars from front lawns. Most were designed to redress the defects of the original APA master plan by limiting lakeshore and backcountry development, ending forever the possibility of more than 400,000 new homes in the park, the theoretical maximum under the old plan. Within hamlets, growth would be encouraged; outside of them, the park would continue its slow reversion to climax forest.

The preceding 20 years, however, had changed the face of New York environmental politics. Though Nelson Rockefeller was a Republican, he came from the wealthy class that saw itself as steward of the Adirondacks—families like his had maintained the so-called "great camps." Cuomo, an urban populist, though occasionally eloquent about the park, was clearly unwilling to expend political capital on its behalf. By the time the report was released, rumor and fear had already plunged the Adirondacks into a stretch of ugly unrest. With money pouring in from Wise Use groups and or-

ganizations like the John Birch Society, park opponents were soon blockading traffic on the Northway. Even when the protesters turned violent—burning the barns of APA commissioners and shooting at state inspectors—local politicians couldn't muster the guts to speak out. Cuomo essentially backed down—to date not one of the commission's recommendations has been adopted. It appeared, at least at first glance, that this crisis would cripple the Adirondacks.

And yet, there's a chance that something useful emerged from those flaming months. Environmental groups were forced to realize, for better or for worse, that Adirondackers were going to participate in the park's future. No more dictatorship, benevolent or otherwise—whatever example the Adirondacks ended up setting would not simply be an accident of 19th-century politics guarded by a small band of Wall Street heirs.

As time passed, environmentalists began to deal with local politicians more than in the past. One of the key forums was a series of private meetings to plan what land the state should acquire if it ever again had cash to spare. The sessions ended not with a list but with a concession of sorts from environmentalists:

Continued on page 134

THE SUMMER MORNING LIGHT THROUGH THE big trees surrounds the dark branches with a radiance that is never entirely still. The sound of the watercourse on the slope below has been lost in the rustle of leaves and the calls of the few thrushes and finches in the bamboo thickets. There is no path to speak of, up the steep slope, around fallen branches. At the top of the rise the ruin suddenly emerges from among the trunks.

The coral mortar and stucco of the stone façade are not the most usual building materials in Hawaii, and they have turned gray and green and black with time and the rain, and are daubed with mosses and lichens. Light shines along the surviving shape of the masonry like sunrise gathering behind a mountain. The massive walls have crumbled and have been rounded to the shapes of hills. The tops of bright trees glitter in the clearing behind them, in what were once the rooms of a building.

THE CLAMOR OF CIVILIZATION HAS SILENCED THE NATIVE VOICES OF A BELEAGUERED ARCHIPELAGO.

The lintel is still there over what was the main doorway, though there are roots knotted on the stones and disappearing into the cracks between them. In front of the opening, on a level space that had been a broad verandah, a large stone

SNAIL SONG

by W.S. Merwin

HAWAII

has been faced with a metal plaque that tells some of the story.

The structure was once the summer house—or, as some prefer, the "summer palace"—of King Kamehameha III and his wife, Queen Kalama, in the mid-19th century. It occupies a site in the deep valley of the Nuuanu Stream, in an area called Luakaha, some 800 feet above sea level. There are several waterfalls nearby, and the cliffs rise steeply on both sides of the valley. At this height above the South Coast of the island of Oahu, and above Honolulu, the air is cool and softened with frequent mists and showers, and for generations the chiefs and kings of Oahu retired to the upper valley when the weather turned hot down on the plain.

Liliha, the wife of Boki, Kamehameha I's governor, had a house somewhere in this part of the valley, and in the summer of 1831 she placed it at the disposal of the German naturalist Dr. F. J. F. Meyen. Liliha's summer retreat was built, Meyen says, "quite like the Indian huts," which meant a framework of poles lashed together and thatched with the leaves of *pandanus* and with *pili* grass. A decade later, when the present structure was built, views of appropriate architecture had undergone drastic changes. Coral and stucco masonry had appeared in the islands less than 25 years before, with the churches of the missionaries from New England, those purveyors of righteousness who had filled Kamehameha III's childhood and youth with misery.

The choice of the exact site for the royal summer house might have been purely topographical, but Queen Kalama's father is said to have been born nearby, which would suggest that the nobility of previous generations had kept summer homes in the area. At some point the place acquired the name of Kaniakapupu, which is generally taken to mean "the sound" or "the song of the land snail."

Hawaiian land snails are small, elegant creatures endemic to the islands. They were once common through the Nuuanu Valley and the upland forests on all the main islands, but now everywhere they are rare and endangered. Meyen, after his brief passage through the region, paid them his own tribute, saying (not quite accurately) that in the Sandwich Islands nature had "placed countless land snails instead of insects on the leaves of the trees." He speaks of their "regular stripes," their "brilliant colors." Some, he says, "are completely grass-green, but this color disappears at death."

Meyen also speaks of the dense growth in parts of the valley, but by the time of his visit, 12 years after the death of Kamehameha I, the assault on the original forest, particularly at the lower altitudes, was already well advanced. Above the neatly tended taro paddies and gardens and banana plots of the Hawaiians down along the plain he found the trees heavily tangled with vines, which indicated considerable decimation of the older growth. Four decades of European contact, and of supplying vessels and settlers with firewood, among other things, had begun to eat away the delicate fabric of the indigenous forest. The sandalwood trade had dealt a fatal blow to the traditional domestic and agricultural life of the Hawaiians, compelling the men to be away from their farms and families for longer and longer periods. The heavy cutting of sandalwood (most of which was traded to China to the profit of American sea captains) had also led to the destruction or severe disturbance of habitats on the main islands to a degree that now can only be guessed at. By the time Meyen saw the valley the sandalwood had all but disappeared from

anywhere accessible to the coast.

There must have been a trail, at least, up the valley of the Nuuanu Stream for a very long time, perhaps since the first period of Polynesian settlement on Oahu. The region, and its winds and rains and the green vanes of the Ko'olau cliffs, like gills of an enormous fish, are alluded to in chants of unknown age. But in the decade or so between Meyen's visit and the building of the summer house at Kaniakapupu, the removal of trees from the valley accelerated. The trail became a wagon road, first for construction and then for the carriages of the nobility and of the state visitors who were entertained there. An edict announcing that "the chief's (or the King's) view must not be impeded" implies that all trees around the site had been felled, at least on the side toward the sea, to allow an unobstructed vista of the lower valley and the coast. There may have been few trees remaining in the neighborhood as the wagons rumbled up the road with tools and stones and coral for mortar. Visitors speak of the 70-foot waterfall of the Nuuanu Stream as though they had been able to see it from near the house, so the forest of the land snails may have been removed all the way to the cliffs on the sides of the valley, leaving, perhaps, only a grove somewhere to the rear of the house, and a few trees lining the road. At the same time, deforestation was speeding up on all the main islands as American-born speculators acquired land and began to try out different forms of agricultural exploitation.

The house that took shape at Kaniakapupu was spacious but plain, "undistinguished," as one contemporary account put it, "by any architectural beauty." It was roughly 60 feet square, with walls two feet thick, and a wide verandah, raised slightly above the ground that sloped away on three sides. Around the verandah there was a picket fence—a long way from Massachusetts.

The "palace" was in use as a summer retreat in the early 1840s. Its single great moment, the one that came to seem like a play for which the building provided the only possible setting, took place at the beginning of August 1843. The very date varies in different accounts, which may indicate that the event began almost at once to pass into legend. But the occasion for it is beyond question, and it makes the ruin at Kaniakapupu seem like a distant participant in some of the aspirations and passions that resurfaced in 1993, the year in which Hawaiians of a variety of persuasions began to demand restoration of some form and measure of sovereignty. For the legendary royal entertainment at Kaniakapupu in 1843 was a vast celebration of the return of independence after five months spent unwillingly under the British flag.

There are said to have been ten thousand guests. There was a parade up the valley. Three hundred infantry. Officers on horses. The royal standard. Grand marshals. The state carriage drawn by four iron-gray horses. Liveried coachmen and postillions. And the king and queen. Then, five abreast, a thousand women on horses, draped in Spanish ponchos and in leis, and then twenty-five hundred horsemen.

First there was a display of ancient sports on the level ground to the east of the house, in particular an exhibition of spear-throwing and catching. Then they all sat down around tables or mats to the consumption of mountains of food: hundreds of hogs and chickens, whole oxen, barrels of salt pork, thousands of fish, turkeys and squid and ducks, pyramids of fruit and coconuts.

The accounts of the original celebration are echoed and magnified and merged into those of commemorative festivities given there, on the an-

THE PASSIONS OF THE CELEBRATION, ITS MINGLED NOSTALGIA AND ANXIETY, INSISTENCE AND DOUBT, DENIED AND ECHOED THE DEEPENING TROUBLES OF THE KINGDOM.

niversary, for several years. Something of the kind no doubt happened in the memories of those who attended them all. The food and the clothes and the dances and the pageantry grew more elaborate as there was more time to prepare them in advance, and the passions of the first occasion, its mingled nostalgia and anxiety, insistence and doubt, denied and echoed the deepening troubles of the kingdom.

And then, by degrees that are not so carefully nor so fondly recorded but which must have kept pace with the declining fortunes of the monarchy, the "palace" at Kaniakapupu fell silent, into disuse, and neglect, and decay. Visitors to the great feasts spoke of a "pleasant grove" of big trees to one side of it. We do not know what the trees were nor where they stood nor what became of them. In the later part of the century much of the upper Nuuanu Valley was described as "savannah." It seems that large areas of the trees remaining at mid-century had been cleared for cattle pasture as ranching spread through the islands.

BY THE BEGINNING OF THE 20TH CENTURY, AFTER the overthrow of the monarchy by American-born or American-minded businessmen, and the takeover of the islands (under cover of the guns of the USS *Boston*), the deforestation of the valleys of Oahu had so reduced the water table that even a city the size of Honolulu as it was then could see trouble ahead. Furthermore, the Hawaiian Sugar Planters Association wanted to be assured of the great quantities of water required for sugar production. A program of "reforestation" was begun, experimenting with fast-growing imported species to replace the vanished Hawaiian forest. Through the 1920s and '30s seeds from other parts of the world were dropped from military airplanes, planted by government agencies, by volunteers, by CCC teams. Albizzias, casuarinas, eucalyptuses, which one sees in the valleys now. Some of the introductions proved to be unpredictably invasive. Some were inhospitable to other growth. In the European fairy tale, the forest that grew up around Sleeping Beauty's palace was presumably original growth returning, but the forest that now envelops Kaniakapupu contains almost no indigenous species of any kind. The largest trees on the lower slopes are eucalypts, and they in turn are being infiltrated, surrounded, choked out by a species of temperate bamboo from China or Japan that is moving rapidly across and up the valley, helping

maintain the water table, it is true, and preventing erosion, but dooming every tree it reaches. Up near the ruin the larger trees are mostly camphors, and it is surprising to see a few palms among them, but there the irony continues. The palms are *Pritchardias*, belonging to the genus that includes all palms endemic to Hawaii, but the trees at Kaniakapupu appear to be members of one of the few non-Hawaiian species, from Fiji, and were planted as ornamentals. The seeds may even have been carried there from gardens by birds.

Only the dense thicket of *hau*, the running tree hibiscus (*Hibiscus tiliaceous*), which begins just outside the west wall of the ruin, is in any sense native. It is not endemic to Hawaii but it is indigenous, and certainly it had a traditional importance and many uses in the islands. The extremely light wood was used for canoe outriggers and for kite frames; the fiber of the bark was made into ropes, twine, and net bags. The yellow flowers, which on some trees have dark-red centers, change color in the course of the day, deepening to shades of apricot and rust and orange, and fall off before the next morning. They had a place in Hawaiian medicine. In Hawaiian legend one of the sisters of the moon goddess was turned into the *hau*, and on Oahu the tree is said to be the visible form of a wind in a valley parallel to Nuuanu. The *hau* at Kaniakapupu might even be a survivor from before the house was built, or it might have been planted there to be shaped into an arbor. Or again the birds may have brought the seeds.

It must be noted that the few birds that are there now are not native either. Loss of habitat and an avian-malaria-carrying tropical mosquito introduced by a British sea captain (deliberately, in a fit of spite) have totally eradicated native birds almost everywhere at lower altitudes in the main islands of the chain. The birds that dart among the bamboo and the camphor trees represent imported species—intentional introductions, or accidental escapes from the zoo or from private houses, some of them quite recent arrivals. Several, such as Asian thrushes and the bulbuls from the Near East, sing gloriously, but the bulbuls have proven extremely destructive in their new habitat, and all are indications of the degree to which the indigenous life of these valleys and of the islands altogether has been disturbed and diminished during the past two centuries.

AND WHAT OF THE LAND SNAILS THEMSELVES, FOR whose "song" the place is said to have been named? People who grew up in Honolulu before World War II refer to them fondly, and speak of having found the glistening, tentative creatures commonly, in gardens and on walks up into the valleys. I might still find a few of the Nuuanu Valley species *Achatinella bellula* left now, over along the green cliffs, if I knew where to look and were patient and lucky.

There are four genera in Hawaii, all of them small and elegant. There were more than 40 species of *Achatinella* at the time of European contact, most of which had evolved in and for highly specific habitats. Of the original species only about 16 are left now, and those are all endangered. Habitat destruction again, of course. Pesticides and pollution of various kinds. And the introduction of other species of snails and of slugs, accidentally or igno-

THE HAWAIIAN FOREST SUSTAINED ITSELF FOR MILLENNIA BEFORE THE ARRIVAL OF HUMANS. THE PRESENT ASSEMBLY OF ALIENS COEXISTS WITH LITTLE MORE STABILITY THAN THAT OF TENANTS IN AN APARTMENT COMPLEX.

ISLANDS OF LOSS AND HOPE

THE SIERRA CLUB SEEKS a Hawaii where native habitats maintain their wild richness, where the coast and the sea are safeguarded from pollution, where human disruptions are minimized, and tourism is maintained at a negligible cost to the environment.

♦ **The Land:** More than 2,000 miles from the nearest continental land mass, the Hawaiian archipelago is the most geographically isolated place in the world; more than 90 percent of its native flora and fauna exist nowhere else. Fifteen percent of the islands' 6,425 square miles are protected by federal, state, and private entities; the federal government oversees four national parks and three national wildlife refuges.

♦ **Population:** 1 million residents; 7 million annual visitors.

♦ **Economy:** Tourism tops the list, bringing in some $10 billion annually—about one-third of the state's total income. Next comes the U.S. military, which contributes $2.5 billion a year. Agriculture runs a distant third, although *pakalolo* (marijuana) is the biggest cash crop—an estimated $5 billion worth was confiscated by state police in 1991.

♦ **Power Players:** Hawaii's all-Democratic congressional delegation includes Representatives Patsy Mink and Neil Abercrombie and Senators Daniel Inouye and Daniel Akaka.

♦ **Well-Known Fact:** More than half of the 2,000 remaining North Pacific humpback whales winter in Hawaii. Composers as well as acrobats, the endangered humpbacks sing complex, ever-evolving songs that last from 6 to 30 minutes.

♦ **Little-Known Fact:** The first colonists of the volcanic islands were probably fern and moss spores that drifted in on the jet stream; new arrivals established themselves only once every 100,000 years. It is estimated that more than 10,000 unique forms of life thrived here before the first humans, Polynesians from Tonga and Samoa, arrived between A.D. 500 and 700.

♦ **216 Years Ago:** Captain James Cook sailed into Kauai's Waimea Bay on January 19, 1778, and named his discovery the Sandwich Islands. Greeted as a god but killed a year later by the natives, Cook opened the islands to European settlers, who brought with them domestic animals—goats, cattle, pigs, dogs, and cats—that ran rampant, decimating the delicate flora and fauna. Nearly 75 percent of the documented plant and bird extinctions in the United States are Hawaiian.

♦ **Nature Meccas:** Molokai, the fifth-largest and least-visited island, has the state's biggest beach and highest waterfall, and the world's highest sea cliffs. On the Big Island, Hawaii Volcanoes National Park offers 140 miles of trails through lava fields, native-bird reserves, rainforests, fern groves, and craters.

♦ **Superlatives:** Rising 13,680 feet above the sea and consisting of 10,000 cubic miles of solidified lava, Mauna Loa has a bulk larger than the entire Sierra Nevada; when measured from the sea floor it is the world's highest mountain. The air at its upper reaches is so clear that the U.S. Meteorological Service observatory on the northeast side of the mountain can record dust particles thrown up into the air from a hiker's steps several miles away.

♦ **Progress:** In 1978 the Sierra Club, working with the Sierra Club Legal Defense Fund, helped win protection for the palila, an endangered bird on the island of Hawaii. More recently, Club activists helped delay a Star Wars rocket-launching project on Kauai; gain significant additions to the Kilauea Point National Wildlife Refuge on Kauai; stop construction of an enormous commercial marina on Hawaii; and obstruct—for now—a ruinous geothermal project in Hawaii's Wao Kele O Puna rainforest.

♦ **Unprotected Treasures:** Throughout the islands, lava tubes, limestone caves, and sea caves hold the secrets to the geological, botanical, biological, and human history of Hawaii. Despite their inestimable value, caves are mined and used as refuse dumps, and alien plants and animals kill cave organisms and destroy archaeological sites.

♦ **Biggest Threats:** The entire archipelago faces continued degradation and extinction of native species, coastal disturbances, unfettered development, and unregulated tourism. The forest industry, having harvested all the koa (a tropical hardwood) from private lands, has set its sights on state lands, a move that may precipitate an environmental boycott of koa.

♦ **Tells It Like It Is:** Up-to-date and unique natural-resource news can be found in *Environment Hawaii*, a monthly newsletter written by Patricia Tummons. For back issues and subscriptions ($35/year), contact Tummons at 200 Kanoelehua Ave., Room 103-325, Hilo, HI 96720, (808) 934-0115. For a complete discussion of Hawaii's biological systems, consult *Conservation Biology*, edited by Charles Stone (University of Hawaii Press, 1989).

♦ **To Learn More:** *Six Months in the Sandwich Islands* by Isabella Bird (University of Hawaii Press, 1964); *Stories of Hawaii* by Jack London (Mutual Publishing Company, 1985); *The Burning Island: A Journey Through Myth and History in Volcano Country, Hawaii* by Pamela Frierson (Sierra Club Books, 1991); *A World Between Waves*, edited by Frank Stewart (Island Press, 1992).

♦ **To Help:** Contact Barbara Boyle, the Sierra Club's Northern California and Hawaii Field Representative, at 4171 Piedmont Ave., Suite 204, Oakland, CA 94611, (510) 654-7847. The Hawaii Task Force Chair is Nelson Ho, P.O. Box 590, Mountain View, HI 96771.

ON OUR AGENDA

SIERRA ECOREGIONS CLUB

♦ Enact legislation introduced by Representative Patsy Mink (D) that would prohibit helicopter flights over national parklands and limit them in other sensitive areas.

♦ Prevent further destruction of endangered and threatened plant and animal habitat.

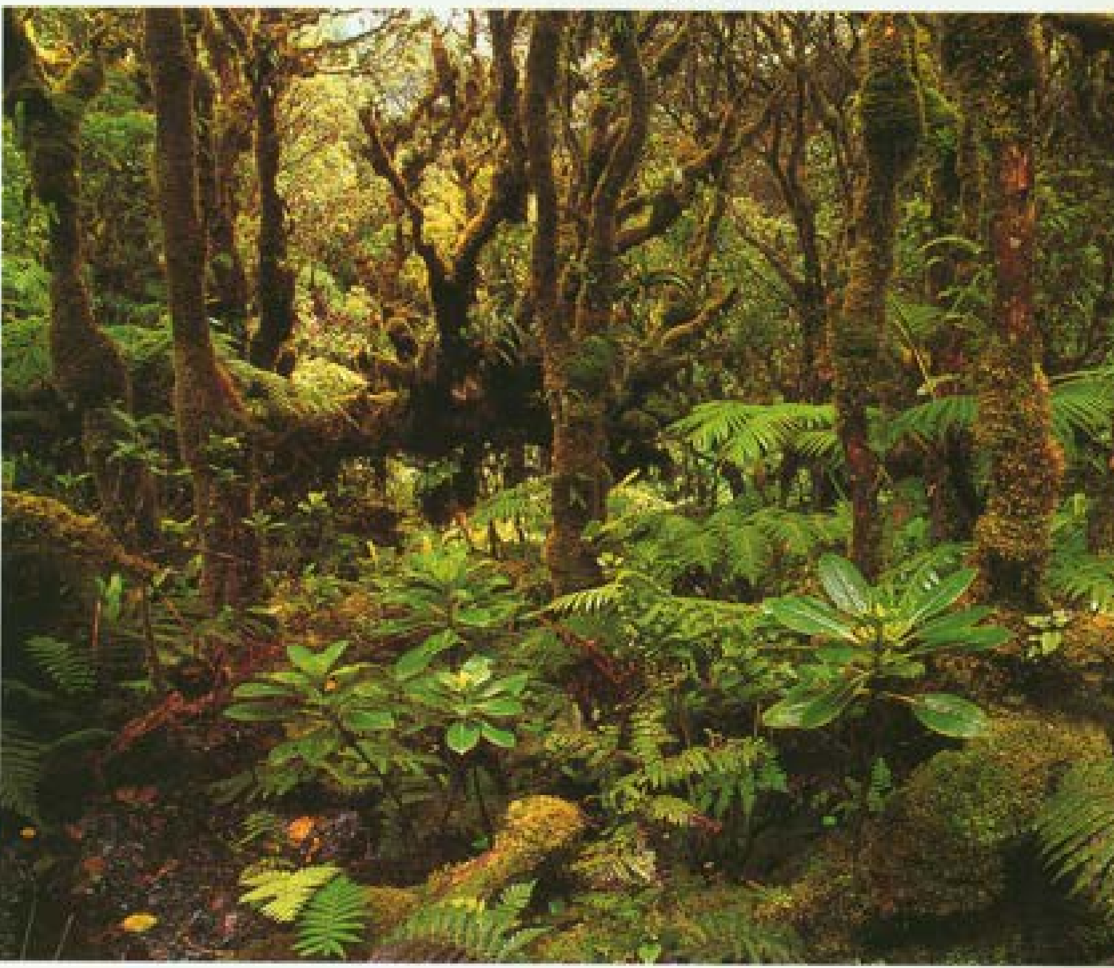
♦ Permanently derail geothermal development in Wao Kele O Puna and continue to strengthen regulations regarding geothermal exploration.

♦ Promote energy efficiency and reduce dependence on environmentally unsound technologies.

♦ Establish a full-time Sierra Club presence in the state capital and expand work at the county level.

rantly, many of them in this century. The giant African snail, of the genus *Achatina,* was introduced in the 1930s as an ornamental, it is said. And then, to control the depredations of the introduced species, several cannibal species, including *Euglandina rosea*, were brought in during the 1950s and '60s, and they have probably exterminated entire species of endemic snails, while the African giant and other introductions continue to proliferate. Rats and feral pigs and the collecting of the native snails for their beautiful shells have further reduced their numbers.

And then there are the activities of the military: in Makua Valley, west of Nuuanu, the principal surviving population of *Achatinella mustelina* has been subjected to every sort of weapon, from artillery to bombs to rockets, as the military has used the snails' habitat for target practice and deliberately set fire to the area. The Army has claimed that the scene of its operations is now so contaminated as a result of military use that nobody else could possibly do anything with it, and so continues to blast, burn, and poison the valley while organizing elaborate and expensive dodges to evade the languidly enforced regulations of the Environmental Protection Agency. The once-lovely Makua Valley, at the military's withering touch, is becoming a ruin of another sort, louder and more obvious than Kaniakapupu.



Which by now can be seen as a kind of overgrown garden at a late stage, far removed from the original life of the place, and now "natural" largely through abandon. There is a charm to the crumbling wall that the house itself may never have possessed, and the introduced trees and bamboo and birds have composed a shady and retired place, unkempt, suggestive, quiet, with a beauty of its own, even more ephemeral than what was here before it. For the Hawaiian forest, in its evolutions, sustained itself, until it was prevented from doing so, and did it with a constantly increasing biological variety, for millennia before the arrival of humans and their commensals. Whereas the present assembly of aliens coexists with little more stability to its relations than that of tenants in an apartment complex, and it would be foolish to hazard a guess as to its future.

This part of the valley is now the setting for a land-use dispute. A neighboring landowner wishes to build two new houses not far from the site. The resulting controversy has elicited a spectrum of attitudes about the place, including proposals to restore the "palace," and others to leave the area exactly as it is, abandoned and all but secret, having at least escaped, until now, the corrosive tides of tourism.

Nobody seems to be sure any longer about why the area came to be called Kaniakapupu. When people once thought they heard the song of the land snails, a biologist told me, they were probably hearing something else. He suggested that perhaps it was crickets. According to legend, when people heard the singing they were hearing spirits. It may be that they were hearing the stillness itself, of course. The silence of the ruin without the snails any longer, and without promises. ■

Our Shifting Eastern Shore

A wilderness of concrete carpets the Atlantic coast from Boston to Norfolk, a sprawling megalopolis of some 35 million people. Yet even in the midst of intense urbanization, a few rivers, forests, and fields manage to survive; and so too numerous species of waterfowl and endangered raptors such as peregrine falcons, bald eagles, and ospreys. All along the coast, estuaries and wetlands provide nurseries for fish and shellfish, reminders that the Atlantic fisheries were once among the richest on the continent. Sea turtles nest on the barrier beaches along the southeast coast; manatees dodge powerboats in the waters of Florida.

This region's problems are as varied as its natural bounty. Unplanned towns and cities spread out over wildlands, and shorelines are cut up for beach homes and resorts, limiting public access and destroying fragile barrier beaches and wetlands. Pesticide-laden runoff from farms and suburban lawns contaminates waterways and aquifers. Highways built to serve the growing population cut through natural areas and farmland; increased auto traffic adds airborne pollutants to an already overburdened ecosystem.

Loggers—especially in New Brunswick, Maine, and the southeastern coastal states—are clearing thousands of acres of trees for pulp and timber, replacing the complex biology of living forests with tree farms. Oil companies plan to exploit the 200-mile-wide Exclusive Economic Zone set up by the federal government along the coast; the shipping of oil and chemicals through coastal waterways invites catastrophe.

As Aldo Leopold taught us, the first step is to save all the pieces. The Sierra Club is working to preserve what biological diversity remains along the Atlantic coast by protecting open space, seeking corridors to connect existing parklands, and winning new wildlife refuges. The wetlands of the coastal region are an essential resource, and the Club has been battling to save them from being drained and developed out of existence. The state of Maine, for example, is trying to build a bulk-cargo port on Sears Island that would destroy the island's rich wetlands—a project the Club is actively campaigning against. In Florida, the Sierra Club has been fighting to free the Kissimmee River from its concrete tomb. As part of the largest wetlands restoration in U.S. history, Congress has recently allocated $300 million so that the Army Corps of Engineers can undo the damage it has done to the Kissimmee.

The best way to stop urban sprawl is to make cities more livable, so the Sierra Club is working with urban designers and planners, fighting unneeded highway projects and promoting rail travel. Club activists are supporting energy efficiency and conservation as alternatives to the construction of another round of power plants (Virginia alone has given permits to more than two dozen new coal-fired facilities) and to projects that would drain distant water sources to assuage the thirst of the coastal cities (such as the proposed 80-mile-long pipeline from the Roanoke River to Virginia Beach, a water grab that would parch the Roanoke River Wildlife Refuge downstream).

The abundant land that astonished the first European explorers can still be glimpsed here, if sometimes only through a haze of pollution. The great challenge is to restore the ecological integrity of the Atlantic Coast Ecoregion, so that future generations will have an equal opportunity for wonder.

► *For more information, see "Resources," p. 148.*

THE OLDEST MOUNTAINS' MOSAIC

SELF-INTEREST ALONE, ONE MIGHT THINK, WOULD BE sufficient reason for residents of the densely populated states of New Jersey, New York, Massachusetts, Connecticut, and Pennsylvania to preserve their last remaining open spaces. For more than a century, frazzled urbanites have repaired to nearby countryside for solitude, physical rejuvenation, and psychic solace.

But today even Walden Pond is in danger of development. Greed, speculation, and a stubborn reluctance to plan for the future are rapidly turning the great birch, maple, and spruce forests of the Central Appalachians into parking lots. It is to these challenges that the Sierra Club is bringing its vision.

Ten thousand years ago, Pleistocene glaciers blessed the Central Appalachian region with rolling hills, deep valleys, and craggy mountains. In addition to its namesake range, the region's other mountains have become synonymous with rest and recreation for city-dwellers: the Shawangunks, the Catskills, the Taconics, the Berkshires, the Poconos.

From the mountain heights flow the prolific waters of the Susquehanna, Delaware, Hudson, and Connecticut rivers, supporting verdant mixed southern and northern hardwood and conifer forests. Elk forage here, bobcats hunt in the forests, and Atlantic salmon spawn in the rivers—though populations of the two latter species hang by a thread. To the west, the Allegheny and Monongahela empty into the Ohio, then into the Mississippi and the Gulf of Mexico.

Appalachian environmentalists face a chilling task, because 35 million human residents make this ecoregion the most densely populated in North America. If those who work to protect it can create harmony between people and nature, they will at the same time create a model for populous areas throughout the world.

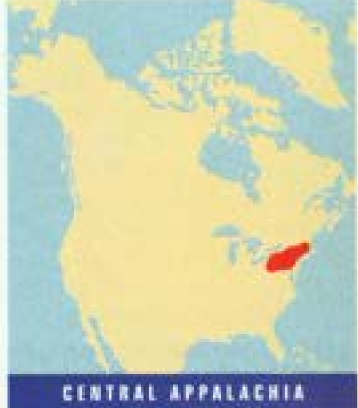
But harmony is hard to attain where the human note rings so discordant. Overpopulation is a serious threat, but the sheer number of people is not the only problem. More land has been devoured by development in the 13,000-square-mile New York-New Jersey-Connecticut metropolitan area in the past 25 years than in the previous 300, not because of increasing human numbers, but because of the way people have been deployed: a relatively insignificant 6-percent rise in population during this period coincided with a loss of 60 percent of the area's open space to ruthless suburbanization. The process has not only stolen wild land, it has brought with it the environmentally destructive projects of commuter civilization: more highways to carry more cars greater distances (and more cars spewing more exhaust), more garbage dumps, more contaminated watersheds, more congestion for the next set of commuters to flee. You can run but you can't hide: Central Appalachia is riddled with one out of four of the nation's Superfund hazardous-waste cleanup sites.

The march of the bulldozers destroys urban environments as surely as it does rural wildlife habitats. As cities are abandoned and drained of capital, the urban environment crumbles, and the poor and minorities—those without the option of leapfrogging to the newest suburb—remain behind. The result is environmental racism.

Essential to livable cities, of course, are decent jobs. Sierra Club members in Central Appalachia are finding that it is not enough merely to condemn growth; they have to develop economic models and projects that demonstrate successful alternatives.

At the same time, what's left must be saved. Club members are lobbying legislators to push for stronger protections for natural resources. This includes protecting land from development; creating "greenways" of contiguous forest and farmland; electing environmentally aware local officials who can influence and enforce zoning regulations; and increasing the participation of Sierra Club members on planning commissions, town boards, and other policy-making bodies. If humanity cannot reconcile itself with nature, Central Appalachia will lose its last remaining sanctuaries from the urbanized world.

► *For more information, see "Resources," p. 148.*



CENTRAL APPALACHIA

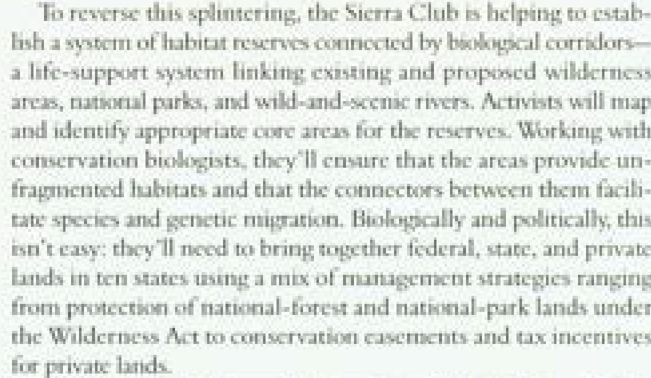
AMID HILLS AND HOLLOWS

A QUIRK OF GEOLOGY DISTINGUISHES THE SOUTHERN Appalachian Highlands ecoregion. The portion of the Appalachian range that extends from Pennsylvania's Alleghenies south to Alabama's Red Mountain escaped glacial scouring during the last Ice Age. What remains is a unique 50-million-year-old vestige of the forest that once covered much of the Northern Hemisphere.

Here, the Appalachians' uninterrupted ridges form a natural north-south highway for plants of the eastern United States. As a result, the hills and hollows of the region's forests are treasure-troves: Great Smoky Mountains National Park alone harbors more than 1,400 varieties of flowering plants and 100 species of trees; Shenandoah Park trails lead to groves of 300-year-old hemlocks and 400-year-old white oaks. The forest provides habitat for an equally impressive display of wildlife, including black bears, northern flying squirrels, and an uncommon variety of salamanders.

SOUTHERN APPALACHIAN HIGHLANDS

Today, most of the forest has been logged, leaving second-growth woodlands chopped up by highways, clearcuts, farms, and, most recently, urban and recreational development. In furious pursuit of nature, tourists flock to the Blue Ridge, the Smokies, and the Alleghenies—but the roads and services they encourage further fragment the region.

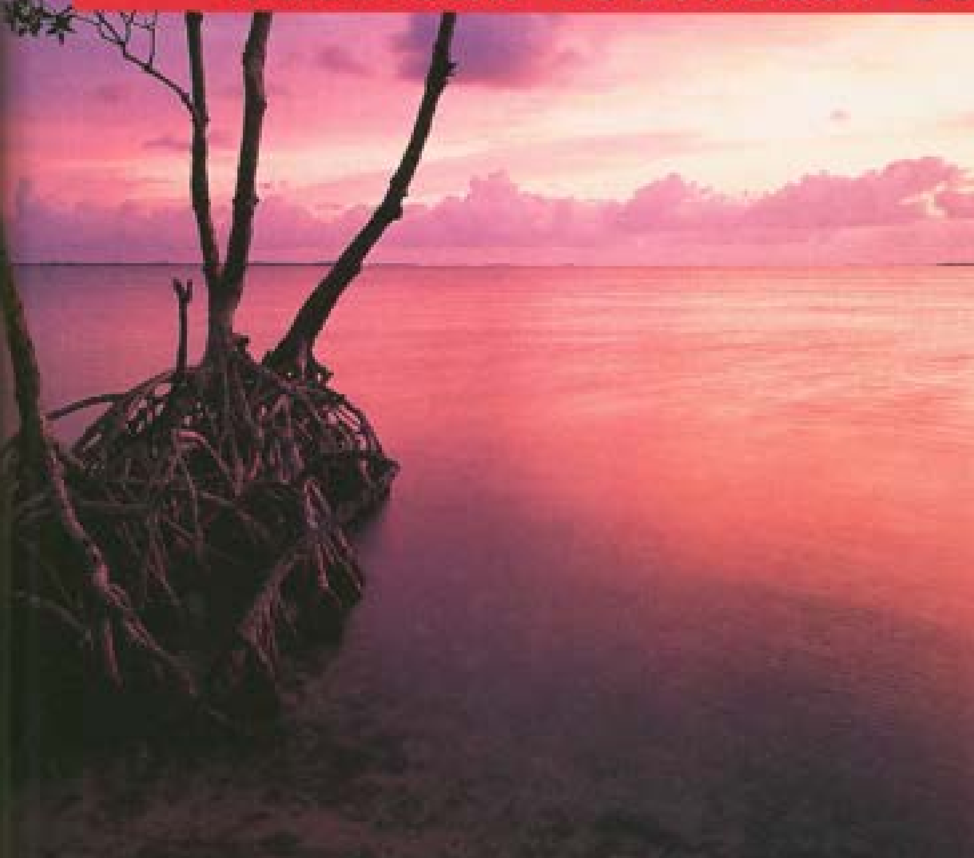


To reverse this splintering, the Sierra Club is helping to establish a system of habitat reserves connected by biological corridors—a life-support system linking existing and proposed wilderness areas, national parks, and wild-and-scenic rivers. Activists will map and identify appropriate core areas for the reserves. Working with conservation biologists, they'll ensure that the areas provide unfragmented habitats and that the connectors between them facilitate species and genetic migration. Biologically and politically, this isn't easy: they'll need to bring together federal, state, and private lands in ten states using a mix of management strategies ranging from protection of national-forest and national-park lands under the Wilderness Act to conservation easements and tax incentives for private lands.

Loss of biological diversity is just one of the challenges facing Southern Appalachia. Just 20 years ago the Washington Monument was visible from the northern end of Shenandoah National Park 75 miles away. Today air pollution in the region is so severe that visitors often can't see beyond the nearest hills. The problem is intractable: while nearby urban areas are a factor, some sources of the region's airborne pollutants are as far west as the Ohio Valley.

The Sierra Club envisions a clearer future for Southern Appalachia. The Club will lobby the state legislatures of the ecoregion to adopt strict air-quality programs and to curtail a reliance on coal-fired power plants. Clean water and properly managed growth and transportation are also imperative to maintaining the biological integrity of the ecoregion. This will be a mountain of work, but Southern Appalachian Highlands activists are committed to preserving a legacy that even glaciers couldn't undo.

► *For more information, see "Resources," p. 148.*



MAKING CONNECTIONS IN A WATERY REALM

THE AMERICAN SOUTHEAST LOOKS SOLID ON THE map, but it is in fact defined by liquid: 2,000 miles of the ocean's edge, hundreds of thousands of miles of rivers and streams, and almost half the remaining wetlands in the lower 48 states. From the Florida Keys to the mouth of the Rio Grande, the estuaries, coastal bays, mangrove swamps, and bayous support a jambalaya of fish and crustacean life, as well as endangered populations of Louisiana black bears, red-cockaded woodpeckers, and Florida panthers—all cheek by jowl with 53 million people.

Every day, these wetlands are drained for corporate farms, paved over for strip malls, sucked dry by channelized, mechanized waterways. In Georgia, 10 square miles of wetlands disappear annually; in Louisiana, 50 square miles. Florida's coastal wetlands are being filled for still more tourist hotels and condominiums, gradually smothering the shoreline in asphalt and beach umbrellas. The waters that remain are regularly poisoned: six of the country's ten largest oil ports ring the Gulf of Mexico, and nearly every mile from Mobile Bay to Brownsville has been polluted by the oil industry. Petrochemical and pulp-and-paper plants discharge hundreds of tons of pollutants into the water and air, a toxic load matched only by the U.S. military, whose war on the environment has left Superfund sites on many of its bases throughout the region.

Waste has made life hazardous for many poor African-American communities, like those of Emelle, Alabama, home of the largest toxic-waste dump in the world; Columbia, Mississippi, where children play near barrels full of poisons; or Tifton, Georgia, where a failed steel-mill-ash "recycler" sits one block from an elementary-school playground. In the Southeast (as elsewhere), toxic pollution is compounded by racism, increasing its deadly effect. In response, Sierra Club grassroots organizer John McCown provides, as he says, "a cultural bridge" between minority communities and the traditionally white Club. "The bottom line is, whites *and* blacks are sitting on these dumps," says McCown. "To the extent they are divided, polluters are benefiting from the division."

The Sierra Club's first step toward saving the Southeast is to halt the destruction of both natural and human habitats. Club activists have helped, for example, to pass a "Forever Wild Land Acquisition Trust" bill in Alabama; to prevent woodchip mills from denuding the Tennessee River Valley; to enforce existing laws and pass new ones designed to curb polluting industries; and to enable dozens of small communities throughout the region to say no to unwanted landfills, incinerators, and nuclear-waste storage facilities. In Georgia, the Club helped pass a law requiring that the vitality of entire river basins be considered in drawing up water-quality plans; and its Delta Chapter has formed a committee to preserve the habitat of the 200 to 300 remaining Louisiana black bears.

The desperate work of reversing destruction goes hand in hand with the satisfaction of restoring an abused ecosystem to health. This work includes establishing a chain of marine sanctuaries within and around the Gulf; winning protection for rivers like the Little, the Suwannee, the Pearl, and the Atchafalaya; creating interconnecting greenways of trails and parks in urban areas; and linking the uplands with riparian and wetland habitats. Finally, people must also be linked. The Sierra Club recognizes that neither the Southeast nor any other region can be healthy and whole so long as poor and powerless communities are targeted for environmental sacrifice.

► *For more information, see "Resources," p. 148.*

A New Sense of Stewardship

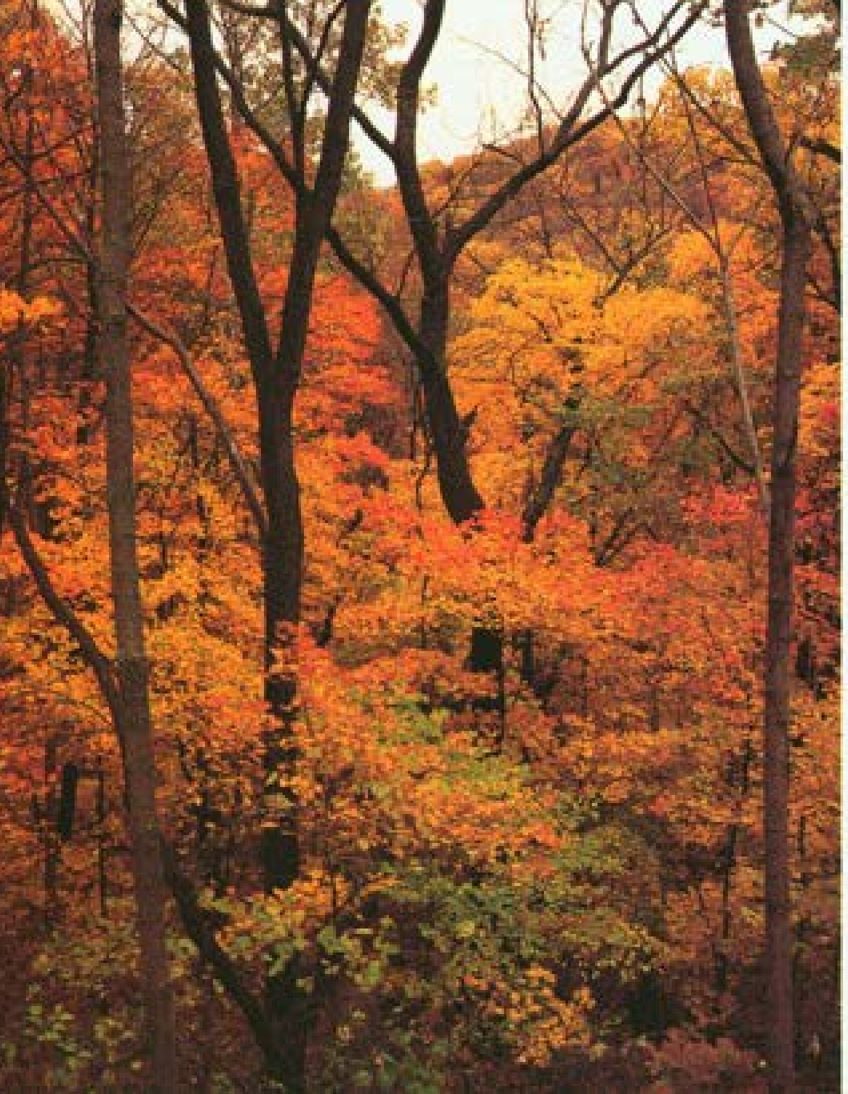
FROM THE RIDGELANDS JUST SOUTH OF ILLINOIS, through Missouri to the mountains of south-central Oklahoma and Arkansas, the Interior Highlands are America's biological crossroads, where species from the arid West mingle with those of the humid Southeast. The red wolves may be gone, but black bears, mountain lions, and possibly even Florida panthers prowl the continent's principal hickory/oak forest. Beneath the wooded ridges lies a spectacular cavernous underworld whose subterranean streams sometimes force their way to the surface to shelter pale-back darters, Ouachita madtoms, and Kiamichi shiners.

Although wealthy in natural diversity, the Interior Highlands have historically been economically poor. The region is changing rapidly now, but shortsighted development is impoverishing the ecosystem. Small logging operations and family farms are being replaced by corporate clearcutters and the largest concentration of poultry-producing facilities in the world. Where wild turkeys once scrabbled for acorns, hundreds of millions of fryers, roasters, and laying hens huddle in factory farms, brightly lit 24 hours a day to increase production. A major environmental problem in the region is disposing of more than a million tons of chicken manure a year.

A sadly typical case is the big poultry plant that moved into Green Forest, Arkansas, bringing much-needed jobs but more wastewater than the town's sewage plant could handle. Untreated waste flowed into local streams and, because of the area's fractured and porous limestone geology, the polluted water was quickly carried underground, contaminating wells for miles around. Cleanup costs are running in the millions of dollars.

Such myopia also marks the U.S. Forest Service, which encourages clearcutting of the remaining hickory/oak woodlands. In the past quarter century, the Forest Service has replaced hardwood "weed trees" with monocultural pine plantations on a third of its loggable lands. The agency even wages chemical warfare against native species, bombarding tens of thousands of acres a year with herbicides designed to kill "noncommercial" species, thus drastically altering the native biota. As a result, many of the Highlands' plant and animal species are now threatened or endangered.

The Highlands are also a victim of their own natural charms. A proliferation of vacation and retirement communities in the Ozarks jeopardizes the natural beauty that lured visitors in the first place. Development is outpacing basic environmental infrastructure, leaving much of the region without effective sewage-treatment or waste-disposal facilities; often such projects are opposed by retirees, who hope to keep taxes low. Sadly, the poverty of the region has led many to welcome development without question—even when it threatens their quality of life.



Club activists in the Interior Highlands are trying to instill a new sense of environmental stewardship. They have been in the forefront of efforts to create the 97,000-acre Winding Stair Mountain National Recreation Area in Oklahoma; gain wilderness status for 90,000 acres in the Ouachita and Ozark national forests and 70,860 acres in the Mark Twain National Forest; bar construction of the Black Fox nuclear facility in Oklahoma; win wild-and-scenic status for the Eleven Point River in Missouri; and organize local citizens groups to resist the importation of hazardous waste into their communities.

The list of what remains to be done is even longer. It includes restoring the hickory/oak forest; getting the wastes from oil-and-gas production recognized as hazardous; protecting streams, rivers, and aquifers from animal and mining wastes; and establishing municipal recycling programs. Each step is important, for each leads the Interior Highlands that much closer to real biological integrity.

► *For more information, see "Resources," p. 148.*

FIVE GLACIAL GIFTS

FROM THE RIGHT VANTAGE POINT ON A FINE SPRING day, the gleaming waters of the Great Lakes can appear limitless and incorruptible. One-fifth of the world's fresh water is held in five giant basins with a surface area of 95,000 square miles. Together, they form a sweet inland sea.

But in recent years, residents have learned that these lakes are a closed system as sensitive to disturbances as an aquarium. Only one percent of the lakes' water trickles into the Atlantic Ocean. The rest stays within the region, cycling endlessly from stream to lake to sky to land. In such an environment pollution builds up slowly but surely, and returns to plague locals in the air they breathe, the water they drink, and the fish they eat. The 40 million inhabitants of the Great Lakes area have learned this ecological lesson the hard way.

Water pollution had become so ferocious by the late 1960s that oil and garbage burst into flames on Cleveland's Cuyahoga River, and *Life* magazine declared Lake Erie dead. After 20 years of modern sewage treatment and stronger pollution laws, the lakes are visibly cleaner, but they are still far from pure. A century's worth of industrial muck lies at the bottom of the harbors in Gary, Cleveland, Detroit, Buffalo, and dozens of other hot spots. Air pollutants from incinerators and coal-burning utilities end up in the Great Lakes watershed, as do the pernicious poisons of the steel, chemical, and pulp-and-paper industries. It makes for a kettle of fish so foul that children as well as women in the child-bearing years are advised not to eat mature salmon, lake trout, and other fish.

A few of the worst chemical culprits have already been banished, among them DDT and PCBs. The Sierra Club wants to lengthen the list with a ban on nonessential mercury in manufacturing and on chlorine compounds in pesticides and paper production. A U.S./Canadian water-quality agreement backed by the Club has the potential to curb an even broader array of pollutants. And, starting with Lake Superior, the Sierra Club is lobbying the EPA and Congress to require industries and cities to totally eliminate persistent toxic chemicals from their effluent.

"Ten years ago government officials smiled at our 'naive' agenda," says the Sierra Club's Great Lakes Program Director, Jane Elder. "Today, the International Joint Commission [an agency devoted to managing waters in both countries] has recommended that the U.S. and Canadian governments make Lake Superior a binational demonstration site for zero discharge. Industry groups, aware of just how serious we are, have organized a coalition to oppose us."

It's an uncompromising agenda for a dangerously polluted watershed. "As the cormorants, the terns, the eagles, and the fish keep telling us," Elder says, "our sparkling freshwater system is contaminated with long-lived poisons. These will plague us for years to come. Enough is enough."

► *For more information, see "Resources," p. 148.*

AT THE CONTINENT'S CREST

As Lewis and Clark and their guide, Sacajawea, made their way westward across the Rocky Mountains, they encountered primeval forests alive with wolves and grizzlies. Nearly two centuries later, these symbols of the frontier West still survive in the Rockies, along with lynx, wolverines, bison, pronghorn, and elk. No other region in the Lower 48 has retained so many of its wildlife species—and no other contains such large expanses of wildlands.

National parks lie at the core of two of the Rockies' largest preserves: Yellowstone (mostly in Wyoming) and the Glacier/Waterton complex (on the border between Montana and Alberta). A third vast wilderness lies in central Idaho, with the Salmon River and the Selway/Bitterroot Wilderness at its heart. Even these preserves cannot ensure the survival of wide-ranging predators such as the wolf, however, which roams a territory of 40 to 400 square miles.

"The problem in the Rockies is twofold," says Larry Mehlhaff of the Sierra Club's Northern Plains office. "The core areas are not as wild as they used to be. And the wildlife corridors between them are rapidly being chopped up into tiny, lifeless fragments."

ROCKY MOUNTAINS

The Sierra Club hopes to defend the Rocky Mountains Ecoregion (which extends from Canada through Idaho, Montana, Wyoming, Colorado, Utah, and New Mexico) by adding 16 million acres to the 9 million acres of national-forest land already protected as wilderness. These additions would shield the three largest areas from development, as well as two smaller ones: Rocky Mountain National Park (in Colorado) and the San Juan Mountains in Colorado and New Mexico. The latter two lack some of the species that Lewis and Clark noted, but are still expansive and pristine enough to offer hope for restoration.

The Sierra Club is also urging Congress to revise statutes that encourage commercial exploitation of public lands, while holding federal land managers accountable to the enlightened provisions that require them to focus on stewardship—not on politics or timber receipts, mineral royalties or grazing revenues.

"The native home of hope," author Wallace Stegner once called the Rocky Mountains. Fittingly, the Sierra Club's goal here is ambitious. Over the next few years and decades its activists hope to preserve and restore no less than fully functioning natural ecosystems in this still-magnificent land.

► *For more information, see "Resources," p. 148.*

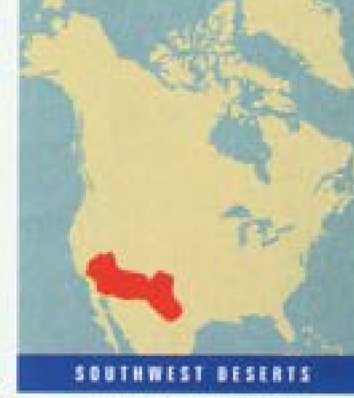
RESTORING A THIRSTY PARADISE

A TRAVELER CROSSING OVERLAND FROM LOS ANGELES TO Big Bend National Park in West Texas encounters three of North America's four great deserts, each ecologically distinct and strikingly beautiful. The Mojave of southeastern California and southern Nevada is the most arid of them (Death Valley is tucked in its northeast corner), with a stark landscape sparsely populated by creosote bushes and, at higher elevations, Joshua-tree forests. The Sonoran of southern Arizona and the southeastern tip of California has the longest species list, including fan palms, saguaro cacti, palo verde, and mesquite. The Chihuahuan, reaching up from Mexico to cover portions of southern New Mexico and West Texas, is bisected by the Rio Grande and dominated by yucca and lechugilla (an agave species) growing on mesas and limestone hills.

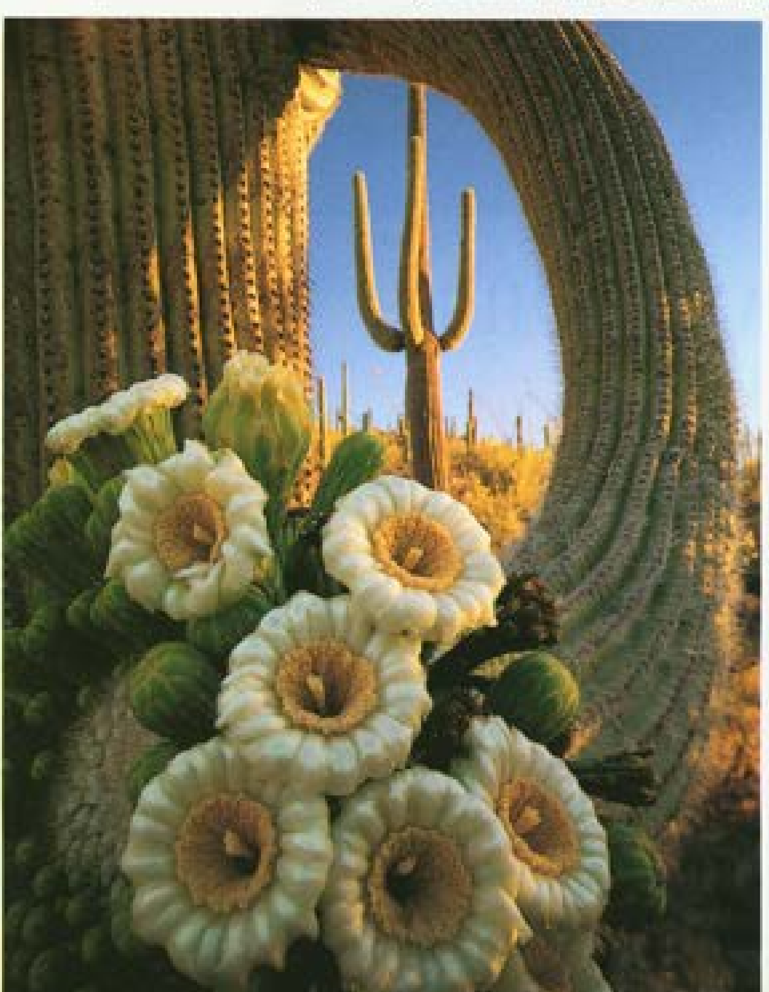
Within this region are hundreds of "sky islands"—mountaintop habitats isolated from one another and remarkably different in composition, because the dry distances separating them have allowed their biotic communities to evolve in distinct ways. Most of these aeries are found near the intersection of Arizona, New Mexico, and Mexico. Here 2,000-plus plant species thrive, nearly 10 percent of all the species found in the United States.

The Southwest Deserts also support bighorn sheep, desert tortoises, collared peccaries, roadrunners, gila monsters, kit foxes, bobcats, and kangaroo rats. Yet many animals are endangered by the region's dominant species, *Homo sapiens*. At the turn of the century, droves of fortune-seekers were lured here by promises of abundant, easily tapped natural resources. After World War II, retirees came to the Sunbelt *en masse*, searching for dry, healthful living in such artificial, air-conditioned oases as Palm Springs and Phoenix. Today thousands still migrate annually to the deserts to work in tourism or high-tech, or to speculate in real estate. These multitudes have scraped, poisoned, trampled, gouged out, paved over, and dewatered the ecosystem. Even the region's once-famed vistas have been obscured by air pollution from cars, copper smelters, and coal-fired power plants.

In this torrid zone, every drop of water is essential to preserving life, yet 90 percent of all riparian habitat in the deserts has been wiped out or severely degraded. Watersheds have been denuded and groundwater reserves sucked up. The Colorado and the Rio Grande, along with their tributaries, often cannot supply enough water to satisfy the thirsts of both large-scale agriculture and booming urban populations. Meanwhile, industrial solvents and agricultural chemicals leach into remaining groundwater tables and river valleys. Along the Mexico–U.S. border, where many U.S. industries have fled in search of low-wage labor (and lax enforcement of environmental laws), toxic wastes and untreated sewage flow freely into streams.



To restore the Southwest Deserts Ecoregion to its former glory, the Sierra Club has championed passage of the California Desert Protection Act, which would establish three new national parks (Mojave, Death Valley, and Joshua Tree) and designate 4 million acres of wilderness. Activists are also working to achieve full funding and enforcement of the Clean Water Act, educate citizens on how to restore degraded streams, designate wild-and-scenic rivers (in Arizona, activists have identified sections of the Verde, Salt, Gila, San Pedro, and Bill Williams rivers as worthy of such status), and pass state laws preventing groundwater misuse. The Sierra Club has joined with other conservation groups in an effort to designate portions of eight mountain ranges in Arizona's Coronado National Forest as biodiversity conservation areas. These and other efforts will continue until the region is once again hospitable to the endangered desert tortoise and Sonoran pronghorn, and until the long-exiled grizzly and Mexican gray wolf are finally welcomed home.



► *For more information, see "Resources," p. 148.*

MILES AND MILES OF SOLITUDE

FIFTEEN THOUSAND YEARS AGO, TOWARD THE END of the last Ice Age, the lakes covering most of present-day Nevada and parts of Utah, California, Oregon, and Idaho dried up. Left behind was a vast, arid, high-elevation basin, with deep canyons and steep, north/south-trending mountain ranges, piercingly cold in winter and blisteringly hot in summer.

Today the Great Basin/High Desert is a region of wild beauty and extreme ecological fragility, sparsely populated and seemingly desolate. Yet its ranges sustain bobcats, mountain lions, deer, and numerous other animals. Many Great Basin species have become uniquely adapted to these highlands because the dryness of the desert floor prevents migration between ranges. Fleet-footed pronghorns are a notable exception, as are raptors: golden eagles, red-tailed hawks, goshawks, peregrine and prairie falcons, harriers, kestrels, and even bald eagles sweep the skies of this sere landscape.

The bad news? Livestock, grazing on private and public land, often trample streamsides, obliterating all vegetation. Cyanide from heap-leach gold mines contaminates water sources. Irrigation flushes boron, arsenic, and mercury out of the soil into streams and ponds, where they poison fish and wildlife. Toxic wastes are dumped illegally in remote areas. Military jets roar through the Basin's airspace, while armored vehicles tear up the land in war maneuvers. Cities on the Basin's periphery drain off its water, threatening to turn an already arid region into a genuine wasteland.

For many years, the Sierra Club has led efforts to protect the Great Basin environment. Club activists in the region have opposed power lines, radioactive-waste dumps, coal-fired power plants, nuclear reactors, and the increasing takeover of the desert by the military. They have pressed for mining-reclamation bills and promoted alternative energy sources and conservation techniques.

Above all, the Club has worked to preserve Great Basin wilderness; it was instrumental in passing the Nevada Forest Service Wilderness bill as well as in establishing Great Basin National Park. Yet more than 10 million acres still qualify for wilderness status, while others not technically roadless have special values that need safeguarding. The park itself, in eastern Nevada, is far too small to adequately represent Great Basin ecological values, and by law permits domestic-livestock grazing. For these reasons, enlarging Great Basin National Park and designating additional wilderness and park areas are high on the Sierra Club's list of programs for protecting and restoring the region. To make sure all wilderness is properly managed, the Club is pressing BLM and Forest Service agents to become more forceful and conscientious land stewards, despite stiff resistance from miners who currently have free run of the public domain, and from ranchers who feed on the largesse of government grazing subsidies. Club activists who want the Endangered Species Act strengthened and enforced are helping to identify critical Great Basin plant and animal communities; at the same time, they are assisting the U.S. Fish and Wildlife Service in the restoration of overgrazed and polluted wildlife refuges.

Some visitors to the Great Basin find the immense flat stretches between mountain ranges lonely and monotonous. Yet the region's isolation and wide-open spaces are precisely what endear it to those who stop and explore, and what motivate activists to seek the desert's protection . . . at least until the next ice age.

► *For more information, see "Resources," p. 148.*

AT WORK IN THE RANGE OF LIGHT

NORTH AMERICA'S LONGEST UNBROKEN CHAIN OF mountains—400 miles of dazzling granite outcroppings and forested slopes—so stirred wilderness prophet John Muir that he founded the Sierra Club more than a century ago to defend his beloved Range of Light. Thanks to legions of Club activists since then, countless High Sierra peaks, lakes, meadows, and ancient pine, fir, and sequoia forests have been saved, ensuring habitat for mountain lions, wolverines, black bears, and hundreds of other plant and animal species. Also secured is a wild sanctuary where harried humans can seek rock walls and whitewater rivers for physical challenge and remote valleys for contemplation and renewal.

But as today's Sierra Nevada activists know well, keeping the range unharmed is an endless, gnarly climb. Despite the Club's persistence, Sierran ecosystems are buckling under pressure from loggers, ranchers, miners, off-road-vehicle enthusiasts, water diverters, and resort developers. Gone are the grizzlies, condors, common loons, and yellow-legged frogs once found here; soon to vanish, perhaps, are red foxes, willow flycatchers, great gray owls, and the few remaining runs of anadromous fish.

To mend and defend these mountains, Sierra Club activists are working to establish preserves spanning the range's entire length and breadth. Building on existing national parks, wilderness areas, and wild-and-scenic rivers, the Club seeks ancient-forest reserves and expanded protected areas. Also needed are safeguards for the oak woodlands and chaparral scrub of the Sierra foothills; a halt to forest clearcutting; regulations to keep livestock away from fragile streamsides; and an end to new ski resorts, ridgetop homes, TV towers, dams, mines, roads, and other intrusive developments. The Club's objective is a Sierra Nevada wild enough to permit native species to migrate, recolonize after local extinctions, and adapt to long-term climate changes.

Such a return to the wild Sierra of yore can be accomplished only if people willingly change their approach to conservation. The Club wants to replace outmoded, piecemeal land-use-planning techniques with organic, ecoregional efforts that husband entire landscapes, habitats, and watersheds. To this end, citizens in towns throughout the range will need to coordinate their actions, ensuring that each local project fits within an overall, range-wide scheme.

Support for these efforts will have to come from local, regional, state, and federal governments. At the federal level, the Club is seeking permanent protection for all the Sierra's remaining ancient forests, roadless areas, and critical habitats. In particular, the Club wants to establish a Sequoia National Forest Preserve free from timber harvesting, roadbuilding, and other extractive industry. It also seeks wild-and-scenic-river legislation to protect Sierra rivers, especially the Clavey, North Fork Stanislaus, and American.

No change has been more ardently sought by the Sierra Club than having the National Park Service implement a master plan for Yosemite that relocates employee housing outside park borders, develops mass transit for visitors, and reduces commercial operations. The Park Service has resisted such initiatives for years, but the Club's insistence is growing, and change is long overdue.

Restoring the Sierra Nevada's natural grandeur will require intense public involvement: poring over habitat maps, conducting biological surveys, holding strategic-planning meetings, sending letters by the truckload to elected officials, and tapping new grassroots support. The reward for this persistent storm of effort, years from now when the dust settles and a rejuvenated Range of Light emerges, will be pride in having safeguarded an invaluable aspect of our natural heritage.

► *For more information, see "Resources," p. 148.*

SIERRA NEVADA

WHERE FISH BUILT A FOREST

THE LANDSCAPE OF THE PACIFIC NORTHWEST HAS been molded by great volcanoes like Rainier, Baker, and St. Helens. Yet an equally vital role has been played by the strong, silvery salmon, which has been bringing nutrients from the ocean to the forests here ever since the vegetation was stripped away by glaciers some 10,000 years ago. "[Salmon] were not the only means by which nature reclaimed the wasteland of gravel, boulders and clay, but they were among the most important," says author Bruce Brown. "Running in such numbers that many rivers were known for the marvel of their rotting, the salmon helped re-create the soil which supports the rococo excesses of the modern Olympic Peninsula rain forest."

Without salmon, the Northwest's forests and streams would never have been so richly endowed with flora and fauna. Without healthy forests and streams, though, the fish cannot survive. Drastic alterations of Northwest landscapes have wiped out 106 populations of salmonids and put 214 more at risk. These activities have also caused crises in the logging and fishing industries—and fundamentally changed the region's character. Few people gazing at the Snake River in Wyoming realize it was once part of a seamless ecosystem that extended from the Continental Divide in the Northern Rockies a thousand miles to the Pacific Ocean.

The main culprits are sprawling cities, hydroelectric dams like Grand Coulee (which clog the Columbia and its tributaries), and rapacious logging. Ninety percent of the original coastal forest is gone. Moving east of the Cascade Crest, one finds drier inland woodlands in which logging and fire suppression have promoted disease and decline. Only the rugged forests of the Northern Rockies are still truly wild, but they won't remain so for long without stronger protections.

The Sierra Club hopes to ensure the future of the Rockies' wildlands by placing them in the National Wilderness Preservation System. Elsewhere in the region, the Club is working to establish a new form of permanent protection for all remaining ancient forests—and for other undisturbed habitat. For salmon's sake, the Club is calling for restoration and protection of watersheds and more natural river flows from dams. In addition, the Club seeks "transition assistance" to help logging towns build healthy economies that are not based on cutting old-growth forests.

"Trees, rivers, and salmon created a complex tapestry here—and we cut the threads," says Julia Reitan of the Sierra Club's Northwest office. "But we still have the opportunity to preserve the pattern—and to stitch some of the torn places back together."

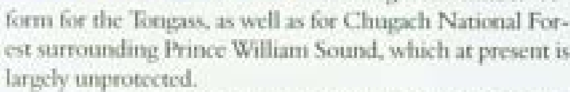
► *For more information, see "Resources," p. 148.*

A GRAND ARC OF PLENTY

MOST OF THE THOUSAND-MILE ARC OF THE Alaska rainforest, from Ketchikan at the southern tip of the "panhandle" to Kodiak Island, is much as it was when Vitus Bering, near death from scurvy, first glimpsed it in 1741, and as Alutiiq hunters had known it for the last 7,000 years. Where mountains jut 18,000 feet out of the sea and glaciers as big as Rhode Island calve monstrous icebergs into the tides, the natural giantism of the Pleistocene still survives in the largest bears on earth and moose that stand higher than horses. Towering hemlock, cedar, and spruce shade rivers still throbbing with salmon, while coastal waters teem with orcas, sea lions, otters, and milky-white belugas—a natural wealth that sustained human communities in comfort and plenty for millennia.

Our generation, however, is destroying the source of that bounty. When the wreck of the *Exxon Valdez* blackened more than 1,500 miles of Alaska beaches with 11 million gallons of North Slope crude in 1989, the world learned how fragile this mighty system is. Five years later, most visible signs of the spill are gone (though populations of otter, salmon, harbor seals, harlequin ducks, and marbled murrelets have still not recovered). Now the region faces a graver, more permanent threat: the same razed-earth logging that has already devastated the Pacific Northwest.

But by rare poetic justice, the former disaster provides the opportunity to help stop the latter. Nearly $700 million in civil and criminal penalties assessed against Exxon are available to help restore the region by such means as the purchase and permanent protection of private inholdings within public parks, refuges, and forests. The Sierra Club has helped form a broad alliance of environmentalists, commercial and sport fishermen, tourism entrepreneurs, Native corporations, and Native subsistence users to ensure that much of this money is spent on preservation. Already, oil-spill funds have spared 66,000 acres of forest by adding them to the state-park system.



While some federal and state officials are now actively helping to save the Alaska rainforest, others are still forcing taxpayers to subsidize its destruction. In 1992, Tongass National Forest lost $64 million grinding huge swaths of forest into pulp for the rayon industry. The Sierra Club is seeking real timber reform for the Tongass, as well as for Chugach National Forest surrounding Prince William Sound, which at present is largely unprotected.

Rainforest logging is perfectly in step with the boom-and-bust rhythm of the Alaskan economy. Two centuries ago Russian fur traders enslaved the Aleuts, forcing them to hunt the sea otter to near-extinction. Next, whales were slaughtered for lamp oil and ladies' corsets. Successive gold rushes left toxic mine tailings and polluted streams. Now the forest is being leveled at a record rate, with the trees that escape pulping exported as unprocessed logs to Japan, Korea, and China. On this last frontier, the goal is still to exploit local resources for a quick fortune.

The Sierra Club has a grander vision. In it, the most critical parts of the parks, refuges, and forests along the western Gulf of Alaska are free of developed inholdings. Wildlife habitat is guaranteed through new wilderness areas and wild-and-scenic rivers (more than 100 of which are eligible in Tongass National Forest alone). A healthy forest provides a sustainable economy—fishing, recreation, and a smaller-scale wood-products industry. Joining the Club in this endeavor are seven other organizations in the Alaska Rainforest Campaign, all dedicated to preserving one of the greatest temperate rainforests of North America.

► *For more information, see "Resources," p. 148.*

NATIVE GARDEN OF THE NORTH

HUDSON BAY AND JAMES BAY, ACROSS THE NORTHern reaches of Manitoba, Ontario, and Quebec, form one of the world's largest seas, fed by the waters of a third of all Canadian rivers. The bays' watersheds cover a million square miles, from Labrador in the east to the Rockies in the west, from the Arctic Circle in the north almost to the Great Lakes in the south. Their waters sustain beluga whales, seals, and walruses, while their estuaries, heath-covered islands, salt marshes, freshwater fens, subtidal eelgrass beds, and ribbon bogs provide nourishment for huge flocks of geese, ducks, and loons. Tundra on either side of the bays provides habitat for caribou, moose, otter, muskrat, beaver, lynx, and polar bear. This wildlife, in turn, supports the traditional Cree trappers and fishers of the James Bay region and, along Hudson Bay, the Inuit and Naskapi. The Cree regard their part of the ecoregion as a "garden" providing for all their needs.

HUDSON BAY / JAMES BAY WATERSHED

In 1972, with no environmental assessment and over the objections of Native peoples, Quebec's energy corporation, Hydro Quebec, launched the first phase of hydroelectric developments here. By means of nine dams and 206 dikes, the company diverted four major rivers into the mighty La Grande, flooding 7,044 square miles of forested land. This was only the start of the damming and diverting of the rivers in the La Grande watershed, where another 38 dams and 461 dikes are still planned. Thus has begun the most massive and destructive engineering and river-replumbing scheme in history, one that threatens to alter the entire Hudson Bay/James Bay ecosystem and destroy Cree, Inuit, and Naskapi societies.

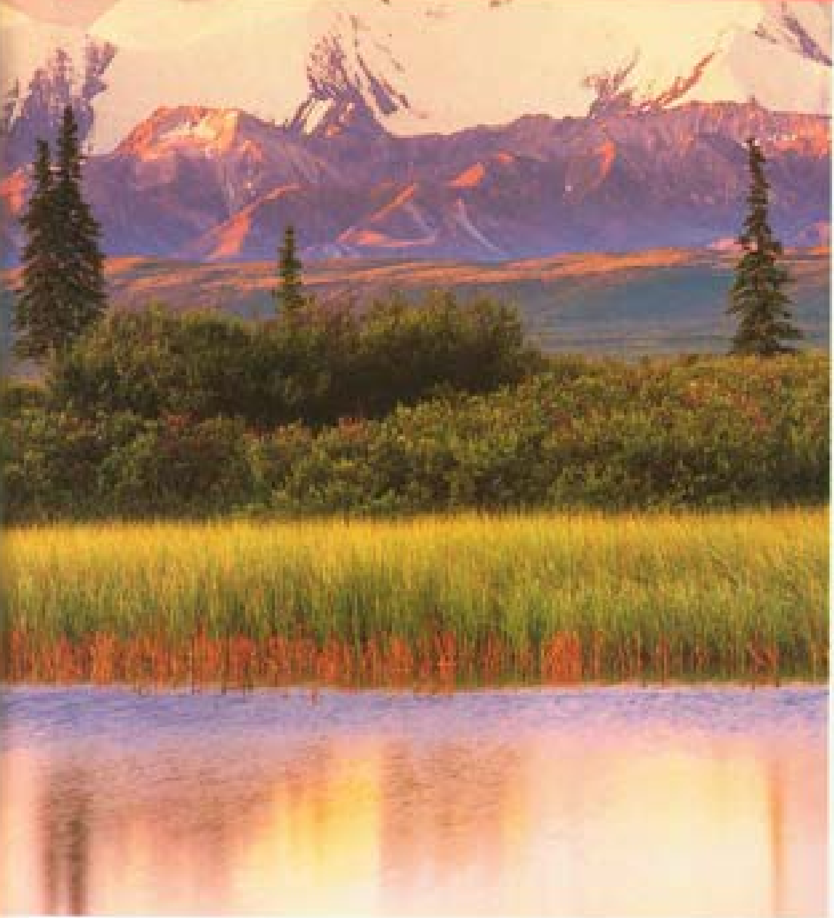
In Manitoba, hydroelectric dams have diverted two major rivers, and at least ten more dams are projected for three others. The Cree of Manitoba vigorously oppose these plans, having already witnessed the collapse of several of their fisheries and the accumulation in fish of toxic mercury, leached from the earth by floodwaters backing up behind the dams.

A less immediate but very real threat looming over the ecoregion is the "Grand Canal," or "Great Recycling and Northern Development" proposal. This $100-billion project calls for the construction of a dike across the mouth of James Bay to create a huge lake. Fresh water from this reservoir would be diverted south through existing watercourses and new canals to the Great Lakes and thence to the American Midwest and the thirsty, booming Southwest, as well as to the Canadian prairies.

The Sierra Club, in concert with other environmental groups and the Grand Council of the Cree, has fought to prevent hydroelectric developments in the region. When Quebec announced plans to proceed with "James Bay 2," involving the damming of the Grande Rivière de la Baleine (Great Whale River) and the diversion of two others into it—as well as a scheme to divert the Nottoway and Rupert rivers into the Broadback—Club activists in Canada and the United States mobilized in opposition. They and their allies persuaded the state of New York to cancel its plans to purchase electricity from Quebec, thereby reducing the demand for new hydroelectric-dam construction in the province. Another of their successes was to force environmental assessments of new dams in Manitoba and Quebec to take into account the cumulative ecological impacts of dam, mining, and forestry projects. And by promoting energy conservation in Ontario they compelled Manitoba to cancel a major dam that was being built to serve the Ontario market.

Hydro Quebec, however, continues to press for all the dams on its drawing board. Sierra Club activists on both sides of the border are working to combat this multibillion-dollar boondoggle. In Quebec the Club has formed a coalition with conservation organizations and Native groups in hopes of turning public opinion against new dams. A system of nationally designated Heritage Rivers has been proposed. In New York and New England, electricity users are being asked to conserve energy, thereby drying up the market for excess Canadian power. In the fight to keep fresh water flowing into an unspoiled Hudson Bay/James Bay ecoregion, the next ten years will be decisive.

► *For more information, see "Resources," p. 148.*



THE WOODS AT THE END OF THE WORLD

IMMENSE AND MYSTERIOUS, THE GREAT FOREST OF THE Far North seems as distant in spirit from the problems and pollution of the south as it is in miles. The boreal forest is the northernmost forest zone on the planet, forming a broad circumpolar belt across North America, Europe, and Asia. Together with the Russian taiga, it forms the largest natural ecosystem on Earth. On this continent, the boreal forest extends unbroken from Alaska to Newfoundland; to the north, it borders on the arctic tundra; its southern boundaries reach into Minnesota. Of the wooded land in Canada, 82 percent is boreal forest.

Rainfall is relatively light here, and the climate is severe, with short summers and long, cold winters. Renewed and maintained by fires, the forest provides a rich habitat for wildlife. More than 10 percent of the endangered species in Canada are found in the boreal forest, including the peregrine falcon, the whooping crane, the eastern cougar, and the eastern wolverine.

For generations, the forest has been home to the people of the First Nations, Cree and Athabascan and Metis. Though some have settled in towns, many still live in and from the woods. Their traditional way of life depends on the integrity of the forests.

This little-known region would seem to be protected from human greed and blundering by its remoteness and harsh climate. Forty below weeds out the fools, they say in the North. Unfortunately, this is no longer necessarily true: today the farthest reaches of the boreal forest are threatened with massive logging operations. Until recently, its low yields and slow-growing timber had protected this woodland from the kind of rapacity that has leveled coastal rainforests in British Columbia—but logging here is on the increase, especially for wood pulp for papermaking. Sixty-five percent of Canada's boreal forest is under long-term lease for logging, including provincial parks and wildlife reserves. There are at least 45 timber-industry projects worth more than $10 billion currently being built or planned for the region—including sawmills, pulp mills, and three chopstick factories.

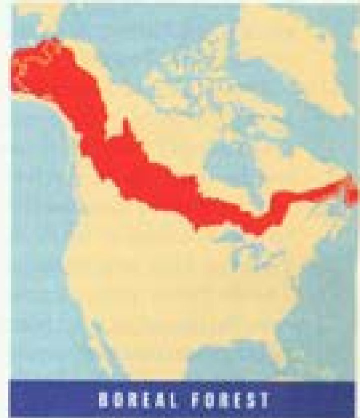
To protect the forest ecosystem, it will not be enough to put aside small, unconnected parks. What is needed are reserves large enough to maintain biodiversity and ecological health. The Sierra Club wants to ensure that environmental assessments of the forests are made before governments decide whether to "release" timber to the logging companies.

As it stands, most forestry decisions are made at the provincial level. One objective of the Sierra Club is to strengthen the mandate of Forestry Canada, the Canadian national ministry for forests. The Club also hopes to work with the provincial governments to improve their forest-management practices.

Resistance to the timber industry in the north has been a matter of individuals and small organizations up to now. The Sierra Club hopes to help broaden this movement; an important part of this effort will be increasing public awareness and participation. "A lot of people don't realize what's going on up here," says Duncan Stewart, a Sierra Club director and chair of the organization's Boreal Forest Task Force. "The government sees only one use for the boreal forest—as an economic engine."

Along with other conservationists throughout Canada, Club activists will attend a conference this May in Athabasca, Alberta, sponsored by the Stockholm-based Taiga Rescue Network. Working with forest activists from around the world, the Club hopes to help develop a strategy for the boreal forest that will protect it from untrammeled resource exploitation. If the multinational timber corporations have the last word, the forests of the far north could be shaved bare, their rivers poisoned by mill runoff, their endless ranks of spruce and fir turned into toilet paper and chopsticks.

► *For more information, see "Resources," p. 148.*



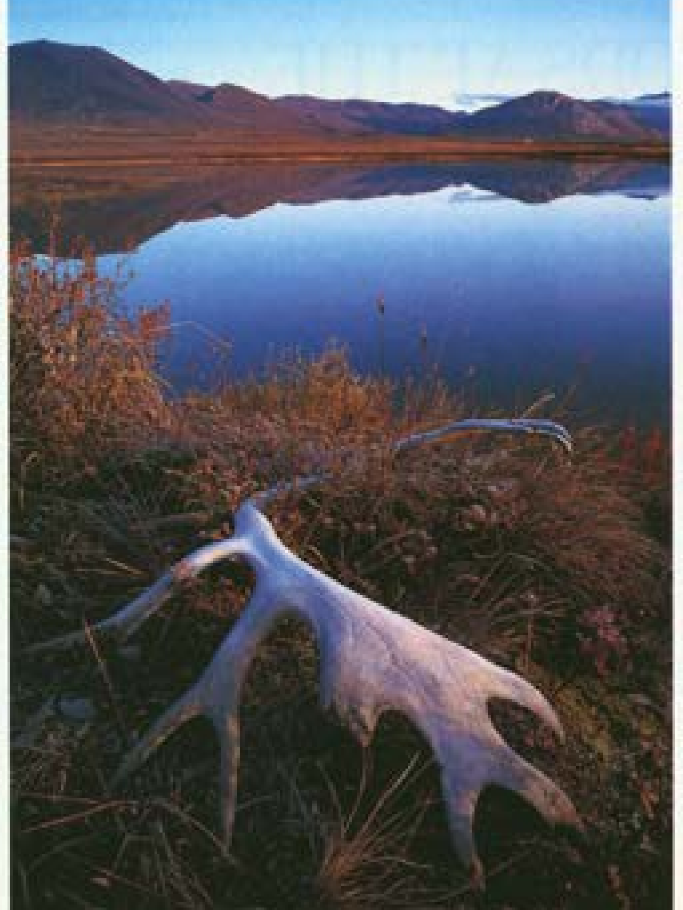
BOREAL FOREST

A Wild and Unbounded Place

UNTIL ROBERT EDWIN PEARY REACHED THE North Pole in 1909, the North American Arctic was one of the least known places on the planet. In the years since that expedition, the Arctic's silent expanses have become threatened by the industrial extraction of its fish, oil, gas, and minerals to satisfy the incessant consumer demands of a growing world population. In view of the Arctic's vulnerability, Canada and the United States, along with other circumpolar nations, have formally agreed to monitor environmental damage in the region, establish an emergency response program, protect the marine environment, and conserve endemic flora and fauna. These are huge challenges, and the Sierra Club, whose members have long explored the arctic environment and worked for its protection, is determined to see this international commitment carried out.

Alaska's Arctic National Wildlife Refuge and the adjoining 5-million-acre Ivvavik National Park in Canada already form the first international arctic preserve. The Porcupine caribou herd that calves on the coastal plain of the Arctic Refuge remains the most important meat source for the 7,000 Gwich'in Indians scattered throughout Alaska and the Yukon. Also to be found here are polar and grizzly bears, wolves, foxes, musk-oxen, Dall sheep, and more than 135 bird species.

Yet huge chunks of the ecoregion still lack essential wilderness protections. Oil-and-gas development threatens the coastal plain, including the 1.5 million acres at the biological heart of the Refuge. The Sierra Club, which played a lead role in establishing the refuge by spearheading passage of the Alaska National Interest Lands Conservation Act of 1980, is today spurring the Canadian government to expand Ivvavik and urging the U.S. Congress to give the Arctic Refuge wilderness status. Club activists are also pushing for the greater Arctic Refuge/Ivvavik ecosystem to be declared an International Biosphere Reserve through the United Nations Man and the Biosphere Program.



One of the most vulnerable areas of the Arctic is the 6-million-acre utility corridor flanking the Trans-Alaska Pipeline, which transects three wildlife refuges and Gates of the Arctic National Park and Preserve. Despite intense public opposition, the Bureau of Land Management transferred almost 700,000 acres of this land to the state of Alaska, which seeks eventual control over the entire stretch north of the Yukon River. The Sierra Club hopes to prevent the state from selling this land to private owners and developers.

In the northwest corner of Alaska, a pristine area the size of Indiana became a National Petroleum Reserve in 1976 at oil-industry insistence; it contains wildlife habitat that scientists have yet to thoroughly investigate. The Sierra Club wants an assessment of the region so that the most biologically sensitive areas can be protected. Without such a study, extraordinary places could be damaged before much is known of their natural history. Of particular interest to researchers are the Utukok and Colville rivers, both of which flow from the De Long Mountains in the western end of the Brooks Range.

Along the icy northern edge of the continent, activists are working to protect Alaska's offshore areas, the enormously fertile Chukchi and Beaufort seas, as well as the Arctic Ocean. Large tracts of these waters have been leased for oil drilling, and the risk of catastrophic spills is very real. Several oil companies are planning or have already started exploratory drilling. To stop them, the Club, in coordination with other conservation groups, is calling for a moratorium on lease sales.

The reason for these concerns becomes especially clear to those who visit the Arctic Refuge in summer and see its wildflowers blooming in profusion under the midnight sun, who meet with Native villagers, and who witness the spectacle of tens of thousands of caribou migrating to their calving grounds. As Arctic explorers George Collins and Lowell Sumner wrote in the *Sierra Club Bulletin* in 1953, "The preservation of a part of the original Arctic wilderness would be one significant step toward further understanding the Northland's biological wealth; it would protect wildlife breeding areas, and one of the great scenic and historic regions of North America."

► *For more information, see "Resources," p. 148.*

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Continued from page 109

whatever land the state bought should come from willing sellers and not by forced taking. The specter of eminent domain had sparked much of the violent rhetoric, even though such blunt methods had rarely been used to acquire park lands. "The word is filtering down now," insists Duane Ricketson, an eighth-generation Adirondacker and a founder of the homegrown Residents Committee to Protect the Adirondacks, a group that filled a vacuum between the interests of developers and outside environmentalists.

Too much can be made of the signs of emerging moderation. Most local officials—and especially the region's state senator, Ronald Stafford—remain demagogic in their opposition to state regulation of the park. But there's more dialogue now. "It's been good for environmental groups to see that local governments are not all filled with backwoods Neanderthals," says Ricketson. Instead of a huge package of Adirondacks laws, he sees the chance for a narrower bill protecting shorelines, perhaps coupled with relief for local governments that suffer because of tax breaks designed to help the timber industry. Reform of the park agency and slight increases in the size of hamlets might be wedded to increased protection for the backcountry, he says. A few towns are even starting to enact their own zoning laws. "It may take a while—it may be 20 years from now—but I see the day when someone will stand up and start spewing the same old rhetoric about property rights and so on—and they'll be laughed at."

That day may be hastened by the laws of chemistry and biology. Even as the Adirondack forests are slowly recovering from logging, there is evidence that their waters are starting to suffer from development—nutrient overload can already be noticed in the myriad lakes and ponds of the park. For all the national attention given to acid rain in the Adirondacks, only about 20 percent of its lakes and ponds are sensitive to the problem, most of them

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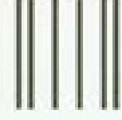

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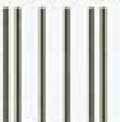

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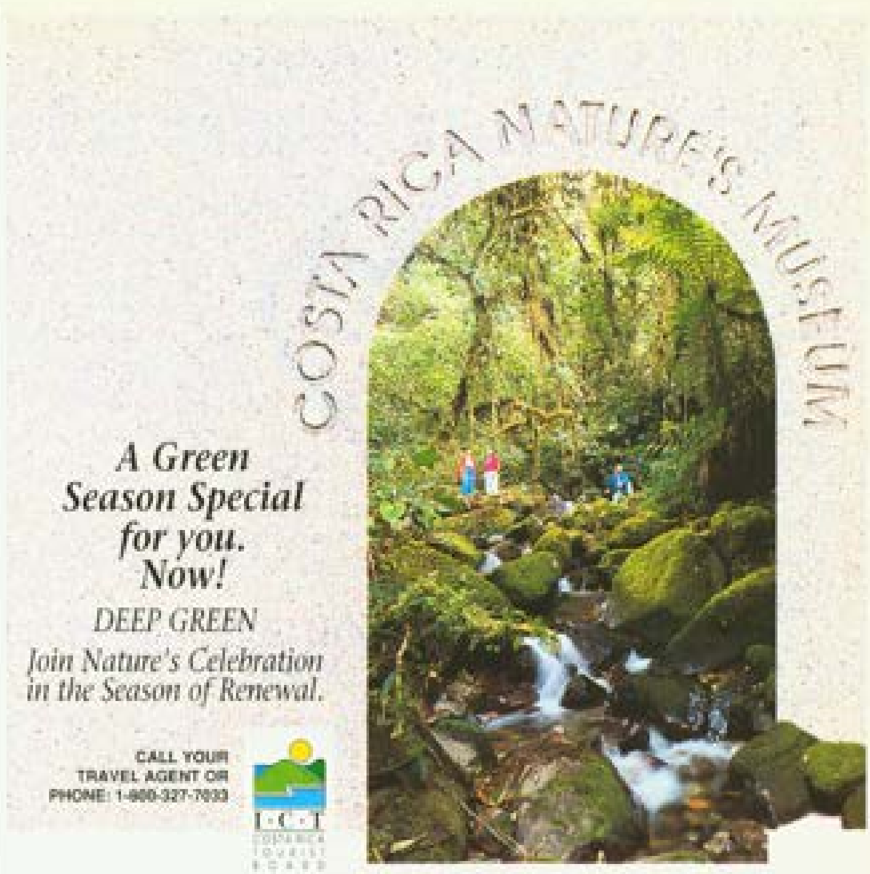
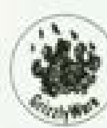
high, small, and uninhabited. If current national efforts to control sulfur pollution begin to pay off, attention may shift to more mundane degradation.

"Even a very low-density residential development has a noticeable impact," says Mike Martin of the Adirondack Aquatic Institute, as we paddle Green Pond past newly built houses. "A forest is a system for recycling nutrients, from the litter on the ground back up to the leaves in the trees. If you clear it, nutrients run right down into the lake." And once the house is built and the septic system installed, the problem gets worse. As effluent saturates the ground around a septic system, contamination spreads slowly outward. Eventually, it's likely to reach a lake, or a stream that feeds one. Sewering, an obvious option, usually prompts more development, which in turn causes more runoff. The answer probably lies in property setbacks and shoreline restrictions as recommended in the Davis report, part of an outlook that requires people to anticipate problems, rather than wait until they've become crises.

That lesson is spreading from the Adirondacks around the world. While preparing the report for Cuomo, Davis learned he'd won a MacArthur fellowship—a quarter of a million dollars for being a land-use genius. One night soon after, when his family was monitoring phone calls to weed out threats, former Sierra Club Executive Director David Brower phoned, inviting Davis to Lake Baikal. ("To someone of my generation," Davis says, "it might as well have been God calling.") Since all his opponents had been loudly recommending he go to Russia, Davis signed on. He found the lake, like the Adirondacks, still in relatively good environmental shape, but it was easy to see trouble gathering; working closely with the Russians, Davis and a team of scientists began to prepare a map very much like the one he'd assembled 20 years earlier in upstate New York.

"In some ways, the job was much easier," he says. "There is no tradition of private property there. If you were giving a farmer his land for the first time, what did it matter if you told him





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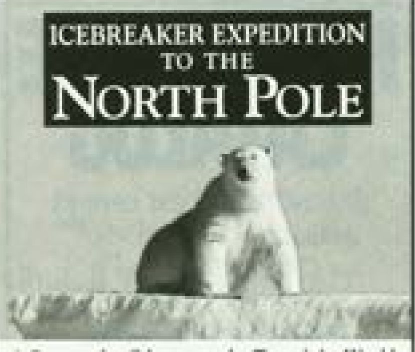

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he couldn't put a development on it?" Even so, zoning an area larger than France was a monumental task, and seeing that the laws are enforced will be more difficult still. Of 150 million acres, two-thirds are protected; the rest will be carefully logged or put to other use, says Davis. "Some foreign lumber operations are interested, even though we tell them they can't clearcut. They appreciate the fact that the whole system is laid out, that there's less uncertainty than in the rest of Russia." The real test will be whether the Baikal region will be able both to protect its environment and to become more prosperous than the surrounding areas in a few years. If this happens, then the project will be a success.

Davis has already moved on to map a huge area along the Russian-Chinese border, and will soon journey to Chile. "We in the Adirondacks were first," he told a group of environmentalists last summer. But, he continued, we have largely failed to fulfill the promise here. Why? Many reasons, including squabbling among environmental groups. And, "while we listened to the land, we didn't always hear the people."

TWENTY YEARS AGO THE VILLAGE OF Newcomb was a small place. Then came the closing of the titanium mine at nearby Tahawus, on the southern flank of the High Peaks, and with it went several hundred jobs. The town grew smaller still; its population has sunk to 550. Its school, the smallest in New York, has only 60 students, and is under pressure from the state to close. The school board has been discussing paying tuition to other towns so its high schoolers can ride a bus for as long as an hour each way, an arrangement that would almost certainly prevent new young families from moving in.

Newcomb—though extreme in its isolation and its single-industry history—is symptomatic of the latest crisis to hit the Adirondacks, the one that may be most devastating to the idea that Americans and wild places can live intertwined. The communities in the core of the park are poor, often with substandard housing and faltering

schools. Faced with a chronic lack of jobs, populations are aging—in Essex County, where Newcomb is located, the median age is expected to increase from 32.5 in 1980 to 38.8 by the year 2000. The total school-age population had already dropped from 6,000 in 1980 to less than 5,000 by 1990. These numbers mean new kinds of impoverishment. "The organic links for a community eventually fall apart," says Jerry Pepper, research librarian at the Adirondack Museum. Parents watch their kids leave, not just because the city is flashier, but because there is literally no work for them to do, and the same cycle that has depopulated much of rural America sets in. But with so much at stake here, it seems especially sad that people can't find ways to thrive in and around the wilderness.

Art Norton is making the attempt. He is director of Essex County's Industrial Development Authority, charged with luring jobs to the area. The Adirondacks "could be a real model of planned development," he says. "And I mean economic development, not development development." Indeed, the one thing that's been growing in Essex county is second homes—up 41 percent in the last decade. "Those are disinterested taxpayers, though," says Norton. "If they like the place so much, then they should move here. They should help make it good, help make it last."

At the moment, Norton's dearest dream involves the old mine site at Tahawus, which he thinks could host a factory to build rail cars for New York City. "It's a natural fit," he says. "There's a good rail line right at the site." Such a plant might employ 600 people, enough to bring the Essex unemployment rate right back down to the nation's average, enough to put the Newcomb school on a sound footing. In a sign of the new mood of conciliation, Norton has convinced many environmental groups to endorse the concept. Even the Adirondack Mountain Club, whose members stride past the abandoned mine on the way up Mt. Marcy, has agreed in principle.

Surprisingly, the APA isn't Norton's greatest worry. In fact, he says, each time he's proposed a project to the agency he's had a permit inside of two months. Bigger obstacles may be the lingering image of barn-burners and rabble-rousers. Adirondack politicians like Senator Stafford can get elected year after year by jeering at the APA, instead of using the leverage created by representing the state's playground to demand some progress. "The politicians always have their bogeyman in the APA and the state—it means they never have to take responsibility," says Duane Ricketson. "We need to say to Albany: 'We enjoy the wilderness, but we have serious economic problems up here too. What can you do for us?'"

So here's one vision, and a good one—an Adirondacks made livable by the appearance of a few factories. "It won't take many," says Norton. "Our unemployment percentages are awful, but the numbers are small. If we got some more jobs up here, I don't think it would look a lot different, but it would sure feel a lot

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different. The tensions would be gone."

To some degree he's right. But nothing in Adirondack history suggests the area will ever be truly prosperous. "The long winters," says John Collins, chairman of the APA. "The glacial till and lack of transportation. This is not farming country. This is not land that is going to provide a high level of existence, if one depends on the land alone." People will still have to cobble together a living from a dozen different odds and ends, and that living will never look like the "lifestyles" we've come to take for granted in suburban America. It may turn out that solving the Adirondacks' human crisis will involve new mind-sets as much as new factories, require subtle shifts in the definition of prosperity—shifting it in a way that might echo the way "forever wild" has echoed out across the planet.

Collins comes from a long line of Adirondackers—his grandfather was the caretaker at Sagamore, the Vanderbilts' sumptuous summer camp in Raquette Lake. Collins—"Mr. C"—teaches fifth grade at Long Lake's school, 15 miles down the road from Newcomb. This year's class has eight young scholars, and today they are diagramming sentences about last week's field trip to Albany, which though only three hours' drive away might as well be in a different world from Hamilton County, the last county in the East without an automatic teller machine.

"I always take them by the governor's mansion," says Collins, "and then we walk into a residential area. It's not too attractive to them—the houses side by side, the brick front yards. The kids are somewhat appalled that people live like that." But, he says, "If I told you the number of times I'd heard school kids say 'I wish we had a mall nearby,' you wouldn't believe it."

Solving that dichotomy of desire is a crucial part of solving this crisis. To some extent, the prosperity of Adirondackers is in our own hands—and in our own heads. Learning to take our wealth from the natural glory around us—recalibrating desire so that we're satisfied by the sugar maple and not the shopping mall—is part of the answer. It

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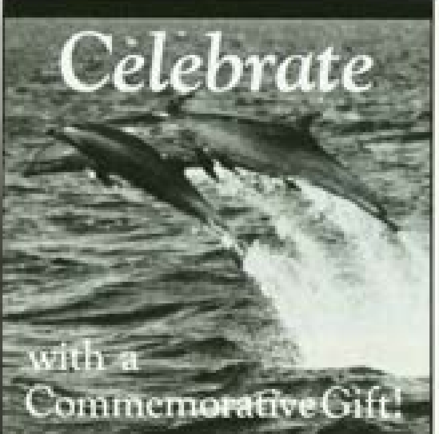

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won't put food on the table, and food on the table is a necessity. But a lot of the rest of what we want is not necessary, and pursuing it means wrecking what we have. The moose and the mall are mutually exclusive. Here there is at least the possibility that the glory of open spaces and loon call and neighbors knit tight by living on the margins of modernity might be enough to make up for missing luxuries.

There are places where the message is clearly getting through. At the Adirondack Museum in Blue Mountain Lake, kids arrive constantly. "When I first got here, they might come once a year and just race through the place," says Daisy Kelly, the museum's education coordinator. "Now we have them back so much that they can actually do some learning." The most common question when confronted with an artifact, she says, is " 'Is that real?' And if it is, they're thrilled." Some of the kids, in fact, now lead workshops, demonstrating skills like rustic toymaking.

Wandering around the museum, though, the present moment starts to seem mundane. The exhibits, which draw 100,000 visitors each summer, celebrate a romantic Adirondack past—river drivers and hermits and great camp owners with plush private railroad cars, porches full of rustic furniture, and hand-carved guideboats. Beautiful as the dioramas and reproductions are, they also feel exotic, as if from a foreign country. I try to imagine what from the lives of present-day Adirondackers might someday be enshrined here.

John Collins, in his Long Lake classroom, may have the best clue. "These kids have a sense of limits that other generations didn't have. It's a first-grade lesson—you can't have your cake and eat it too. You can't have the park and chop it up and sell it too."

But it's a lesson the world has never learned. "Limits" will be the globe's chief topic for decades to come—every crisis pressing in on us, from the greenhouse effect to population to species extinction—is a question of how large humans will be in relation to the rest of creation. The Adirondackers know more about limits than most folks—they've been living under evolving strictures for a century, and as a result are "smaller" relative to nature than people almost anyplace in the Western world. The region isn't going to grow its way out of its problems—hemmed in by law and by wilderness, it needs to create an economy that copes with stasis, a culture geared for repetition and steadiness.

Those limits often chafe, that smallness sometimes bothers. This is not a lagging, backward place, interesting for its packbaskets and rustic bedsteads. Adirondackers are, for better or worse, a vanguard culture. The whole world is going to have to live differently. The whole warming, depleting, unraveling planet will no longer be able to grow its way out of its problems. If we in the Adirondacks can learn to find joy in our situation—to see ourselves made rich and not poor by loon and beaver and pine and bog and trackless snow—it will not only help solve our third crisis, it will be the greatest of our gifts to the world. ■

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NORTH AMERICAN PRAIRIE

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prairie preserve is one of the oldest in the state, as close to virginal as it is possible to find. This is prairie the way you imagine it—the land is flat under the dome of the heavens, thickly growing goldenrod, big blue-stem, sunflowers, Indian grass, clover, bentgrass, and milkweed. Myriad other grasses and broadleaves (as they call them in the weedkilling business) rise and bend in the gusts of the west wind. Brilliant autumn yellows bloom everywhere against a background of late-season browny-green, though the summer's rains seem to have given the prairie an extra season of lushness. One or two shrubby trees grow among the grasses from seeds that in a natural course of events might have succumbed to prairie fire. The ground underfoot is entirely firm—a mat of roots and plants that tangle into humps and dips beneath my feet. But a hundred and sixty acres is only a quarter-section, after all, and the named and preserved Kalsow Prairie is entirely surrounded, as far as the eye can see, by fields of corn and beans, cut square by country roads, dotted here and there with houses and barns.

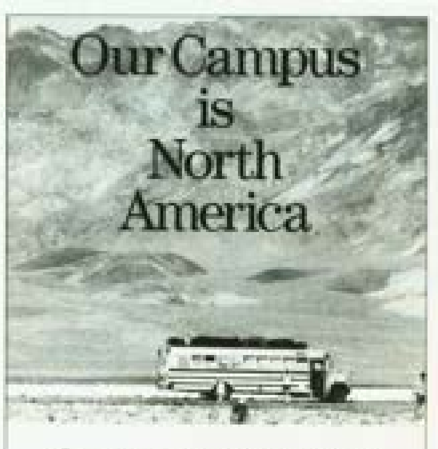
Immediately across the road from the prairie is a cornfield. The crop stands six or seven feet tall, blocky and graceless, awaiting enough dry weather for harvest. Between the road and the corn is a strip of wet, black soil, unprotected, ready to be washed or blown away. The crop looks better than almost all the corn I've seen on my way here—at least it is green rather than yellow, tall rather than sickly. The farmer who owns it may survive another few years.

The words commentators used to describe last year in Iowa, Illinois, Minnesota, and Missouri, the heart of the agricultural region and the region of the long-lost tallgrass prairie, are big words: "disaster" gave way in June to "catastrophe" in July. Right here, in the prairie-pothole region, where some creeks and rivers drain into the Missouri and some drain into tributaries of

the Mississippi, right here is where floods at Kansas City, St. Louis and Ste. Genevieve, Des Moines and Iowa City, are born. The floods we have seen are not an act of God, but a result of history, a result of choosing technology for an intensively tilled, monocultural, cash-crop-based agricultural system designed to satisfy the demands of ever-expanding markets, as well as an appetite for a meat diet based on feeding animals grains rather than herding them. More immediately, they are the result of altering the water-holding capacity of the soil. More importantly, they are a warning that we have taken too much from the prairie without giving anything back.

Many forces drive us to ignore the warning. One of them is that most of the media commentators know little or nothing about agriculture or the history of this region. Another is the unexamined conviction, shared by most people in our society, that agriculture as it has been done is agriculture as it must be done. Still another is a belief, promoted by those who are invested in the present agricultural methods, that the prairie (or California's Central Valley, or the farmlands of eastern Washington and Oregon) can all be made by technology to perform the way it looks like they should perform—as if they were man-made machines for the production of food—through the application of a little more force. Still another reason is greed, which is merely the conviction that humans have the right, God-given in the eyes of many, to possess and exploit every corner of the earth, that every square mile and every plant and animal species must "pay for itself," that the human life supported by agriculture is intrinsically valuable while other forms of life are not.

It is not "politically correct," or "morally right," or even "necessary" to heed the warnings abounding in the soil and water of the prairie. It is intelligent. Whether we do so or not is the measure of whether we have progressed beyond the Mesopotamians of four and a half thousand years ago, or whether we are, in fact, still caught in a comforting illusion of familiarity. ■



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from the so-called clean industries of Silicon Valley, and hydrocarbons washed off streets and out of the air by rainfall. With more than 75 percent of its wetlands lost to development, and with most of the river flow that once fed and flushed it now diverted for Central Valley agriculture, the bay is becoming a sluggish sink of human-generated poisons. Puget Sound suffers from the same insults, plus dioxin-forming dyes and bleaches released by paper mills. Recent studies indicate that young salmon merely *passing through* the sound are experiencing growth suppression and impaired immune system function.

But thoughts of pollution are far from my mind the next morning as I hike with a friend in the hills near Topanga Canyon. It's a bright, sun-soft day, the kind of day when it's easy to see why Southern California became the chief attraction of paradise. The chaparral gives off a sweet fragrance; the fleshy white blooms of the yuccas are just popping open. Between us and L.A., the Santa Monica Mountains stand tawny in their heights and green in their clefts, agreeably rugged and wild—wild enough, my friend tells me, to support a population of mountain lions. (One was seen, not too long ago, under a freeway overpass.) Even the infamous L.A. smog seems mild today. It's plainly there—an opalescence in the sky, a smarting in the eyes—but to dwell on it seems a mean-spirited quibble on a day so benign and blessed.

In fact, air quality in the L.A. basin has improved in the last few years, thanks to better emission controls on cars and—probably—the recession's effect on industrial sources. No environmentalist I spoke to was exactly elated, though, since even in its cleaner condition L.A. air was bad enough in 1992 to exceed federal standards for one pollutant or another 180 days of the year. The impact on human health is immeasurable, but it's been estimated that merely meeting federal standards would save $9 billion a year in health-related expenses in the greater Los Angeles area. No one has a choice about breathing, and those most susceptible to the ill effects of smog are those with the fewest choices of all—the elderly, the infirm, and children.

Air quality has been improving in other West Coast cities too, but as in L.A., there's little cause for celebration. The northern cities that scorn Los Angeles are coming more and more to resemble it, sprawling into far-flung suburbs designed around private-auto use, while public transit languishes. My own little Portland is doing the best of the lot, but even there the freeways are crammed at rush hour, the light-rail system is insufficient, and half a million more residents are heading our way, it's said, in the next 20 years.

All of which is miserably depressing as I begin the long drive north, my head aching with facts and numbers. In the face of the evidence, it's hard to be

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cheerful about the progress of the human experiment, on this coast or anywhere. Poet Robinson Jeffers called humankind a sick microbe, a self-doomed aberration, and in my present mood I can't argue with him—or with the brain scientists who say we're well wired for immediate threats, for fight or flight, but practically incapable of responding to continuous, long-term hazards. As if to confirm what I'm thinking, brake lights flash and traffic on the Hollywood Freeway congeals to an erratic creep. An accident, the radio reports. And of course this entire sprawling ramshackle village is an accident—a planless accretion of streets and freeways, of suburb after splayed-out suburb, an accidental splurge of 15 million souls mostly innocent, wedded to their cars, as I am, trying to make a living, as I am, trying to make it home in the smoggy orange evening so they can pack the freeways in the morning again for a new day of work.

I've been stuck in this same clog of traffic in every city on the coast, and I always react the same—like an angry child deprived of his freedom, a freedom whose costs and consequences I don't want to think about but can't help but think about, stewing in fumes on a gridlocked freeway. Somehow, we'll all have to settle for less freedom, or at least a different kind of freedom. However the human brain is wired, we'd better put it to use finding ways to live that don't poison ourselves and everything around us. And while we're at it, we'd better think about how we're going to control our numbers. The fix we're in is twofold, and the freeway this hot summer evening clearly displays it—too many of us fouling our nest, and too many of us period. Growth without limits is disease.

Out of town at last on U.S. 101, I think of the reintroduced condors in the Sespe Sanctuary to the north, and I hope they're alive and well tonight. I hope they can thrive in what wild territory they have left. Around midnight, soothed by hours of country music from Bakersfield, I'm winding up Highway 1 into the Santa Lucias, the Big Sur country, a landscape that never fails to lift me with joy. I park the car and clamber down a thicketed slope to a broad, grassy, moonlit terrace, which I share with a few frightened cows.

Below me, the luminous ocean rumbles against the last of North America, the very limit of paradise. From here, there is no virgin ground where we might flee our mistakes and start over. But if the soaring mountainside where I'm perched is land's end, it is also a beginning. Here, out of the windy chaos of possibility, a continent rises into being—mute, noble, unspeakably beautiful, and we unspeakably privileged to share it. *The world's well made,* wrote Jeffers, and despite the prophecies of his darker hours, we are well made too. We are arrogant, shortsighted, not nearly as intelligent as we think we are—but we are capable of nobility and generosity ourselves, and surely we are competent to live here if we will try. Below me the Pacific foams and surges, bearing its power from chartless reaches, as wild and perennial as hope itself. ■

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who assume rural bumpkins can't responsibly conduct business in their own backyards, don't incite much local applause—even though historically these assumptions have sometimes been true.

We might even get radical and consider a permit system for backcountry use on all public lands, periodically retiring for, say, three to five years any that begin to show signs of serious wear. We already put people on a list and make them wait eight or nine years for a permit to run the Colorado River through the Grand Canyon. We can do the same for a Jeep safari or a gonzo bike ride on Wilson Mesa. Recreation, like livestock, mining, and timber, is a federally subsidized activity on the public lands, and there is no obvious reason it should escape regulation. While we certainly need to reform the antiquated and environmentally destructive 1872 Mining Law, curtail timber sales in forests where logging threatens biological diversity, eliminate some of the 22,000 public-land grazing permits, and banish cattle from critical stream habitat (grazing accounts for 28 percent of all erosion in the West, where riparian areas are, according to the EPA, "in the worst condition in history"), we also need to control the deadly and ruinous *Homo sapiens*. It doesn't much matter to *Microcoleus vaginatus* whether it is mashed by a hoof, a boot, or a tire.

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The time is early evening, and I've come up here to escape the bedlam of Moab on Memorial Day weekend—and to reflect on my great good fortune on being 1,000 miles away from my own home turf in Northern California. The newspaper this morning reports gridlock at Yosemite National Park and the Park Service's advice to prospective holiday visitors to "stay home." In fact, they've decided to close the park's entrance gates for a given number of hours each day.

A thousand feet below me the broad bench of the White Rim, a 200-foot-thick layer of Cutler Formation sandstone left by the final retreat of a Permian sea, is already half in shadow. A few miles to the west and another thousand feet below the White Rim, I can see into the dark reaches of Stillwater Canyon and catch just a glimpse of the Green River, just a fingernail where the fading light catches it at the bend of a meander.

Fifteen miles to the west, beyond the river and across the northern extension of the Glen Canyon National Recreation Area, the Orange Cliffs rise in an undifferentiated wall at the edge of the San Rafael Desert, and in the *far* distance (now we're talking 80 to 100 miles), Boulder Mountain and the Aquarius Plateau block my view into Nevada. Well, Nevada is 300 miles off; maybe it's not *quite* that clear this evening.

Like almost any promontory along the rim of this mesa (Dead Horse and Grand View being the most visited), Murphy Point overlooks a 280-million-year-old layer cake of preposterous sedimentary rocks. A geologic hallucination. Every scribbler before me has apologized for an inability to communicate the lyricism of the view, *any* view, out here on the Plateau, and I hasten to join the ranks.

I don't care how many inspired images of Gothic architecture and sacred monuments I invoke, it's just a pile of rocks. It's just beachfront laid down by the to-ing and fro-ing of intermittent seas, by erosion from the Uncompahgre Uplift to the north, by blowing sand dunes that covered most of Utah during the Triassic and Jurassic periods. It's just detritus left in the wake of vast erosional forces that completely stripped 140 million years of deposited formations off the top (all that Dakota sandstone and Mancos shale—a vertical mile of everything, in fact, that once lay above the Navajo sandstone) and went on cutting down through the Kayenta, Wingate, Chinle, Moenkopi, Cutler, and Honaker formations to the ancestral rock of the Paradox Formation revealed at the bottom of Cataract Canyon.

Or, as one Mormon rancher trying to make a living in the midst of all that scenery once said, "It's a hell of a place to lose a cow." A frustrated resident of Garfield County once offered my father and me his opinion of the landscape as we argued one afternoon in Escalante over the proposed paving of the Burr Trail (then a primitive road between the mountaintop town of Boulder and the backside of Capitol Reef). "Red ledges!" he said. "Red ledges! What's so damn exciting about red ledges?"

The wind comes at me like an attitude across those red ledges, amid which I have assumed a twilight perch. It seems chipper and playful enough, though at the same time mercurial and wicked, as if possessed of a demoniac presence. I'm not much given to personification, but this wind, I think, flirts with me; I hear it coming like black riffles approaching across water, then flit suddenly away to boogie in the ricegrass and yucca. Without so much as a kiss. Harlot. I snub its next advance and it grabs my Charlie Tweedle imitation-beaver cowboy hat and flings it into the Jurassic void.

Sitting here in near-absolute silence, looking out over hundreds of square miles of incomprehensible grandness, I think, not altogether whimsically, that I have in some measure my father to thank for this view. In 1961 he came here as a special assistant to Secretary of the Interior Stewart Udall and spent days in a group trekking through the South Desert, Cathedral Valley, and the Waterpocket Fold, looking for areas that might be included in an enlarged

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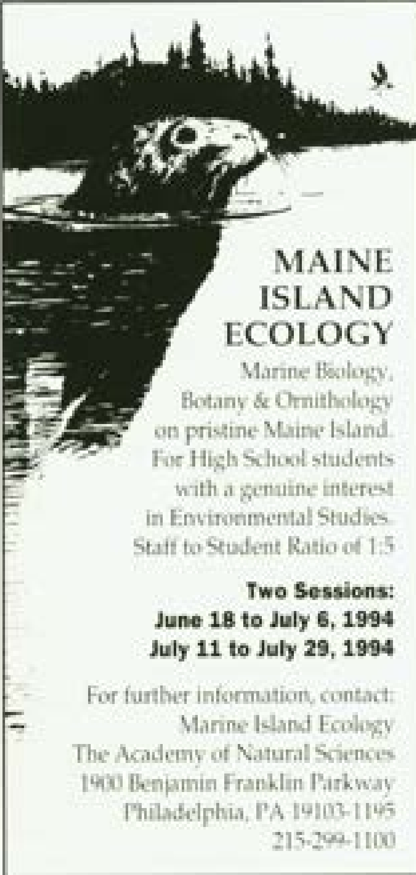

Capitol Reef. It was one of his hiking companions, Bates Wilson, superintendent at Arches National Monument, who promoted the idea of a Canyonlands National Park (and eventually became its first superintendent), but it took the foresight of Udall and all those who worked with him to transform vision into reality.

Since Udall, we've had more than 20 years of no sight at all. We've had development-oriented federal land-management agencies that, in concert with industrial interests and the cheerleaders of the property-rights movement, have actively promoted the degradation of the public domain and fought against the Wilderness Act mandate to set aside areas "for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness and . . . to provide for the protection of these areas [and] the preservation of their wilderness character. . . ." Of the 83.2 million acres (130,000 square miles) of the Colorado Plateau, only 0.5 percent (433,140 acres) has been designated as federal wilderness. The additional 5.7 million acres proposed by the Utah Wilderness Coalition would bring the total to 7 percent. Not much.

Anyway, what's so abhorrent about locking up a few more red ledges? For the first time in more than 20 years, we have an administration with the ideological disposition to reverse the habit of mind hostile to wilderness, and we can only hope it will take seriously the proposition that the *idea* of wilderness is more important to the human spirit than any "use" (occupational or recreational) we can put it to. The Plateau country, as my father wrote in the introduction to *Wilderness at the Edge*, is "not a country of big returns, but a country of spiritual healing, incomparable for contemplation, meditation, solitude, quiet, awe, peace of mind and body." We can create industrial and social nightmares anywhere and anytime we feel like it—unless we think we've got enough. "Wilderness once we have given it up, is beyond our reconstruction." ■

The time has come around once again to cast your vote for Sierra Club directors. This year 13 candidates have been nominated, 7 by the Nominating Committee and 6 by petition. They are, in alphabetical order: Carolyn Carr, Jim Dodson, Kathy Fletcher, Chad Hanson, Connie Hanson, Margaret Hays-Young, Laura Hoehn, Merwin Lucas, Don Morris, Gene Packard, Denny Shaffer, Duncan Stewart, and Adam Werbach. Also on the ballot is a proposition concerning Sierra Club forestry policy. Members should have received their ballots by now; if you haven't gotten yours, contact the Office of Volunteer Development, 730 Polk St., San Francisco, CA 94109, (415) 776-2211. To be counted, all ballots must be returned by April 9.

The Sierra Club has learned with regret of the death of Grant McConnell at his home in Bonny Doon, California, on September 27, 1993. He was 78. Philosopher, historian, teacher, and an important figure in the conservation movement, McConnell was a prime mover in the campaign for North Cascades National Park. A Sierra Club member since 1956, he first brought the North Cascades region to the attention of the Club and other conservation organizations in the early 1950s, and worked tirelessly for the park until it was finally established in 1968.

McConnell, the author of half a dozen books, including the widely praised *Stehekin: A Valley in Time* (The Mountaineers, 1988), taught for many years at the University of Chicago and, later, the University of California at Santa Cruz. He was instrumental in setting up the Board of Environmental Studies at the latter institution, where he was professor of political science until his retirement in 1980.

Abigail Avery, lifelong environmentalist and peace activist, died on December 21, 1993, at the age of 81. Avery, of Lincoln Center, Massachusetts, held a wide variety of positions with the Sierra Club during her 50-year involvement. In 1980, she received the Club's highest honor for service to the organization—the William E. Colby Award. In 1986 she became one of nine honorary Sierra Club vice-presidents.

Abby, as she was known to her many friends, was involved in a number of conservation causes, from saving cranes in China to preserving the North Cascades to helping in the fight against the planned drowning of James Bay. She unselfishly supported the work of the Sierra Club, both in her home region of New England and nationally. She will be missed by all who knew her. ■

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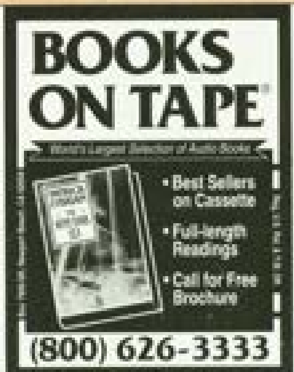

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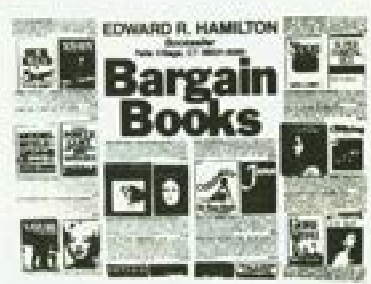

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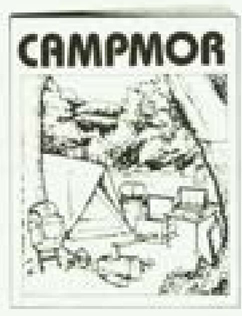

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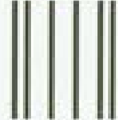

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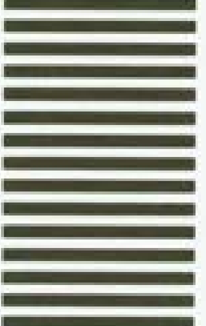

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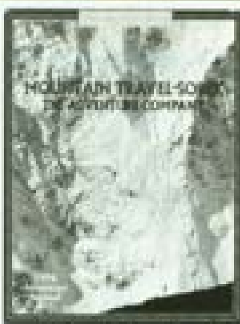

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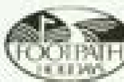

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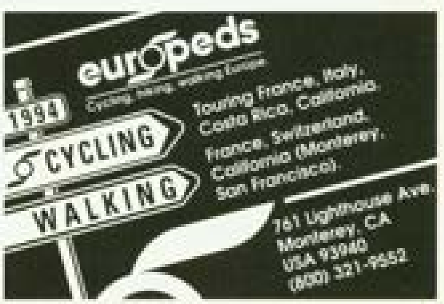

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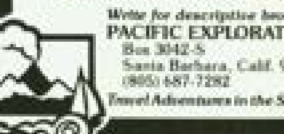
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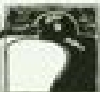

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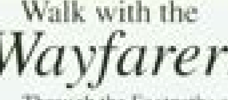

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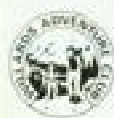

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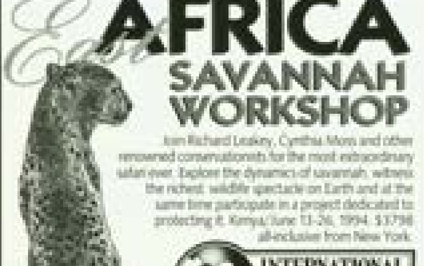

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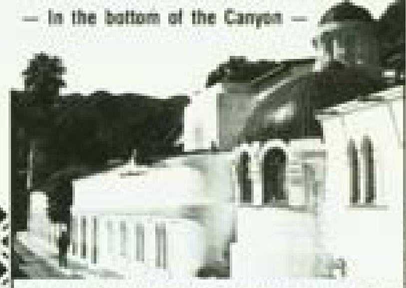

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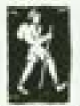
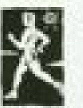
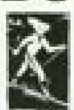

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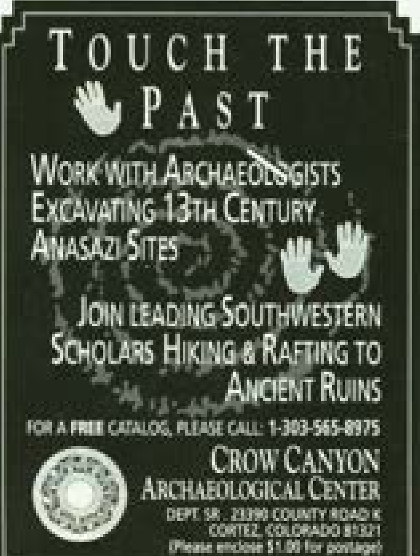

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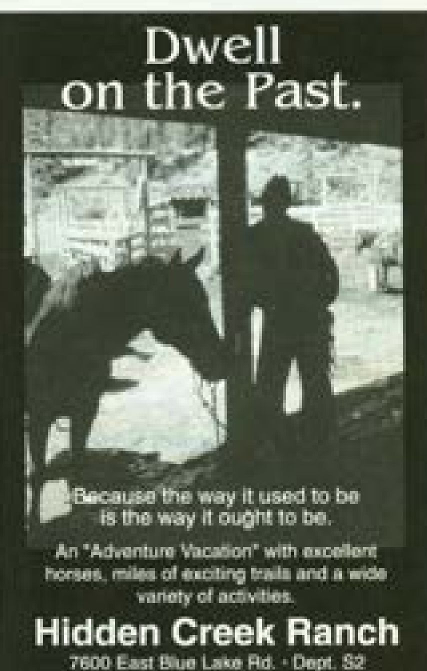

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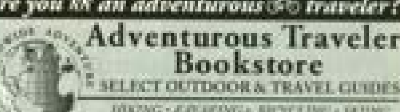

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WHAT GRADE DOES BILL CLINTON GET SO FAR ON HIS ENVIRONMENTAL REPORT CARD?

Bill Clinton has earned a D on his environmental report card. He has not worked up to his ability and is easily led astray by his companions. Billy did poorly on his North American Free Trade Agreement test; to make up the bad grade he earned, he needs to work harder to support strong environmental programs and legislation. He has good potential, and if he puts as much effort into a stronger Endangered Species Act as he did into NAFTA, his grade level will rise dramatically.
Joan Jackson
Carlsbad, California

I give Bill Clinton a "B" at this stage in his administration. Among my student friends, "B" stands for "Boring." It means that one showed up for class, turned in most assignments, and essentially went through the motions. It means that one did not exhibit originality or bravery.

In contrast to Baby Boomers, my generation does not see Clinton as a breath of fresh air. He has subjected the future environment of America to political compromise. Republicans and Democrats, amid vague Clintonian talk of "change," have resumed gridlocked politics as usual. Not surprisingly, many of my friends have given up the search for vision and, more importantly, have given up the search for a place called Hope.
Mark Fraioli
Sharon, Massachusetts

I give him a B-plus so far. The Sierra Club has been expecting too much in these difficult economic times. Let's work with Clinton and Gore and not become adversaries.
Joan Lindop
Prospect, Kentucky

Clinton gets a D-minus. The only reason he doesn't get an F is that we have the example of George Bush, who, I must admit, was worse. Clinton, Bruce Babbitt, and USDA Secretary Mike Espy have not only sold out to the logging, mining, and cattle industries, but have threatened the environmental community with "sufficiency legislation" that would make the administration's plans immune to legal challenge. Clinton's Forest Summit Option 9 plan allows logging of 40 percent of the Northwest forests, and provides no permanent and inviolate reserves, no prohibition of clearcutting in roadless watersheds, no ban on raw-log exports, and fewer restrictions on private lands.
Alfred S. Fuller
Sun Lakes, Arizona

I'd give the president an A, because I'm grading on a curve. Other recent pupils lowered my standards.
Rich Reis
Silver Spring, Maryland

I gave Clinton an A for his original budget proposal. The fact that the budget that finally passed was only marginally friendly to the environment indicates how much work needs to be done in 1994 to elect a greener U.S. Congress. I also gave him an A for his appointments, especially Interior Secretary Babbitt and the new head of the Forest Service, Jack Ward Thomas. Unfortunately, his final-exam results were disappointing. His support for NAFTA compromised environmental standards in favor of economic development. I gave him a D on this issue (instead of failing him) because, to his credit, he did what he promised to do during the campaign and obtained a side agreement on the environment.
David D. Boltz
Kirkwood, Missouri

"D" for Disappointing. He inadequately funded AMTRAK, ignored projected light-rail lines, scuttled any future plans for gasoline or energy taxes, and gave too much to the aircraft and highway lobbies. He offered no real reform on grazing or mining laws, and no move to ban logging in old-growth forests, save the spotted owl, or help retool the economy of the Pacific Northwest. He has said and done little to preserve farmland from suburban sprawl.
David Harris
Philadelphia, Pennsylvania

I give President Clinton a C-minus for his overall environment record. While his rhetoric and appointments have for the most part been very good, his follow-through on specific assignments has ranged from average to poor. Here's an annotated breakdown with marks:

SUPERFUND: D-plus. Clinton's proposed changes to Superfund, though designed to streamline the law, would instead destroy it.

EPA: D-minus. While his appointment of Carol Browner as head of the EPA is okay, he cut the agency's funds by 8 percent below Bush's recommendation.

INTERIOR: C-plus. Clinton's appointments of Bruce Babbitt as Secretary and Jim Baca as BLM head are commendable. However, the President recommended tens of millions of dollars less than Bush had requested for spending on parks and wildlife refuges, and he still has not helped Babbitt reform grazing practices.

RECYCLING: B-minus. Pushing for post-consumer content in federal paper purchases was a good move. But the administration has yet to push for the use of recyclables in product manufacturing.

WETLANDS: D-plus. Clinton's heavy reliance on mitigation and wetland banks rather than sensible wetlands protection is a major letdown.

ENERGY: C-plus. While there are many good things in his energy-action plan, almost all are voluntary.

TREATIES: A-minus. Signed the Biodiversity and Global Warming Treaties. The only weaknesses here are lack of money for implementation and an energy program that falls short of meeting global-warming commitments.
Ed Engle
Winston Salem, North Carolina

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