

PERC REPEATS



FOR FREE MARKET ENVIRONMENTALISM

ENVIRONMENTAL
justice for *ALL*

FUELING
the future

MORRO BAY
Fishery

STEGNER'S
Quotable Words

GREEN JOBS BOOM
OR BUST?



FROM THE EDITOR

BY LAURA E. HUGGINS

PERC, the Property and Environmental Research Center, is a nonprofit institute dedicated to improving environmental quality through markets.

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Now that President Obama has been in office for six months the report cards are pouring in. Many organizations give Obama an “A” for being “green.” The question, however, is not whether Obama has a green image, but whether his policies will really improve the environment. Based on this criterion, TERRY ANDERSON would not give the president such high marks.

Consider President Obama’s call for more than \$80 billion in spending and tax incentives to promote green jobs. Everyone favors good jobs and a healthy environment, but it’s not clear that spending money without knowing the facts about green jobs will get us either, according to PERC senior fellows ANDREW MORRIS and ROGER MEINERS and two of their colleagues.

Focusing on energy, Obama has promised to spend \$15 billion a year to spur green technologies such as biofuel. ALISON BERRY claims there are reasons to be suspicious of the subsidy-ridden alternative energy industry. She suggests that using woody biomass to help generate heat and power rather than producing ethanol may be a more economically sensible solution.

Environmental justice is another area where policies crafted with good intentions don’t always have good outcomes. Before the new administration resorts to more political remedies for environmental inequity, SPENCER BANZHAF suggests looking at the social mechanisms underlying the issue. Cleaning up pollution in disadvantaged communities may actually harm poor people by triggering gentrification and higher housing costs.

A group that truly deserves an “A” on its final report card is the Nature Conservancy in conjunction with the Environmental Defense Fund and the Morro Bay fishing community for their collaborative effort to save fish, marine habitat, and the local economy at the same time. ROBERT DEACON elaborates on how economic incentives can prevent the destruction of sustainable stocks of fish.

Also in California, guest columnist JONATHAN ADLER highlights a recent court decision that could have a significant impact on water rights and species conservation efforts. As Adler points out, the *Casitas* decision is a small but important step toward achieving both endangered species protection and fairly distributing the costs of saving such species.

In thinking about current environmental policies, it is worthwhile to reflect back as PATTY LIMERICK does on the most quotable words of author Wallace Stegner who once claimed “you have to get over the color green” and think about the long-term environmental impact of today’s policies.

We welcome your comments online at percreports.org. Opinions from the spring issue on stream access are featured on page three.

Laura E. Huggins | EDITOR

?	What do you think about green jobs?	Go to www.percreports.org and give us your answer.
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Readers speak out

MIXED STREAM ACCESS

I'm torn. Some of my fondest Montana memories come from days of fly-fishing publicly accessed streams. In contrast, I've also conducted redd counts on one of the state's most highly contested "stream access" streams and witnessed first-hand the natural resource benefits of privatization. Personally, I would like to see a mix between public and private access based on the size of the stream and an ecological ranking system. For example, privatizing access to high-ranking spawning tributaries and leaving the larger, more resilient, rivers open to the public; thus creating incentives from both public and private parties to effectively manage the resource.

—Chris Corbin

OWNING THE RIVER

The underlying premise of several of your articles in the spring issue of *PERC Reports* is that rivers can be privately owned. Awfully conceited of man to think he can own a river. So much of life depends on rivers. If I could own one, I'm not sure I'd want the responsibility. Just like a river, we're all just passing by. Best we focus on being good stewards of the uplands and leave the rivers to do what they do best.

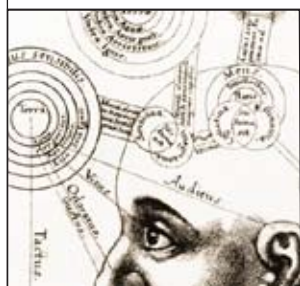
—Rick Craiger

SUPPLEMENTAL LICENSE FEES

I just read Randy Simmons' article [Utah's access decision could backfire on anglers] on stream access in *PERC Reports* and liked his moderated tone. I think the fly-fishing community in Utah is reasonably enlightened on the property rights perspective at this point and there should be an opportunity to reach a compromise next year. I do think there should be public access to navigable streams wherever landownership is highly fragmented (as on the Blacksmith Fork), but not in situations like the one Simmons described. What bothers the angling community is the "waste" of potentially excellent habitat by ranchers or others who have no appreciation of the potential value of the resource they control, and no regard for the common pool dimensions of the resource. In our view, the market just doesn't work (or work quickly enough) in too many of these cases.

What I would like to see is a program of incentives to jump start the market and to encourage landowners to respect common pools. I could support supplemental license fees to subsidize private landowners who make habitat improvements so long as they are willing to sell access rights to anglers who pay the supplemental fees. Too often, private waters are accessible only to people who can pay thousands of dollars to join a club or spend a week on a plush dude ranch. Private landowners do a good job of meeting angling demand at the ultra high end of the market, but there is very little available for the other 95% of us.

—Michael Lyons



Tell me what you think!

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IS OBAMA GREEN?

Of course, President Obama is “green.” These days, it’s hard to find anyone or anything that isn’t. Barack and Michelle have their organic White House garden. George “dubya” has solar panels at his ranch. There are carbon offsets for the electricity that powers chairlifts at ski resorts and carbon neutral pet care. And then there’s the “first green concession stand” at the San Francisco Giants’ baseball stadium. Clearly, the President has no choice but to be on the green bandwagon.

The question, however, is not whether Obama has a green image, but whether his policies will really improve the environment. This is the question Laura Huggins and I ask in our book, *Greener Than Thou: Are You Really an Environmentalist?* Another question to pose is whether Obama’s green policies really are good for the economy. The answer to both is an emphatic NO.

Start with the president’s March 30 signing of the Omnibus Public Lands Management Act, which creates more than 2 million acres of wilderness land. According to his rhetoric, “This legislation guarantees that we will not take our forests, rivers, oceans, national parks, monuments, and wilderness areas for granted, but rather we will set them aside and guard their sanctity for everyone to share. That’s something all Americans can support.”

The facts in PERC scholar Holly Fretwell’s recent book, *Who is Minding the Federal Estate*, suggest otherwise. For example, between 90 and 200 million acres of federal forests are at high risk of burning in catastrophic fire events, according to the Forest Service’s own estimates. Federal lands are taken for granted.

And if environmental irresponsibility were not enough in the government’s land management agencies, fiscal irresponsibility is rampant. Between 2006 and 2008, the National Forest Service lost an average \$3.58 billion each year. The Government Accountability Office testified in Congress that, in 2004, the Bureau of Land Management earned approximately \$12 million in grazing revenues but spent \$58 million implementing its own grazing program. The color of this act is not green; it is red from the sea of red ink that will flow from it.

The environmental and fiscal irresponsibility regarding land management pales in comparison to President Obama’s plans to reduce greenhouse gas emissions. Obama’s approach to global warming is that cutting carbon is good regardless of the cost. He proposes reducing U.S. carbon emissions by 14 percent from the 2005 level by 2020 and by 83 percent from the 2005 level by 2050. Unfortunately, there is no scientific basis to suggest that such cuts will have any impact on global temperatures over the next 100 years. This is espe-



Photo by Terry Anderson

cially true given that China is now the world's largest carbon emitter and growing daily. Again Obama is green in rhetoric only.

Furthermore, the cost of pursuing Obama's carbon policy should have us all seeing red. The Lieberman-Warner bill, under consideration in Congress and supported by the administration, is estimated to cost \$800 to \$1,300 per household annually by 2015, rising to \$1,500–\$2,500 by 2050. The Congressional Budget Office breaks down the burden of achieving a 15 percent reduction in carbon emissions as follows: the bottom quintile of households will see their after-tax incomes fall by 3.3 percent; the middle quintiles will see theirs fall between 2.7 and 2.9 percent; and the top quintile will see theirs fall by 1.7 percent. Hence, the cost of carbon reduction is highly regressive, meaning it is shouldered more by the poor than the rich.

The Obama administration contends that using a cap-and-trade system will keep costs of reducing greenhouse gas emissions down. At the same time, it estimates that selling carbon emission permits will bring in \$646 billion to the treasury over the next 10 years, and independent estimates place the amount closer to \$1 trillion. Because a disproportionate amount of this cost will fall on regulated utilities, expect this cost to be passed on to consumers. That is why the *Wall Street Journal* appropriately calls carbon cap-and-trade "an inconvenient tax."

Finally, consider President Obama's program to create green jobs especially through renewable energy technologies. Renewable energy currently supplies only 7 percent of America's energy demands. Even in

California with its abundant sunshine, solar accounts for less than 0.2 percent of its electricity. Expanding these amounts in any meaningful way given current technologies is implausible.

Obama wants to grow the renewable and alternative energy sectors in the name of green. But even environmentalists are increasingly suspicious of the real environmental impacts—witness the ethanol environmental debacle. And taxpayers should be equally suspicious. A recent study by the Fraser Institute in Vancouver, British Columbia, estimates that each green job the Obama administration proposes to create will cost \$418,800. Again, green should have people seeing red.

Green rhetoric from President Obama has glossed over three important points which are necessary for moving the environment and the economy forward. These are 1) that green policies should be measured in terms of their real impact on the environment and on the economy; 2) that Obama's green initiatives are likely to slow economic recovery in the United States and world economies; and 3) that slower growth will undermine environmental improvements at home and abroad.

Is green really green? Not necessarily, especially when the environmental consequences are questionable and the economic costs are astronomical.

In "On Target," PERC's executive director TERRY L. ANDERSON confronts issues surrounding free market environmentalism. He can be reached at perc@perc.org.



GREEN JOBS

B O O M O R B U S T ?

By Andrew P. Morriss, William T. Bogart, Andrew Dorchak, and Roger E. Meiners

An aggressive push for a green economy is underway in the United States. Policymakers routinely assert that “green jobs” can simultaneously improve environmental quality and reduce unemployment. As Van Jones, the White House green jobs guru, stated, “We imagine formerly incarcerated people moving from jail cells to solar cells—helping to harvest the sun, heal the land and repair their own souls.” Unfortunately, these claims about the wonders of green jobs are built on myths about economics, forecasting, and technology.

Our team of researchers from universities around the nation surveyed prominent green job reports from a variety of organizations including the United Nations Environment Program (UNEP) and the Center for American Progress (CAP) to find that they over-hyped the potential to create good jobs from industries like wind and solar power. It turns out that special interest groups promoting green jobs use dubious assumptions and techniques in their analyses.

These missteps are alarming as proposed policies for green jobs could lead to a smaller economy—reducing the wellbeing of most people. Citizens deserve a careful analysis of and informed public debate about green jobs claims and recommendations before sweeping changes are initiated through the government. To help in the debate, we expose the myths so the facts can be seen more clearly.

MYTHS V. FACTS

“ *Myth 1: Everyone understands what a green job is.* ”



“ *Fact 1: No standard definition of a green job exists.* ”

According to the studies most commonly quoted, green jobs pay well, are interesting to do, produce products that environmental groups prefer, and do so in a unionized workplace. Such criteria have little to do with the environmental impacts of the jobs. To build a political coalition, green jobs have become a mechanism to deliver something for members of many special interests in order to buy their support for a radical transformation of society. Committing hundreds of billions of dollars to promoting something lacking a transparent definition cannot be justified.

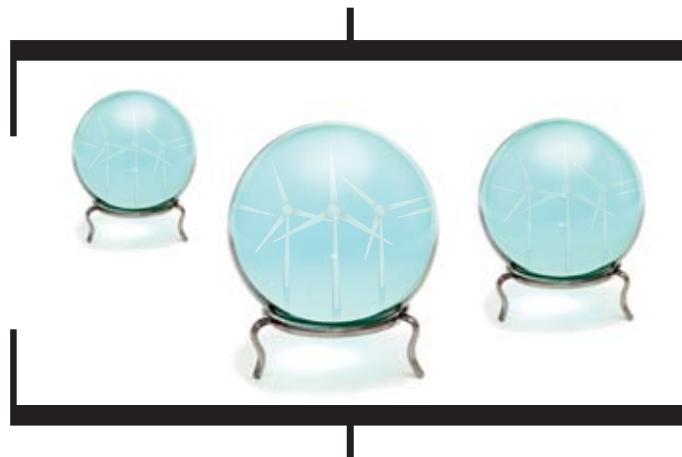
“ Myth 2: Creating green jobs will boost productive employment. ”



“ Fact 2: Green jobs estimates include huge numbers of clerical and administrative positions that do not produce output. ”

Green jobs studies mistake any position receiving a paycheck for a job creating value. Simply hiring people to write and enforce regulations, fill out forms, and process paperwork is not a recipe for creating wealth. Much of the promised boost in green employment turns out to be in non-productive—and expensive—positions that raise costs for consumers. These higher paying jobs that fail to create a more eco-friendly society skew the results in both number of green jobs created and salary levels of those jobs.

“ Myth 3: Green jobs forecasts are reliable. ”



“ Fact 3: Green jobs studies make estimates using poor models based on dubious assumptions. ”

The forecasts for green jobs often optimistically predict an employment boom that will create prosperity in a new green world. The forecasts are unreliable because they are based on: questionable estimates by interest groups taken from tiny base numbers in employment; extrapolation of growth rates from those small numbers that does not take into consideration that growth rates eventually slow, plateau, and even decline; and a biased optimism about which technologies will improve. Moreover, the estimates use a technique (input-output analysis) that is inappropriate to the conditions of technological change presumed by the green jobs literature itself. This yields seemingly precise estimates that give the illusion of scientific reliability to numbers that are actually based on faulty assumptions.

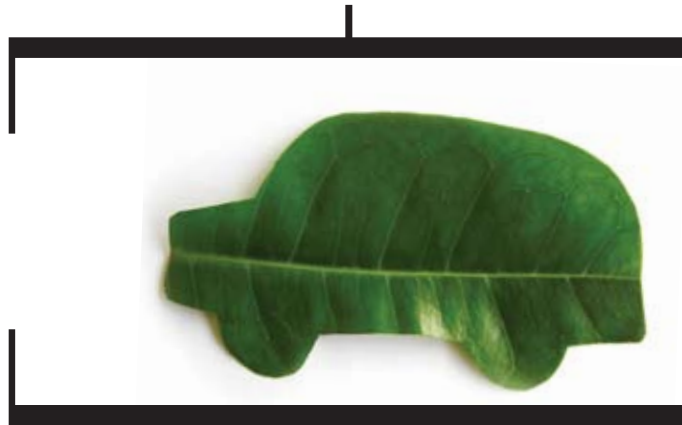
“ Myth 4: Green jobs promote employment growth. ”



“ Fact 4: Promoting more jobs instead of more productivity leads to low-paying jobs in less desirable conditions. ”

Green jobs estimates promise greatly expanded and well-paid employment. This is a false promise. The green jobs model is built on promoting inefficient use of labor. The studies favor technologies that employ large numbers of people rather than those technologies that use labor efficiently. In a competitive market, the factors of production, including labor, are based on productivity. By focusing on low-productivity jobs, the green jobs literature dooms employees to low wages in a shrinking economy. The studies also ignore the millions of jobs that will be destroyed by the restrictions imposed on disfavored products and technologies.

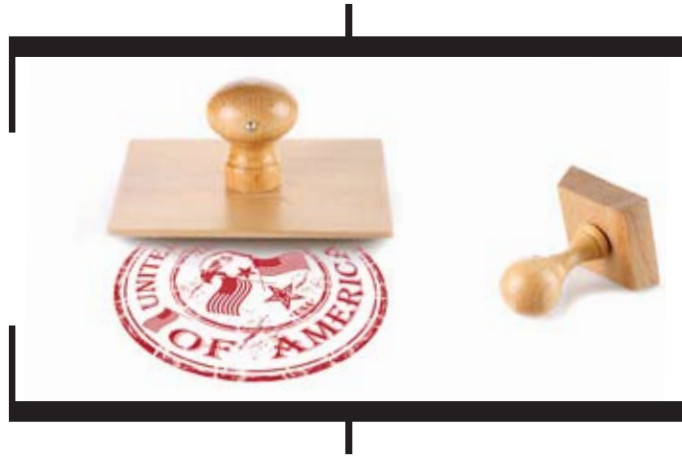
“ Myth 5: The world economy can be remade by reducing trade, relying on local production, and lowering consumption without decreasing our standard of living. ”



“ Fact 5: No nation can produce everything citizens need or desire. ”

The green jobs literature rejects the benefits of trade and specialization, ignores opportunity costs, and fails to include consumer surplus in its welfare calculations. This is a recipe for an economic disaster. Even the favored green technologies, such as wind turbines, require expertise and intellectual property rights largely provided by foreigners. The twentieth century saw many experiments in creating societies that did not engage in trade and did not value personal welfare. The economic and human disasters that resulted should have settled the question of whether nations can withdraw inside their borders.

“ Myth 6: Government mandates are a substitute for free markets. ”



“ Fact 6: Companies react quicker to the demands of customers and the market than they can to cumbersome government mandates. ”

Green jobs supporters want to reorder society by mandating politically favored technologies and expenditures. But obeying government mandates is not the same as the responses arising from market incentives. Powerful evidence demonstrates that markets prompt the same resource conservation that green jobs advocates purport to desire. The rising cost of energy, for example, is an incentive to redesign production processes and products to use less energy. People do not want energy; they want the benefits of energy. Those who deliver more desired goods and services by reducing the cost of energy are rewarded. On the other hand, we have no evidence to support the idea that command-and-control regimes accomplish conservation.

“ Myth 7: Wishing for technological progress is sufficient. ”



“ Fact 7: Some technologies preferred by green jobs studies are not capable of meeting today’s demands. ”

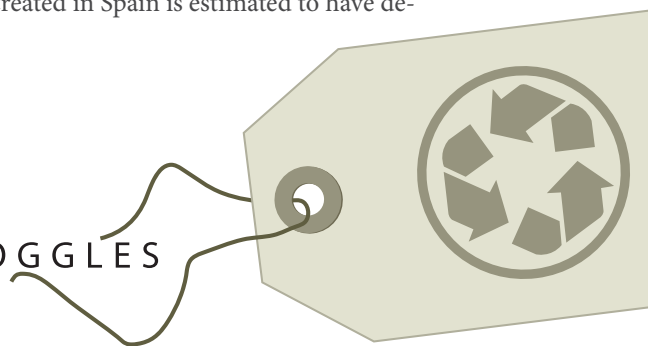
The technologies favored in the green jobs reports face significant problems in scaling up to the levels they propose. These problems are well documented in readily available technical literature, yet are ignored in green jobs publications. At the same time, existing viable technologies that fail to meet the green jobs supporters’ political criteria are rejected out of hand. This selective technological optimism/pessimism is not a sufficient basis for remaking society to fit the dream of planners, politicians, or special interests who think they know best, despite empirical evidence to the contrary.

UNSTATED TRADEOFFS

Before jumping on the green jobs bandwagon, one should also consider what the nation gives up to fund green employment. The CAP report, for example, asserts that if \$100 billion is spent on green activities, that 935,200 jobs would be directly created, implying a cost of \$107,000 per new job created. Most people could go to a state university full time for four years for that sum. Either the funds for these programs were taken from the pockets of people who now have \$100 billion less to spend on other things, causing an economic contraction in those other areas, or it is a bill passed on to the grandchildren of today's taxpayers in the form of deficit spending. These costs are real and must be considered in any debate.

This point is brought home in a recent study directed by Dr. Gabriel Calzada on green jobs in Spain. That country has poured resources into renewable energy sources and is hailed as a leader in solar and wind power. The 50,000 green jobs created in Spain required an expenditure of \$38 billion or an astounding \$760,000 per job. The net employment result was negative; the large sums spent on green jobs drained resources out of other parts of the economy and raised energy prices. Some companies moved production facilities to lower-cost energy countries. In short, each green job created in Spain is estimated to have destroyed 2.2 other jobs.

BEYOND BOONDOGGLES



The costs of proposed green jobs programs are staggering. For example, the UNEP report concludes that “No one knows how much a full-fledged green transition will cost, but needed investment will likely be in the hundreds of billions, and possibly trillions, of dollars.”

The scale of social change that would be imposed is also immense. Green jobs advocates propose dramatic shifts in energy production technologies, building practices, food production, and so on. These calls for radical economic changes promise not only a revolution in our relationship with the environment, but the employment of millions in high-paying jobs. Unfortunately, the analysis provided is flawed, resting on a series of myths about the economy, the environment, and technology and ignoring the opportunity costs of creating green jobs.

To attempt to transform society on the scale proposed by the green jobs literature is an effort of staggering complexity. To do so based on the wishful thinking and bad economics embodied in the reports would be the height of irresponsibility. There is no doubt that significant opportunities abound to develop new energy sources, new industries, and new jobs. A market-based discovery process will do a far better job of developing those energy sources, industries, and careers than can a series of mandates based on flawed data. The policy debate should be open so we can dispel the myths and focus on the facts.

This article is based on a longer essay "7 Myths About Green Jobs." This PERC Policy Series is available at perc.org.

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FUELING THE FUTURE

BY ALISON BERRY

Saws are buzzing on national forests, but these are not your typical logging operations. Instead of taking down big trees for shipments to lumber mills, loggers are cutting saplings and clearing brush from the understory. Such “fuels reduction” treatments are a nationwide effort to reduce risks of wildfire. Heaps of woody biomass—small trees and brush too small to be turned into two-by-fours—are left behind to decompose or to burn under controlled conditions. This biomass instead could be used to generate energy and be part of a solution to the nation’s “addiction to oil,” and to greenhouse gas emissions. In the process, loggers remain employed and the risk of wildfire on national forests is lowered.

A market for biomass is emerging since state and federal regulations began mandating the production of energy from renewable sources, but a closer look is warranted before we trade in our gas guzzlers, power plants, or furnaces. Each use of biomass—for ethanol, electricity, or heat—comes with its own set of complications.

Cellulosic Ethanol

Cellulosic ethanol, which comes from non-corn feedstocks such as woody biomass, is touted as “the holy grail of biofuels.” As a renewable fuel source that is produced domestically and is carbon-neutral, biomass is an attractive alternative to fossil fuels. Yet economical production has proven elusive. In fact, commercialization has been “about five years away” for decades. Scientists continue to dispute the best technique for converting biomass to ethanol and, to date, there are no commercial-scale cellulosic ethanol refineries in operation.



CELLULOSIC ETHANOL



Although production of cellulosic ethanol is meager compared to corn-based ethanol, there are advantages to creating ethanol from biomass rather than corn. Cellulosic ethanol does not interfere with food production or require intensive agriculture. Raw materials—including not only wood, but grasses, yard trimmings, and even municipal waste—are abundant and cheap.

On the other hand, cellulosic ethanol is expensive to produce—\$3.35 per gallon compared to \$2.35 for corn-based ethanol, according to a report by Cato Institute economists Jerry Taylor and Peter Van Doren. Both are more costly than gasoline, which is currently selling for approximately \$2.05 at the pump.

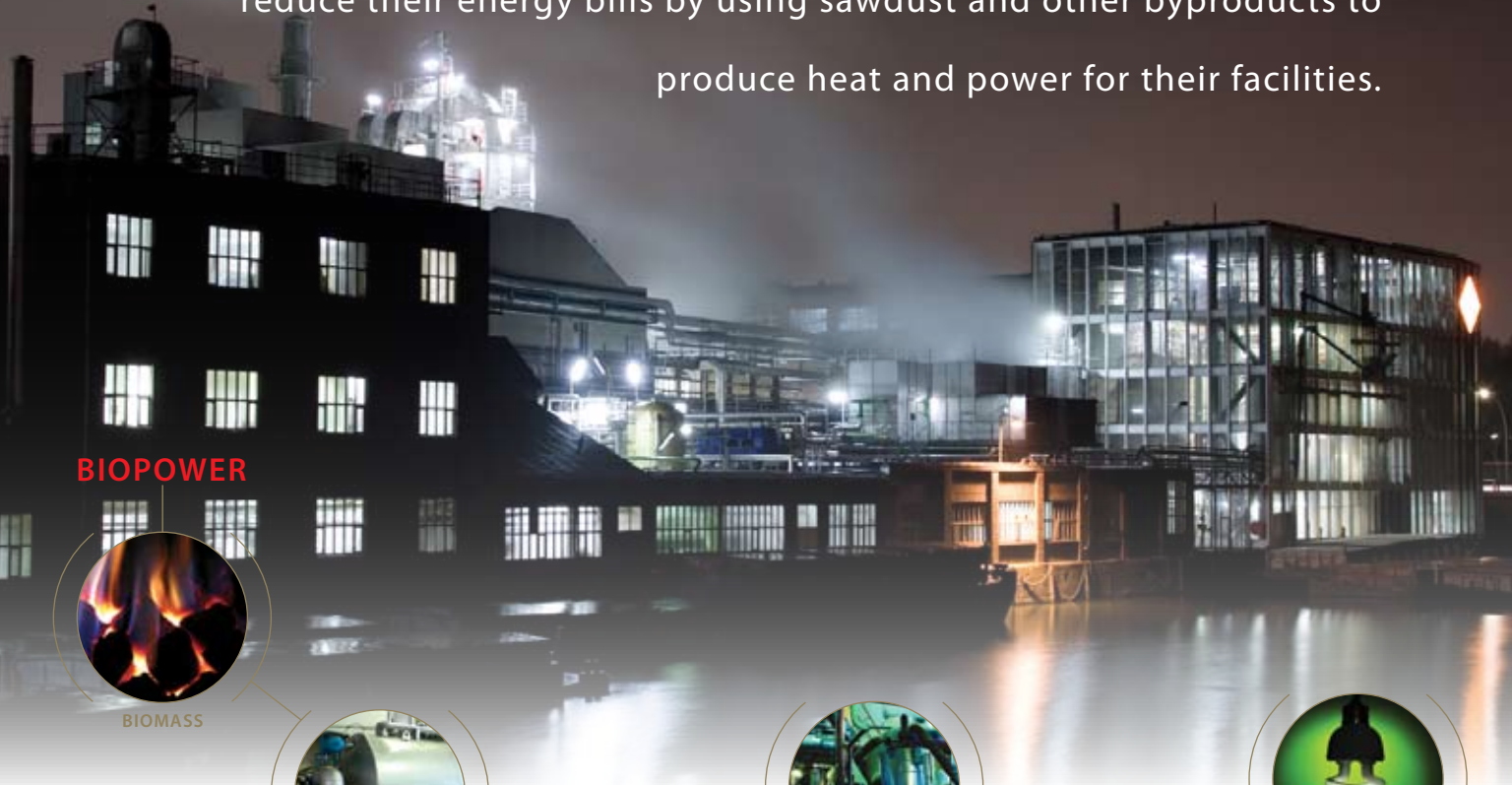
To keep the alternative fuel competitive, the federal government has subsidized ethanol since the 1970s. Doug Koplow from the energy subsidy research firm Earth Track, estimates that ethanol subsidies are between \$1.05 and \$1.38 per gallon, or around \$5.1 billion to \$6.8 billion annually.

Not only does the government subsidize ethanol, it mandates its production. The Energy Security and Independence Act of 2007 requires the annual production of 36 billion gallons of ethanol for transportation fuel by 2022. Of this, 16 billion gallons must be cellulosic ethanol.

The combination of the subsidy and the mandate will cost taxpayers billions of dollars. A more efficient approach would be to support research aimed at bringing the costs of production of cellulosic ethanol down, so that the fuel could be competitive with gasoline without a subsidy.

For example, Coskata—a renewable energy company—claims that it can produce cellulosic ethanol for less than \$1 per gallon. Although this technology is still small-scale, and far from commercially available, it represents a possibility that the ethanol subsidy could be eliminated. Until that happens, the best place for cellulosic ethanol is a laboratory, not your gas tank.

For decades, paper and lumber mills have found that they can reduce their energy bills by using sawdust and other byproducts to produce heat and power for their facilities.



BIOPOWER



Biopower

Another option is to generate electricity from biomass. Unlike cellulosic ethanol, “biopower” is based on mature technology. For decades, paper and lumber mills have found that they can reduce their energy bills by using sawdust and other byproducts to produce heat and power for their facilities. In 2007, 70 percent of the energy used at Weyerhaeuser’s pulp and paper mills was fueled by biomass.

Some mills are going one step further and selling electricity on the grid. One example is on the Warm Springs Indian Reservation in Oregon, where the tribal mill has generated heat and power since the 1970s. An abundance of biomass has spurred the tribes to consider increasing power production for sale to Oregon consumers.

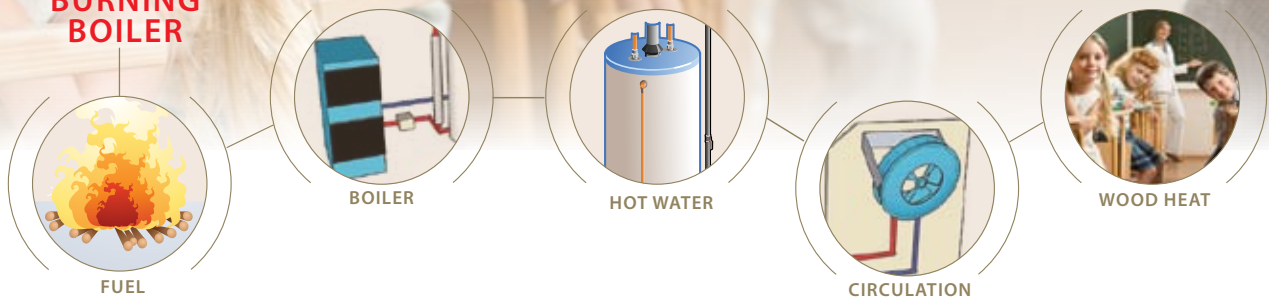
The tribes manage 400,000 acres of forest, and much of this is in need of restoration to mitigate fire risks. In addition, the tribes will use biomass from neighboring Forest Service and Bureau of Land Management lands. The power plant will run on 125,000 dry tons of biomass each year, producing 15 megawatts of electricity—enough to power 15,000 homes.

Like ethanol, biopower producers receive some support from the government. For example, since 1992, biopower producers have been able to take advantage of tax credits amounting to as much as \$1.5 billion annually in recent years, according to Koplow. While this is a considerable sum, it is still much less than the multi-billion dollar ethanol subsidies.

Even before tax credits for biopower were available, mills were able to save money by generating electricity from biomass. This indicates that with an abundant source of biomass on hand, generating power from wood is an economically feasible operation that can provide an outlet for non-timber forest products as well as an alternative to fossil fuels.



WOOD BURNING BOILER



Feed the Fire

A decidedly low-tech option might be the best outlet for woody biomass: burning wood for heat. Although this idea is far from cutting edge, it has provided a solution for high heating costs and overgrown forests in many areas of the country.

States like Montana, Nevada, North Dakota, Wyoming, and Utah, for example, have developed “Fuels for Schools” programs, which take fuels for wildfire out of the woods, and use the biomass to heat schools or other public buildings.

The small town of Darby, Montana, in the Bitterroot Valley south of Missoula, was one of the first communities in the Rockies to install wood-powered boilers in their schools. Darby is surrounded by national forests and local residents were well aware of heightened fire risks on federal lands.

After Congress passed the National Fire Plan in 2000 and the Healthy Forests Restoration Act in 2003, federal fuels reduction treatments increased, leaving forest managers in the Darby area with loads of biomass at their disposal. At the same time, Darby school administrators were looking to cut down on heating costs. As a result, the Montana Fuels for Schools program sprang to life.

Darby replaced its oil-powered boiler with a wood-powered boiler in the summer of 2003. Emissions from the wood boiler, which is extremely efficient, are nearly 20 times cleaner than from a wood stove.

After a couple years of using the oil boiler as backup, by 2006 the school was heated entirely by wood. Annual heating costs fell by almost 50 percent, according to a report from the schools.

Today, there are 16 Fuels for Schools projects. Rural schools are taking advantage of abundant biomass that is nearby, cheap, and efficient for heating.

Wood heat is not subsidized anywhere near the level of ethanol or biopower. Between 2001 and 2003,



States like Montana, Nevada, North Dakota, Wyoming, and Utah have developed “Fuels for Schools” programs, which take fuels for wildfire out of the woods, and use the biomass to heat schools or other public buildings.

the Fuels for Schools program received about \$2.2 million in federal funding, according to a recent study from the Forest Service and the University of Minnesota—pennies compared to the handouts to ethanol and biopower. Furthermore, even without federal dollars, schools can save money by heating with wood. Indeed, the best use for biomass may simply be to burn it.

Tried and True

Woody biomass is an untapped resource with much potential. A market for this forest product would better encourage forest restoration, fire risk reduction, and supplement timber dollars.

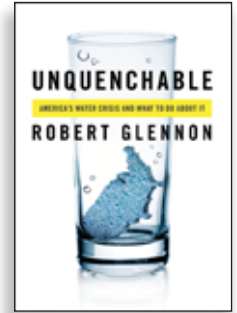
Producing energy from biomass may seem like an ideal situation—reducing dependence on fossil fuels while addressing forest health issues. But a closer look reveals some problems. Most prominently, the alternative energy industry is rife with subsidies, with ethanol enjoying the highest amount of government support.

Using biomass to generate heat and power is a more practical solution. Unlike ethanol, generating power and heat from wood saves consumers money when compared to traditional fuel sources.

As the Warm Springs Reservation and the Fuels for Schools program demonstrate, biomass can generate heat and power effectively and economically. In these cases, energy production is creating a market for an otherwise unused resource—and helping forest restoration at the same time.



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Unquenchable: America's water crisis and what to do about it

The United States must come to terms with its lavish use of water and, at the same time, figure out serious solutions to the immediate problem related to access to water.

University of Arizona James E. Rogers College of Law professor Robert Glennon details the nationwide issue in his new book, *Unquenchable: American's Water Crisis and What We Can Do About It*. The book was published in April by Island Press.

The 400-page book delves into issues related to wealth, privatization, farming, water consumption, “water alchemists,” water harvesting, and other topics.

The solution to the “water crisis,” according to Glennon, is not in towing icebergs from Alaska or in having citywide mandates to only allow for lawn watering twice a week, as was recently suggested in Los Angeles.

“Americans are spoiled. We turn on the tap and out comes a limitless amount of high quality water for less money than we pay for cell phone service or cable television,” said Glennon.

“Because water is so cheap, people don’t value it,” he added.

Yes, conservation must be a major part of the solution, but controlling population growth and using price signals and market forces to allocate water are also critical, he said. One suggestion would be to shift use rights to allow water rights to be transferred from farmers to buyers. That way, farmers could sell land that has the lowest crop yields, reducing their reliance on the water source.

And while water is a product, “we should recognize a human right to water for basic needs. After that threshold level, we need to price water appropriately,” he said.

He began working on the book shortly after publishing *Water Follies: Groundwater Pumping and the Fate of America's Fresh Waters* in 2002. The book set Glennon on a nationwide tour during which he became more deeply embroiled in water-related issues and concerns.

The introduction of his new book reads: “We tend to look at Las Vegas and think it’s a unique case, perhaps a cautionary tale but barely relevant to where the rest of us live. But the truth is, when it comes to water, Vegas offers us a glimpse of our own future.”

Glennon then provides a series of examples in recent years as evidence:

- California farmers opted to cut down to their stumps of hundreds of healthy avocado trees to prevent them from dying off as a result of water shortages.
- Commercial fishing was cancelled off of California and Oregon’s coasts because of the fall of the Sacramento River Fall Chinook salmon population.
- Atlanta came within about 90 days of running out of water. As a result, outdoor watering and filling swimming pools were among the activities that were outlawed.
- When the water supply for Orme, Tenn., began to run out, the town had to truck water in from neighboring Alabama.
- Fully loaded cargo ships were unable to float on Lake Superior, one of the world’s largest freshwater lakes, because its water level had dropped.

What’s more, people are continuing to move to states that have the greatest water access problems or where water resources are most stressed—California, Florida, Texas, and Arizona being among them.

The book is not simply for the western region of the United States.

“At the same time, it’s not a uniform, national problem,” Glennon said. “The basic problem is that people look at water as though it were air. Infinite. Inexhaustible. In fact, water for most practical purposes is finite and exhaustible.”

Something must give, and if it is not the nation’s extravagant and mismanaged water use, that deterioration will come in the form of an extinguished water source and also in a broken down economy.

“Water lubricates the American economy just as oil does,” Glennon said, noting that major U.S.-based companies such as Intel and Google and those producing ethanol and energy need sizable amounts of water for production and network operations.

“We’re running out of oil,” Glennon said, “but we need to be as concerned about running out of water.”

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Robert Glennon is the Morris K. Udall Professor of Law and Public Safety at the University of Arizona and was a PERC Julian Simon Fellow. *Unquenchable* can be ordered at Islandpress.com.



Morro Bay Fishery Charts Bold Course

BY ROBERT DEACON

Morro Bay is a picturesque coastal community in central California. The town's most prominent physical feature is Morro Rock, the remnant of an ancient volcano, which stands at the entrance to the bay that gives the town its name. This small bay is home to a fleet of trawlers that target petrale sole, sand dabs, sablefish, and other groundfish. With an overcapitalized fleet and declining fish stocks, Morro Bay's commercial fishing industry has suffered economically over the past two decades. This is a part of a widespread trend—between 1987 and 2003 gross revenues from Pacific groundfish trawling fell by two-thirds.



Worsening the situation, commercial trawling has come under increasing criticism for its negative environmental effects. Bottom trawling involves dragging large, weighted nets across the seafloor, which can harm corals and rocky bottom structures. Avoiding sensitive habitats or using different gear can minimize these damages, but existing regulations provide no incentives to practice such safeguards.

Bycatch, the incidental take of non-commercial species, is an additional environmental concern in this fishery and in trawl fisheries in general due to the non-selective nature of commercial trawling. By one estimate, 26 percent of the world's entire commercial catch is discarded each year. Fortunately, bycatch is far less severe in the area in question and there are abundant stocks of many of the target species. The main problem is to catch target stocks more selectively, so as to avoid a few overfished species such as canary and yelloweye rockfish, and cowcod. Under existing regulations, the entire fishery is closed if incidental catch of a depleted species exceeds a regulatory limit. Unfortunately, the same regulations provide no reason for individual fishers to minimize bycatch, so bycatch-induced closures have been common.

COLLABORATE OR COLLAPSE

The local community identifies with the commercial fishing industry, regards it as an important factor in the town's appeal to visitors, and is anxious to keep it economically viable. With bleak economic prospects and growing environmental concerns, however, the future of commercial fishing in Morro Bay is uncertain at best.

These problems can be compared to land-use conflicts, where economically valuable activities such as ranching and farming conflict with the conservation of sensitive habitats and the flora and fauna they support. Conservation organizations often find, however, that they can achieve their goals by negotiating voluntary agreements in which landowners receive compensation for modifying the way they use their land. These agreements, called conservation easements, sometimes prohibit "negative" actions such as residential development, logging woodlands, or farming near streams, or mandate "positive" practices such as providing recreational access to property. Conservation easements typically apply in perpetuity and bind future owners. As of 2005, the acreage under conservation easements in the United States stood at 7.8 million acres, an area roughly the size of Maryland.

Conservation easements have certain advantages over legislated land-use regulations as a strategy for achieving conservation. Because they are voluntary and provide compensation, they do not work against the



With an overcapitalized fleet and declining fish stocks, Morro Bay's commercial fishing industry has suffered economically over the past two decades.

landowner's interests, which can be a political advantage in gaining adoption. In addition, they are flexible and can be tailored to the attributes of individual parcels; land-use regulations typically must be applied uniformly. Importantly, the original owner maintains possession and the original economic use of the land often continues, so the economic benefits of the owner's specialized knowledge are not lost.

Using conservation easements to protect the ocean environment seems like a non-starter because there is no property owner with whom to negotiate. However, commercial fishing permits do delineate rights to use the marine environment in specified ways and this raises the possibility of negotiating a conservation easement on the permit. Under such an agreement, the permit holder would cede rights to some actions that are legal but environmentally damaging, in return for compensation. Intuitively, this approach to conservation works better when existing permits clearly define the right to use the resource.



TRIO OF UNLIKELY PARTNERS

The Nature Conservancy's (TNC) conservation goals for the central California ground fishery were to change the method of fishing from bottom trawling to less damaging trap and hook and line gear and to exclude commercial trawling from sensitive habitats. Existing regulations made it impossible to negotiate easements that would stipulate these conditions on the trawl permit directly, necessitating the use of a less direct strategy. Working with the Environmental Defense Fund (EDF), TNC entered into discussions with the 22-member trawl fleet on California's central coast with the objective of improving the ecological and economic performance of this fishery. Over time, TNC succeeded in acquiring 13 permits and 7 trawl vessels. Some of the vessels purchased were retired; other vessels were leased, with permits, to commercial fishers with restrictions on the kind of gear used. Thus, while the permits could not be encumbered directly, the desired objectives were met with lease restrictions.



There is a reason to hope that marine conservation easements will become a widespread tool for ocean conservation in the future.

The Nature Conservancy and EDF also wished to greatly reduce trawl effort on sensitive habitats, an outcome that required regulatory action by the Pacific Fishery Management Council. Illustrating a key advantage of the voluntary easement approach, TNC and EDF gained the support of Morro Bay fishers and the local community by agreeing to buy back trawl permits and vessels from any who wished to sell if the no-trawl zone was adopted. With conservation, community, and fishing interests arguing in favor of the closure, the effort was successful. The outcome is a no-trawl zone of some 3.8 million acres.

Another important advantage of the easement approach is flexibility in adapting individual agreements to specific circumstances and latitude for experimenting with different conservation approaches. These features allowed TNC to negotiate a “conservation fishing agreement” with Morro Bay fisherman Ed Ewing, using one of the vessels it purchased in 2006. The vessel and permit lease agreement specified geographic, monitoring, and gear restrictions. Using available science, TNC developed a geographic plan that focuses effort on soft bottom seafloor that had been heavily trawled for many years, while avoiding sensitive hard bottom areas. The monitoring component included tracking by a Vessel Monitoring System, extensive use of observers, and collection of fishing log and fish ticket data. In addition, the gear used is both smaller and lighter than traditional deep water trawl nets.



BEYOND MORRO BAY

Early signs of success from Morro Bay led TNC to try a similar experiment in Half Moon Bay, a coastal community to the north. One permit holder based there had long used Scottish seine gear instead of bottom trawl nets to harvest sand dabs and petrale sole. This alternative method catches bottom fish in a more environmentally friendly manner than traditional trawling—making the catch particularly attractive to buyers in the San Francisco Bay area. Scottish seining does not require the heavy doors and cables used with traditional trawling and the lighter gear and gentle retrieval process dramatically reduce sea floor degradation. This method has also been shown to result in low bycatch rates. To ensure that this practice continues, TNC negotiated with the individual to purchase the permit and then leased it back with the stipulation that the use of Scottish seine gear continue and with some geographic restrictions on areas fished.

The Nature Conservancy regards its first year of commercial fishing with these permits and restricted lease conditions as a success. Six of the permits it owns were granted an 'exempted fishing permit' by regulators, which allowed the desired gear switching. The voluntary, contractual approach to marine protection is supported by the participating fishers and the local community, and has been approved by the regulators. It has also demonstrated broad scope for flexibility and experimentation. The environmental interests involved regard it as a promising way to reduce bycatch and to reduce seafloor damage. In light of these achievements, and compared to the torturous task of pursuing environmental protection through regulatory change, there is reason to hope that marine conservation easements will become a widespread tool for ocean conservation in the future.

Special thanks to the Nature Conservancy and Bridget Besaw for the generous donation of the Morro Bay photographs for this article. See interview and slideshow feature at nature.org/wherewework/northamerica/states/maine/news/news2679.html.



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ECONOMIST, n. a scoundrel whose faulty vision sees things as they really are, not as they ought to be. —*after Ambrose Bierce*

PROPERTY RIGHTS & PROSPERITY

Secure property rights are central to economic prosperity. It was the emergence of secure property rights that laid the foundation for the Industrial Revolution and the subsequent explosion of per capita incomes. Around the world today, it is variations in the security of property rights that play a central role in explaining differences in prosperity across nations.

A recent study by Markus Goldstein and Christopher Udry (2008) adds to our knowledge of the mechanisms by which insecure property rights wreak their havoc on living standards. The authors find that in West Africa, a system of land reallocation that reduces the security of property rights in farmland reduces investment in land improvements, and hence reduces incomes. Importantly, the paper adds to a large and growing body of evidence that the risk of expropriation is a formidable bar to human progress.

Goldstein and Udry study the economic organization of farming in Ghana, where most of the land is under the ultimate control of chiefs and is allocated locally through matrilineal descent systems of control. Precisely who within the lineage will cultivate a specific piece of land is normally the outcome of complex, often contentious negotiations. Moreover, the precise dimensions of the rights accompanying a piece of land are variable over time. For example, the act of cultivating a plot of land may—or may not—include rights to the produce from trees on the land, the right to rent out the land, or the right to pass cultivation rights on to one's heirs. It is a system in which, for most pieces of land, property rights are both ambiguous and negotiable—

indeed, some would say tenuous.

The principal uncertainties do not lie in the ownership of the product of current cultivation. In fact, as long as cultivation is ongoing, existing tenure is secure. But because fertilizer is expensive relative to the value of the land and the key crops of maize and cassava (pictured right), fallowing to allow land fertility to regenerate is the most important type of land investment in Ghana. Yet under the matrilineal system of land rights there, land that is fallow—not under current active cultivation—is subject to reallocation from one individual to others, based on the asserted economic need of the potential beneficiaries. Immediately after a growing season, the land is too exhausted for expropriation to be much of a threat. But as the fertility of land rises during the fallowing period, so too do the incentives of others seeking expropriation. The result is a compelling incentive for individuals to shorten the period of fallowing to avoid loss of the land. This reduces land productivity and, thus, overall wealth.

Within this system, there is one set of characteristics that lowers the chance that a farmer's land will be expro-



priated—elevated status in the social and political structure. For example, farmers whose families have been in the region longer appear to have stronger de facto property rights. Most importantly, political officeholders have markedly stronger property rights than others. For non-officeholders, there is a 40 percent chance that fallow land will be expropriated during the year; this chance is cut in half for the holders of political office. Hence, officeholders are willing to leave their land fallow for longer periods, which makes for more fertile and thus more profitable land. It will come as no surprise then that annual agricultural profits are roughly 75 higher among officeholders compared to those who do not hold political office, or that the overall wealth of political officeholders is more than double that of those who do not hold office.

It seems peculiar that individuals would select an institutional design that has such devastating effects on both productivity and wealth. In other work, Pande and Udry (2006) propose an explanation. Land reallocation under the matrilineal system in Ghana operates as a type of social insurance system because an important determinant of who receives the land is “need”—the asserted economic hardship facing the recipient. The system originally developed many decades ago when population and land rents were much lower and fallow periods on virtually all land were sufficiently long for full restoration of fertility. It was a time when the difference in economic value between fallowed land and land that had simply been abandoned was much lower than today. Hence the costs of the insurance system were modest when it was devised. As population and land values have grown in Ghana (and elsewhere in West Africa where similar systems are in place), the costs of land reallocation have grown substantially; they now represent a considerable impediment to a higher standard of living. It remains to be seen whether the rising costs of land reallocation will induce institutional adaptation in the region.

Many factors play a role in poverty, whether it is in West Africa or elsewhere. The factors identified by the authors of this paper cannot account for all of the deprivation we see in Ghana, but the paper fits nicely into a growing literature that makes one point abundantly clear: Without secure property rights, prosperity is a pipe dream.

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AND ENVIRONMENTAL JUSTICE FOR ALL— BUT LIBERTY COMES FIRST

BY SPENCER BANZHAF



In 1982, some 450 activists were arrested protesting the construction of a hazardous waste facility in Warren County, N.C., a primarily poor, black community. Since that time, the “environmental justice” movement has shined a spotlight on the disproportionate environmental burden borne by minorities and the poor. Researchers have confirmed that poor people and minorities do indeed live in polluted neighborhoods more often than other groups do. This pattern has been found in numerous contexts. For example, disadvantaged groups live closer to hazardous waste facilities and landfills and live in communities with more air pollution.

These findings have sparked a broad activist movement that has won several policy victories. At the federal level, President Clinton’s Executive Order 12898, still in force, requires nondiscrimination in federal environmental programs and focuses federal resources on low-income and minority communities. In addition, several environmental justice acts have been introduced in Congress. At the local level, stakeholders have won a bigger voice in the approval process for new polluting facilities and have filed lawsuits against governments for discriminatory environmental enforcement. In one prominent case, they forced California’s Southeast Air Quality Management District to settle a suit over the geographic distribution of trades under its pollution trading program.

But before resorting to political and legal remedies for environmental inequity, it is crucial that we understand the social mechanisms underlying it. Such mechanisms determine the nature and locus of any injustice, how a policy affects the demographic pattern of exposure to pollution (if at all), and who bears the costs and reaps the benefits of any cleanups.

Cleaning up pollution in disadvantaged communities may actually harm incumbent residents.



Why the Poor Live Near Pollution

There are at least four mechanisms that potentially explain the disadvantaged groups' higher exposure to pollution. First, disadvantaged groups have less political power. Consequently, they may be less successful at lobbying government agencies to protect their communities from pollution, making it more likely that permits for dirty facilities are approved in poor or minority communities. Likewise, existing facilities may be monitored less stringently for compliance with environmental regulations. Reinforcing these effects, polluting firms may be more attracted to such communities precisely because they know they will not be scrutinized as closely as in other areas. There is some evidence for this effect, with pollution increasing in areas with lower voter turnout. If the correlation between pollution and demographics lies in these mechanisms, then it arises from government failures. Either reforms are required or, alternatively, non-governmental mechanisms for determining pollution patterns should be considered.

Second, where a firm decides to locate may have nothing to do with demographics, but the correlation may arise in response to pollution. In particular, if pollution drives down real estate values, people looking for inexpensive housing may move to polluted neighborhoods. Poorer households are particularly likely to do this. Though they may not like pollution, they may be willing to put up with it in exchange for lower housing costs. Poorer households experience lower environmental quality for the same reason that they enjoy less of most goods: simply because this is what it means to be poor.

Similarly, a third mechanism may be that there are characteristics about some communities that simultaneously at-



tract disadvantaged households and polluting firms. For example, just as disadvantaged groups may prefer lower land prices, so too may polluting facilities. Moreover, land prices may be lower near transportation corridors like highways or railroads. Poor people live near them because of the low housing costs and polluting facilities do because of lower transportation costs for manufactured goods or wastes. And finally, both poorer households and polluting facilities may be mutually attracted to low-wage, low-skilled labor markets. In this case, the correlation between pollution and disadvantage groups again arises from the fact that these groups have lower incomes. The effect is reinforced by the unhappy coincidence that some affordable features of the inexpensive communities are actually attractive to polluters.

A fourth mechanism may be a direct market in pollution. Such markets can arise if property rights to a clean environment are well defined. The rights may be codified explicitly by law or may be recognized implicitly as part of a common tradition. In any case, when rights are well defined, polluters will have to contract to dispose of their pollution. Where they do so will depend on the prices they can negotiate, which in turn will depend on the willingness of different parties to take on pollution. Again, if disadvantaged groups prioritize money (and the things it can buy) over a clean environment, they may be more likely to accept lower compensatory payments for pollution. Accordingly, polluters would be more likely to strike bargains in such communities. In other words, the distribution of pollution will be the result of market activities. In fact, there is evidence that this process plays

at least some role, with about half of landfills making some payments to their host communities.

The Market Strikes Back

But even if property rights are not well defined, markets will still determine where pollution occurs, but without explicit negotiation over the pollution itself. The simple reason is that some resources are impacted by pollution and become less valuable, while unaffected resources might become more valuable. Real estate is a particularly important example. After an increase in pollution in a community, land values in that community are likely to fall, while nearby alternatives might appreciate. These market results have important implications for the effects of various environmental justice policies. For example, if pollution lowers land prices, and if poorer households systematically locate in lower-priced communities, any policy designed to break the correlation by targeting firms' behavior eventually will be reversed by households' behavior. As long as pollution crops up somewhere, the cycle is likely to repeat itself: land values will fall, the rich will move out, and the poor will move in.

Moreover, cleaning up pollution in disadvantaged communities may actually harm incumbent residents. The cleanup is likely to trigger gentrification and increase housing costs. These increased housing costs may more than offset the benefit of a cleaner environment. Of



course, for those who own their homes, this appreciation represents an appreciation in their housing assets. But most poor households are renters. For them, gentrification represents an increase in rents, which benefits only absentee landlords. Such unintended consequences of environmental cleanups are now a major concern of local stakeholders, as seen in a recent report by the National Environmental Justice Advisory Council.

Empowering the Poor

Many of these mechanisms imply that the exposure of different groups to different levels of pollution arises in part from their individual choices. The word “choice” here must be interpreted carefully. It is not meant to imply that poor minority households are in the same position as rich households when it comes to the choices they face. It does suggest, however, that they are competent to work out how best to improve their own welfare, given the opportunities that are available to them. By choosing to live in more polluted but lower-cost areas, they are revealing that inexpensive housing is a higher priority than environmental amenities. Similarly, by accepting compensation to host polluting facilities, they are revealing that they prefer those compensatory payments.

Either way, because a market is involved in distributing environmental quality to different groups, people pay a price, possibly a hidden one, to obtain a cleaner envi-

ronment. When an outside group (such as a government regulator) decides to force a cleanup, it may impose that price on the very groups who would rather not pay for it. If the price is giving up the compensatory payments from polluters, whoever enjoyed those benefits most will pay the price. If the price is higher housing costs, then poor renters will pay the price. By contrast, when households operate in a free market for environmental resources, they will only purchase (or sell) a cleaner environment when it is truly to their advantage. Policies that benefit the poor the most will leverage their ability to help themselves, by giving them more property rights or other resources that can enable them to take advantage of market opportunities.

This article is based on a longer essay “Environmental Justice: Opportunities through Markets.” This PERC Policy Series is available at perc.org.



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Celebrating Wallace Stegner's *most quotable words*

BY PATTY LIMERICK



Editor's note: The following is extracted from a talk by Patty Limerick (author of *The Legacy of Conquest*) delivered at a recent symposium celebrating the centennial of Wallace Stegner's birth. Stegner, an American novelist, essayist, and environmentalist, is often called the "Dean of Western Writers." His works include *The Big Rocky Candy Mountain*, *Angle of Repose*, *Beyond the Hundredth Meridian: John Wesley Powell and the Second Opening of the West*, and *The American West as Living Space*.

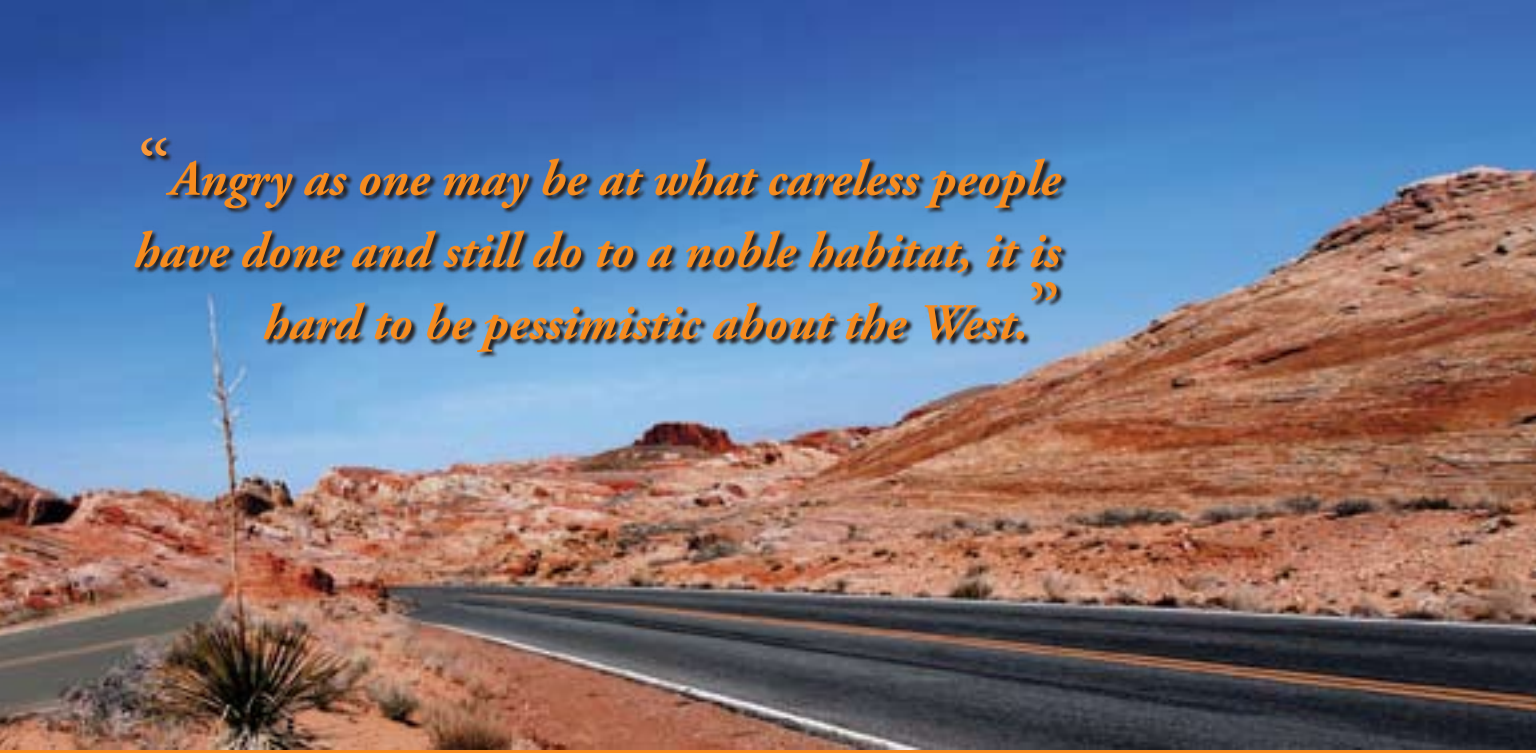
Through the vitality and wisdom of his written words, Wallace Stegner remains an influential presence in the American West. When it comes to the consequences of aridity or the Western myth's power to shape the behavior of its believers, no one is Stegner's equal in expression. His fans and followers could take equal inspiration from his contradictions.

ARIDITY

On the West's lower rates of precipitation and higher rates of evaporation, Stegner's quotable remarks are apt, forceful, and everywhere. In *Marking the Sparrow's Fall*, describing life beyond the hundredth meridian, Stegner portrays a geographical line beyond which

. . . unassisted agriculture is dubious or foolhardy and beyond it one knows the characteristic western feel—a dryness in the nostrils, a cracking of the lips, a transparent crystalline quality of the light, a new palette of gray and sage green and sulphur-yellow and buff and toned white and rust-red, a new flora and a new fauna, a new ecology.

Stegner's reflections on the color green carry particular punch. In his words, "You have to get over the color green; you have to quit associating beauty with gardens and lawns." Contemplate that remark, and then think about the irony built in to a common habit of expression. The environmental movement uses the word "green" as a synonym for "environmentally friendly" or "compatible with and adapted to nature." And yet, ladies and gentlemen, in the American West, green is the color of the Bureau of Reclamation. Green is the color of disturbed ground; it is the color of places where you have utilized water you have diverted from other places. Bright green, in other words, is the color of disturbance.



“Angry as one may be at what careless people have done and still do to a noble habitat, it is hard to be pessimistic about the West.”

WESTERN MYTH

Stegner is equally thought-provoking when he takes on the power—and goofiness—of the Western myth. In a great passage from the essay, “History, Myth, and the Western Writer,” he speaks of what he calls the “amputated present” in Western writing:

I want only to underscore the point I made earlier about the absence of a present in western literature and in the whole tradition we call western. It remains rooted in the historic, the rural, the heroic that does not take into account time and change. This means that it has no future, either. Nostalgia, however tempting, is not enough; disgust for the shoddy present is not enough; and forgetting the past entirely is a dehumanizing error...Millions of Westerners, old and new, have no sense of a personal and possessed past; no sense of any continuity between the real Western past, which has been mythologized almost out of recognizability, and a real Western present that seems as cut off and pointless as a ride on a merry-go-round that can't be stopped.... If you are any part of an artist, and a lot of people are some part of one...then I think you don't choose between the past and the present, you try to find the connections, you try to make the one serve the other.

Stegner then puts an “Old Western” analogy to work:

In the old days, in blizzardly weather, we used to tie a string from house to barn so as to make it from shelter to responsibility and back again.... I think we had better rig up such a line between past and present.

With a clarity of vision that approaches the powers of x-ray, Stegner looked into the Western soul, and revealed the ways that Westerners themselves modeled their behavior on what they found in wild west dime novels, movies, and television shows.

Nobody devours Westerns more hungrily than the bona fide cowboy; nobody is so helplessly modeled by a fictional image of himself. What directly affects the cowhand indirectly affects people who have never had a close acquaintance with a horse or cow. A lot of clerks and soda jerks in western cities are partly what fact and history have made them and partly what the romantic imagination and traditional stereotypes tell them to be.

In an early phase of my own career, I put heart and soul into fighting the Western myth. Reading Stegner's quotable words offered me a better understanding of why separating the myth from actuality proved to be such a tough and unrewarding task. Much of actual Western behavior has been shaped by people thinking they are riding the range as they go to work on Seventeenth Street in Denver and engage in stock transactions.

“ Everything about the dam is marked by the immense, smooth, efficient beauty that seems peculiarly American. Though no architect designed it and no one mind planned its massive details, it has the effect of great art. ”



CONTRADICTIONS

And now we get to contradiction as an important feature of Stegner’s long-term legacy to Westerners. Our minds, like Stegner’s mind, are quilts and mosaics; our principles and convictions are hybrid, mixed, and rarely pure. In truth, when our thinking is pure, it is time to see a neurologist to see where the malfunction lies and if it is treatable. No one would find much to admire in a quilt or mosaic that was consistent, pure, and only of one texture or color. In the same way, it is a pretty dull literary heritage that is pure and consistent. In a writer’s work, some contradictions are sequential, the record of the changes in a person’s attitude through time. But some contradictions are simultaneous, reflecting the workings of a complicated mind and an equally complex soul. Rather than wincing over and trying to unsnarl the contradictions in an admired writer’s works, fans and followers are well advised to embrace them.

Stegner forthrightly put a spotlight on his own contradictions when he included the essay, “The Rediscovery of America: 1946,” in his collection, *The Sound of Mountain Water*. As he wrote in the preface,

These essays... probably show me getting my education in public. For example, I am amazed to find myself, in “The Rediscovery of America,” speaking admiringly of Hoover Dam and Lake Mead. I know better now, or at least know enough not to speak well of reclamation dams without looking closely at their teeth. But I have not changed the essay or any of the essays.

Good for him for leaving his early opinions on record, unchanged. Here is what Stegner said of Lake Mead. I do not quote this to mock it, to regret it, or to do any hindsight quarterbacking at all to it. One reason to let it stand is that the spirit in this passage is pretty close to what I myself felt in September of 2007, the last time that I was at Hoover Dam (called Boulder Dam at the time of Stegner’s visit).

Two days on Lake Mead and an afternoon and evening going through the Dam and the powerhouses have made boosters of us. Nobody can visit Boulder Dam itself without getting that World’s Fair feeling. It is certainly one of the world’s wonders: that sweeping cliff of concrete, those impetuous elevations, the labyrinths of tunnels, the huge power stations. Everything about the dam is marked by the immense, smooth, efficient beauty that seems peculiarly American. Though no architect designed it and no one mind planned its massive details, it has the effect of great art.

Stegner goes on to talk about the positive economic contributions of the Dam. Should his fans find all of this an embarrassment, as he himself did years later? In truth, I find more credibility and persuasiveness in critiques of reclamation written by authors who recognize and acknowledge the power, impressiveness, and even the beauty of the dams. Such critiques are more grounded and more realistic. Purity and consistency would produce mosaics and quilts of one color, and judgments of one dimension.

“We are a wheeled people; it seems to me sometimes that I must have been born with a steering wheel in my hands. . .”



That same essay from 1946 contains a passage that provides material for a fun guessing game. Read it aloud to friends, and ask them to guess which noted Western writer composed it, and I doubt you will get many winning guesses. In this passage, Stegner undertakes to tell us

...how it feels to be out on the road again, dry camping in the desert, hitting the road after five years of rationing and restrictions, doing what a good third of America is doing this summer of 1946, if the polls and the prophecies mean anything. For many people—and I sympathize with them—one of the least bearable wartime deprivations was the loss of their mobility. We are a wheeled people; it seems to me sometimes that I must have been born with a steering wheel in my hands, and I realize now that to lose the use of a car is practically equivalent to losing the use of my legs. Returning to the road after a layoff of several years is like re-establishing intimacy with a wife or a lover. There are a hundred things once known and long forgotten that crowd forward upon the senses, and there is the sharp thrill of recognition in all of them.

This is a fine summation of the seductiveness of the automobile, and it is an equally excellent reminder of our complicity with many of the structures and customs we have grown fond of denouncing. There are, after all, people in the Rockies who occupy the highest ground of environmental principle and who regularly put their mountain bikes or skis on their SUVs to drive to appropriate places to use that equipment. Since they are driving in a state of ideological grace, it may well be that their emissions are cleansed of carbon dioxide and other atmospheric troublemakers. Under these circumstances, it is great that a writer of Stegner’s standing gives us such a memorable tribute to the joy of driving a car through the Western landscape. That does not mean that we have to stick loyally and uncritically by that joy; in truth, this honest admission of complicity adds to Stegner’s validity and force as a critic of our habits.

I end with the most cited of Stegner’s legendarily quotable remarks, carrying a resonant phrasing that does indeed guide us through space and time. Stegner knew that much of what had happened in the American West had undermined or contradicted the hope he puts forward here. And yet, speaking of contradictions, it remains a sentiment worth our respect and attention.

Angry as one may be at what careless people have done and still do to a noble habitat, it is hard to be pessimistic about the West. This is the native home of hope. When it finally learns that cooperation, not rugged individuals, is the pattern that most characterizes and preserves it, then it will have achieved itself and outlived its origins. Then it has a chance to create a society to match its scenery.

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Drill bits bite the dust

As the push for green energy continues to gain momentum, new wind and solar projects are popping up as quickly as dandelions. It seems most everyone is gazing skyward for salvation, yet one form of carbon-free energy still lays waiting beneath our feet. Geothermal energy never gained much traction with the tech types or the venture capitalists, but that may all be about to change.

Bob Potter, who worked at the Los Alamos National Laboratory in New Mexico during World War II, is using some of his experience on the Manhattan Project to solve current energy problems. Potter, 88, and his son Jared, 56, a Stanford-trained geologist, have developed a new form of deep-drilling technology that can tap geothermal heat miles below the earth's surface.

Geothermal power plants use the hot water trapped underground to create steam that turns electricity-generating turbines. This technology is more common in the western United States where the hot water lies closer to the surface. Potter's new technology, however, could make it possible to drill far deeper than before, making geothermal energy accessible anywhere in the country.

Drilling is the most expensive part of developing geothermal energy. In some instances, companies drill through up to six miles of hard rock only to break a drill bit and have to abandon the project. The cost to replace a broken drill bit at the end of six miles of pipe going straight into the earth is prohibitive. Potter has circumvented this problem by replacing the conventional drill bit with super heated water up to 800 degrees centigrade (lead melts at 327 degrees centigrade). As the water is forced through a nozzle, it fractures even granite with ease.

The new technology is already attracting attention. A 2006 study from MIT predicted that "Enhanced Geothermal Systems" such as Potter's could supply as much as 2,500 times the nation's current energy consumption, and Google Ventures has invested \$4 million in Potter Drilling. One more bit of good news—Jared Potter estimates he can cut the cost of drilling in half by eliminating breakable parts and reducing drilling time.

For those with any loose change, the company will soon be looking for investors to commercialize its technology.

For more information visit potterdrilling.com



Down on the urban farm

Some farmers go to work on a tractor and some drive a truck, but in San Francisco and a growing roster of other American cities, farmers hop the bus to work or show up on their bicycles with their hoes in tow. This is urban agriculture in the 21st century.

MyFarm was started by Trevor Paque, a young mortgage broker, who decided in 2007 to get out of the office and take up farming. Hardly a new idea, but Paque took a new approach. His business plan called for building, planting, and harvesting vegetable gardens in small overgrown, weed-infested patches of soil that many people in San Francisco call back yards. Pricing for each garden includes \$50 for a site analysis to check sunlight and soil; \$600 to \$1,000 to build raised beds, install drip irrigation, and plant seeds; and \$20 to \$35 for weekly maintenance and harvesting. As part of the weekly maintenance, the farmer harvests a box of vegetables for the owner. To test the market, Paque posted an ad on Craigslist and within 20 minutes he had 200 responses.

Today his backyard farming business has a waiting list and continues to expand without any further

advertising. Paque discovered many city dwellers didn't have the time, energy, strength, or know-how to grow their own vegetables. And those who already had a garden neglected to pull the weeds or even pick the fresh produce. One key to Paque's success seems to be full-service farming.

His customers are now enjoying a rich array of vegetables every season of the year. The list of produce ranges from the usual broccoli, carrots, peas, and summer squash to Chinese cabbage, Japanese mustard greens, Jerusalem artichokes, arugula, escarole, baby spinach, and tomatillos, along with heirloom varieties such as lazy housewife beans and bull's blood beets.

As Paque sees it, the benefits of urban farming are endless. Food scraps from the table can be composted for the garden rather than hauled off in diesel burning trucks, neighbors can sell shares of their bounty to those who have no backyards, harvest dinners can create community by bringing people together to enjoy their seasonal favorites, and fresh, nutrient-dense, organic foods can be eaten by more people at reasonable prices.

For more information visit myfarmsf.com



What's your wattage

Let's face it. Even in a world where we share the intimate details of our lives online, some things are still private. Your weight. Your credit card bill. What you did at the office Christmas party. Stuff like that. How much energy you use might also be one of those things that you would like to keep private.

The creators of a new super-insulated, solar-heated, prefabricated 700-square-foot house that just went on the market see it differently. For them, complete transparency about energy use is the way to a self-sustaining future. To this end, they added LED lights around the base of their new building that change color as energy use changes. Green indicates the house is producing more energy than it is using, yellow means all is in balance, and red warns that the home is gobbling up more energy than it is generating. If the neighbors cruise by and see the house glowing red, they'll know you cranked up the heat, started the dishwasher, and put a turkey in the oven.

In all seriousness, there is a worthy purpose to the lighting system. Architect Phil Kaplan of Portland, Maine, wanted to give homeowners real-time feedback on their energy use before the energy bill arrives at the end of the month, when it's too late to make any changes.

The building, dubbed "BrightBuilt Barn," functions as an office, studio, or even a two-bedroom home, and the modular design allows for easy expansion at a future date. Plans call for total energy self-sufficiency, but to err on the side of caution, the homes are connected to the power grid and come with a heat pump. The building is 42-by-18 feet with loft storage, triple-glazed windows, R-40 insulation in the walls (twice the standard insulation) and solar panels on the south-facing roof to generate electricity and heat water.

Currently, the cost is about \$200,000, or \$285 per square foot, minus the land and utility installation. Delivery can take 10 to 12 weeks and assembly and finishing require another two to three weeks. The first model was completed in Rockport, Maine, last fall where it is being used as an office and artist's studio complete with bathroom and kitchen.

The building and design professionals who collaborated on this project wanted to do more than launch a successful business—they wanted to raise awareness about energy usage, sustainability, and new building methods.

For more information visit brightbuiltbarn.com

TIDE IS TURNING FOR PROPERTY RIGHTS

Property rights advocates have long argued that the Endangered Species Act (ESA) effectively forces a handful of property owners to provide the “public good” of species habitat at private expense. This appears to violate the Fifth Amendment’s admonition “nor shall private property be taken for public use without just compensation.” Yet courts have been exceedingly reluctant to hold that ESA-based regulations constitute uncompensated regulatory takings.

A recent decision by the U.S. Court of Appeals for the Federal Circuit indicates the tide may be turning, at least in the context of water rights. In *Casitas Municipal Water District v. United States*, the Federal Circuit held that requiring the diversion of water to operate a fish ladder may constitute a taking of private property for which compensation is required. This ruling could have a significant impact on water rights and species conservation efforts.

The case arose out of water-use restrictions imposed on the Ventura River Project for the benefit of the West Coast steelhead trout. The project was built in the 1950s to provide water for agricultural and other uses in Ventura County, California. Though initially financed by the federal government, the Casitas Municipal Water District agreed to repay the construction costs and assume all operation and maintenance costs, in return for a “perpetual right to use all water” made available by the project.

In 1997, the National Marine Fisheries Service (NMFS) listed the West Coast steelhead trout as an endangered species in the Ventura project’s watershed. Pursuant to this listing, the NMFS decided in 2003 that the Casitas Municipal Water District was required to build a fish ladder facility and divert water for its operation, causing a permanent reduction in the amount of water available for the water district each year. The government conceded that the water district had a valid property right in the water, causing the court to focus on whether the measures necessary to conserve the steelhead trout constituted a “taking” of private property.

The Federal Circuit held that requiring the physical diversion of water to the fish ladder amounted to a “physical taking” of water. As Judge Kimberly Moore explained, “the government did not merely require some water to remain in stream, but instead actively

caused the physical diversion of water...toward the fish ladder, thus reducing Casitas’ water supply.” Such action, she explained, constituted the taking of Casitas’ water for the “public purpose” of protecting the West Coast steelhead. “When the government diverted the water to the fish ladder, it took Casitas’ water. The water, and Casitas’ right to use that water, is forever gone.”

This conclusion was important. When the government regulates private property—limiting but not eliminating its productive use—whether such action constitutes a “regulatory taking” requiring compensation is subject to a complex balancing test known as the *Penn Central* test. Under *Penn Central*, it is very difficult for landowners to show that a compensable taking has occurred. Compensation is hard to get unless the government physically takes private property for public use or otherwise eliminates all economically productive use.

Judge Moore’s opinion for the three-judge panel hearing the case was not unanimous; one judge dissented arguing that the more government-friendly *Penn Central* analysis should apply. The government appealed to the full court to no avail, leading some to speculate this case could head to the Supreme Court.

While the fight is not over, the water district’s attorney Roger Marzulla was right to call this a “huge victory” for property rights. Said Marzulla, “It indicates the position *Casitas* has taken all along, which is that if the government needs to take water to benefit the fish, it certainly has the right to do so. It simply must pay for the water it takes.” Species conservation is an important public goal. But it is also important that the costs of saving species are fairly distributed. The *Casitas* decision is a small but important step toward achieving that goal.



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