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FROM THE EDITOR

Myths and Memories

Americans admire farmers, and that admiration keeps sympathy strong for ethanol, an expensive fuel made from corn. In this issue of *PERC Reports*, Gary Libecap calls ethanol "a politician's dream" and shows us how politicians keep the dream alive by overstating ethanol's benefits and ignoring its costs. Libecap's report comes from PERC's new book, *Agricultural Policy and the Environment*, edited by Roger E. Meiners and Bruce Yandle. As those who follow PERC's activities know, this Rowman & Littlefield book is one of numerous publications stemming from our three-year study of environmental issues in agriculture.

We have a more upbeat agricultural story, too. Ashley Fingarson writes about aging grain elevators—the picturesque structures that once dotted the rural American landscape. Largely obsolete today, they are rapidly disappearing. Photographer Bruce Selyem captures them on film, but he has also formed the Country Grain Elevator Historical Society to encourage enthusiasts to buy them and keep them. (Selyem's photograph of an Anceney, Montana, elevator graced the cover of the December 2002 *PERC Reports*.)

Politicians, of course, have many dreams. One is the dream of protecting salmon in the Pacific Northwest—but as Clay Landry reveals, they haven't done much about it. Salmon recovery costs are rising, but the number of salmon is not. Why? Landry points out that the agencies charged with recovery have a construction mindset. They fail to do what is really needed—which is to move more water through the Columbia and Snake river systems.

Land trusts are in the news. In a series starting May 4, the *Washington Post* charged the nation's largest, the Nature Conservancy, with offenses such as using tax advantages to serve Nature Conservancy donors. Over the past two years, PERC research associate Dominic Parker has been studying the stewardship of land trusts (but not just the "800-pound gorilla" that dominates the conservation business). His scholarly assessment, stemming from a broad database of trusts and their activities, is far more favorable than the *Washington Post*'s. But Parker, too, warns that tax benefits can distort decisions about how to preserve land.

As usual, *PERC Reports* includes other features—"Greener Pastures," "Tangents," and a thoughtful letter. And as always, we welcome your comments.

Jane S. Shaw

From left: Libecap, Fingarson, Landry, and Parker.




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Political Forces Keep Dreams of Ethanol Alive

By Gary D. Libecap

Ethanol is a politician's dream. It is supposed to reduce automobile emissions of carbon monoxide and other gases, promote energy independence, and assist midwestern corn farmers (not to mention large ethanol producers such as Archer Daniels Midland and Cargill). In April, the Senate Environment and Public Works Committee approved a plan that, if enacted, would double ethanol production.

But ethanol fails to perform as promised. Its use appears to have no net positive air quality benefits; its production may entail other environmental costs such as soil and water degradation; and it probably does not contribute to energy independence. Only in helping corn growers and ethanol producers does ethanol pull through as advertised.

Ethanol fails to perform as promised. Its use appears to have no net positive air quality benefits; its production may degrade soil and water and it probably does not contribute to energy independence. Only in helping corn growers and ethanol producers does it pull through as advertised.

Ethanol's political history goes back to the Arab oil embargo of 1973 and the related oil price shocks, which made America's growing dependence on foreign oil a political issue. Ethanol, which is alcohol produced from renewable sources of biomass such as corn, looked like a way to stretch gasoline supplies.

Although the cost of producing ethanol was nearly twice that of gasoline in 1980, forecasts of gasoline prices issued by the U.S. National Alcohol Fuels Commission—as high as $4 per gallon by 1990–1991—made ethanol seem a reasonable supplement. The nineteen congressional members of the commission came mostly from agricultural states.

The actual subsidy began with the Energy Tax Act of 1978, which authorized exemptions from the federal highway excise tax for biomass-derived fuels such as "gasohol," a mixture of 90 percent gasoline and 10 percent ethanol. Subsequent laws added income tax credits for blenders of ethanol and gasoline and provided more than $1 billion in loan guarantees for ethanol plants (Kane and LeBlanc 1989). Some states provided an added subsidy of $.20 to $.30 per gallon of ethanol (GAO 1997).

In 1986, a study of ethanol released by the U.S. Department of Agriculture (USDA) concluded that ethanol production could not survive through 1995 without "massive Government subsidies" (Gavett, Grinnell, and Smith 1986, iv, 45). But ethanol advocates moved quickly to repudiate the report's findings, and a 1988 USDA study argued the opposite: By raising corn prices, farmers' deficiency payments would fall to such an extent that there would be a *net savings* to the government (LeBlanc and Reilly 1989, 39).

In the early 1990s, political competition with MTBE (methyl tertiary-butyl ether) developed. The 1990 Clean Air Act Amendments required that gasoline be reformulated with oxygenates to reduce volatile organic compounds

Tim Gerlach courtesy of DOE/National Renewable Energy Laboratory

In 1994 policy debates, representatives of the Sierra Club, Environmental Defense, and Resources for the Future, opposed the oxygenate mandates. Ethanol advocates never dropped their environmental claims, however.

(VOCs) and carbon monoxide emissions in areas where air quality was low. Either ethanol or MTBE could be added to gasoline to reduce carbon monoxide emissions.

Farm-state politicians attempted to mandate only *renewable* oxygenates. In response to their lobbying, the Environmental Protection Agency (EPA) in 1994 issued an administrative rule that required at least 30 percent of the oxygenates used in reformulated gasoline come from renewable sources (EPA 1994, National Research Council 1996, 4)—even though ethanol would have to be specially blended in order to avoid increasing VOC emissions.

The EPA's rule was challenged in appeals court. The American Petroleum Institute and National Petroleum Refiners Association argued that the EPA lacked statutory authority to impose a mandate to use renewable oxygenates and that the mandate undermined the VOC emission reductions required by the Clean Air Act. The court agreed, reversed the EPA ruling, and scolded the agency for taking action that could increase air pollution (*American Petroleum Institute v. EPA* 1995, 1118).

Efforts to advance ethanol continued, however. Congress extended the ethanol subsidy through 2007. And problems developed with MTBE. To meet Clean Air Act standards, the California Air Resources Board required that by 1996 all gasoline sold in the state be oxygenated during winter months. MTBE was the preferred oxygenate because reformulated gasoline with ethanol could not meet California's limits on VOCs. But MTBE is water-soluble, and leakage from storage tanks potentially could contaminate groundwater supplies. It has an unpleasant smell and taste, and it may be a carcinogen. In 1997 the EPA issued a drinking water advisory regarding MTBE. The next year, the EPA formed a blue-ribbon panel to review use of MTBE and other oxygenates. Concerns about MTBE also raised questions about the need for *any* oxygenates to meet the requirements of the Clean Air Act (U.S. House 1998).

In March 1999 Governor Gray Davis ordered the phase-out of MTBE from California gasoline supplies by December 31, 2002. California regulations allowed refiners to produce complying fuel without any oxygenates. But in June 2001, responding to lobbyists, the new Bush administration denied California's request for a waiver from federal oxygenate requirements and ordered the state to include ethanol as a fuel additive. California resisted, with Governor Davis filing suit to block EPA requirements for ethanol use in reformulated gasoline. Today, a political compromise is

under consideration (Carlsen 2002, A15).

Numerous scientific assessments in the early 1990s challenged the environmental benefits of ethanol. Studies by the EPA, National Academy of Sciences, the White House National Science and Technology Council, and the Committee on the Environment and Natural Resources of the National Science and Technology Council did not find conclusive air quality benefits from the use of any oxygenate additive.[1] In 1994 policy debates, representatives of the Sierra Club, Environmental Defense, and Resources for the Future, opposed the oxygenate mandates. Ethanol advocates never dropped their environmental claims, however.

The most recent information suggests that ethanol, when mixed with gasoline, has higher emissions of VOCs than does gasoline blended with MTBE, and the use of ethanol could increase the release of nitric oxide and other pollutants such as carcinogenic aldehydes into the atmosphere. A 1999 National Academy of Sciences study found no significant pollution reduction from ethanol's use and instead possible increases in pollutants that cause smog (National Research Council 1999).

Nor is it likely to contribute to energy independence. A critical study of ethanol's energy and environmental effects published in the *Encyclopedia of Physical Science and Technology* (Pimentel 2002) concluded that conversion of corn and other food/feed crops into ethanol by fermentation is a net energy user.

Ethanol illustrates the workings of the political process when there is an entrenched, well-organized beneficiary, heterogeneous opponents with less at stake, and technical information that makes it difficult for general voters to assess the issue. Unless a constituency emerges in whose interest it is to expose ethanol, or unless the costs of the subsidy rise substantially, this agricultural support program will continue.

NOTE

1. These studies are documented in the chapter from which this essay is excerpted (Libecap 2003).

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Photographer Saves Country Grain Elevators

By Ashley Fingarson

As photographer Bruce Selyem recalls it, he stopped to take a picture of a sunset, "and the grain elevator just happened to be in the sunset." That was in 1985, and the somber beauty of the Anceney, Montana, structure would eventually lead him on a photographic odyssey seeking out grain elevators.

"It is their architectural beauty on the landscape that appeals to me, regardless of a mountainous background or a prairie," says Selyem, interviewed in his home outside Bozeman, Montana, as we observe a vast array of photographs of elevators on the walls. (His mailbox is in the shape of a grain elevator.)

Since the mid-nineteenth century, grain elevators—many constructed of wood, but sometimes of tile or concrete—have been used in North America to store grain before it is transported to a mill for processing. Most elevators were built at train depots or river terminals. As the economics of agriculture changed, many have lost their value and some have disappeared.

Selyem began searching out old grain elevators as photographic subjects five years after his initial encounter. At times, he would return to his favorite places to "get better light—and the grain elevator would be gone." This saddened him. "Almost that entire wall of grain elevators are now gone, " he says.

By 1995, Selyem had a large collection of photographs, but wanted to do more. "Seeing the Coliseum in Rome is different from seeing a picture of it. I cannot connect with it in the same way as in a picture or a story in a magazine." Selyem travels with a photographic slide show, but he points out that his slide show "cannot convey what is outside the viewfinder . . . the sound of a train going by, meadowlarks, all of the sensations outside."

He formed the Country Grain Elevator Historical Society to promote the preservation of the old structures. Based in Montana, the society reaches out to communities around North America. Selyem's wife, Barbara Krupp-Selyem, whom he met when she worked in the grain

Bruce Selyem began searching out old grain elevators as photographic subjects. This one, a concrete elevator in Lee, Washington, was built in 1914.

© Bruce Selyem (www.grainelevatorphotos.com)

The Country Grain Elevator Historical Society encouraged a new owner to purchase and preserve this unique Gothic Revival elevator in Ithaca, Nebraska.

industry, is vice president of the society. A professional writer, she devotes a lot of time to the society, often recording the history of picturesque elevators.

"The organization collects the history and leaves the community, having planted a seed," says Selyem. Such a seed was planted for a one-of-a-kind Gothic Revival grain elevator in Ithaca, Nebraska. The elevator's unique architecture, rarity, and age (it was built in the 1880s) made preservation especially desirable. Selyem's interest attracted a new private owner who is dedicated to avoiding the grain elevator's extinction.

Typically, concerned individuals across the nation alert the society that a grain elevator is in jeopardy. Because most grain elevators are privately owned, they can be purchased to avoid demolition. Then they can be converted into useful spaces. "They can be museums, rock climbing gyms, bars and restaurants, houses, or office spaces," says Selyem. "People with creative minds who are willing to take risks can preserve the beauty of these buildings and use them for economic reasons."

In Selyem's view, the new use should maintain the grain elevator's external integrity. The historical society provides architectural advice to people considering renovating a grain elevator. "We tell them what we have learned, what's already been done, and what contacts to use for repairs or renovation."

Although many people appreciate grain elevators, says Selyem, "some people need some encouragement." Once the society shows an interest in a decaying or dilapidated elevator, the owners begin to do so as well.

"In the early 1990s," he recalls, "I was waiting for the light to get better, and the camera was on a tripod. The man who owned the grain elevator that I was trying to capture drove over in his pickup truck and asked, 'Why are you doing this?'"

Selyem simply replied to the man, "I am taking pictures to preserve its history." The owner then inquired if he could look through the camera. Selyem permitted the man to do so. "I guess it really is a beautiful old building," said the owner.

"The elevator is gone now," says Selyem, "but this

© Bruce Selyem (www.grainelevatorphotos.com)

Clay-tile elevators like this one in Cushing, Nebraska, had the advantage of fire resistance, but they sometimes leaked or were unstable. Only a few remain.

man, who owned the grain elevator for decades and dealt with its problems, was able to look through the lens and take it out of context. The man was able to appreciate what it was at that moment. That is what it's all about."

Selyem does encounter people who perceive grain elevators as ugly. He is also aware that they can't all be saved —"and that's okay." But Selyem believes that "some should be saved as a visual reminder of the past."

One of the organization's main goals is to acquire a grain elevator to serve as its headquarters and as a museum. To promote awareness of elevators, the society occupies a booth at grain and feed industry trade shows. People usually inquire about photographs of their local grain elevator, and nostalgic memories fill the air around the booth.

"Generally, older people are more interested in preservation," Selyem explains. "Younger people do not connect with the aesthetics, the history, or the characteristics of the grain elevators." They currently work in or around them and fail to notice their distinctiveness. But, he asks, "When these young people are older and eventually come to appreciate them, will they all be gone?"

The grain elevator that Selyem randomly captured in 1985 is located just off Highway 84 heading to Norris, Montana. Privately owned, it is under renovation to become a residence. The side facing the highway will retain its original appearance, but the side hidden from the road will have windows and decks.

To Selyem, all grain elevators are beautiful. "Each of them has a story. Each has a personality. All of the old ones have the same, basic structure on the outside, just like humans. Each one is unique, just as we have our own personality and character." Selyem adds, "You really have to notice them."

Ashley Fingarson is a student at Montana State University. For more information about Bruce Selyem or the Country Grain Elevator Historical Society, see www.country-grain-elevator-historical-society.org.

THE WRONG WAY TO RESTORE SALMON

Few Results at $400 per Fish

By Clay J. Landry

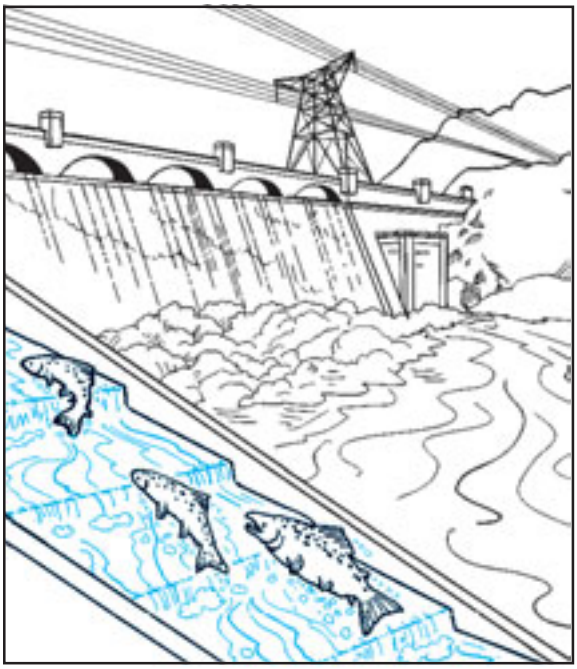
What is the value of a salmon? If you shop at Seattle's Pike Place Market, a freshly caught salmon might be worth $98 (that is, about $6.50 a pound). If you are a fly fisherman, the sockeye you catch might cost between $25 and $75—depending on how much you spent for your gear or a guide. But these figures pale in comparison with the amount of money that the federal government pays in its efforts to keep salmon flowing through the tributaries of the Columbia and Snake River basins in Oregon, Washington, and Idaho. A conservative estimate is that the Bonneville Power Administration (BPA) alone is spending $400 per fish.

A conservative estimate is that the Bonneville Power Administration alone is spending $400 per fish. And there is little to show for the federal government's infusion of cash. Most of the money is going toward construction-oriented projects rather than to move more water through the river system.

And there is little to show for this infusion of cash. Most of the money goes toward construction-oriented projects rather than the one thing that experts recognize is imperative for salmon protection—moving more water through the river system. Dam reservoirs "slow water flows . . . which may result in increased mortality, " wrote the General Accounting Office (GAO) recently. "An abundant snow pack aids juvenile passage to the ocean by increasing water flows" (GAO 2002, 8). Low flows are bad; high flows are good.

The General Accounting Office's 2002 study was one of the first studies to describe federal salmon and steelhead recovery projects and to quantify the amounts of money spent on preserving salmon. The study found "little conclusive evidence to quantify the extent of [the projects'] effects on returning fish populations" (GAO 2002, 3). Indeed, some of the GAO-reported activities don't really qualify as recovery projects. They include "research studies," "monitoring actions," "surveying spawning grounds," and ESA-required consultations" (GAO 2002, 4). Few activities are on-the-ground experiments in recovery management.

The GAO attempted to quantify the costs of recovery. In the five years between 1997 and 2001, federal agencies, including the Bonneville Power Administration, the U.S. Army Corps of Engineers, various branches of the Department of the Interior, and the Environmental Protection Agency have spent $968 million of federal money, plus an additional $537 million given by the federal government to States and Native



Courtesy of Bonneville Power Administration (www.bpa.gov)

American tribes on salmon recovery in the Columbia and Snake rivers (GAO 2002, 3). By this accounting, federal agencies spent $1.505 billion over the five years or about $301 million per year.

My independent effort to quantify the costs of salmon recovery (Landry 2003) suggests that the costs are much higher—approximately $2.879 billion over five years, or $575.7 million per year. The table provides a summary of this federal spending on salmon recovery from 1998 to 2002, as identified by direct communication with departments and agencies heavily involved in salmon recovery. It avoids or at least minimizes double counting by considering various cost reimbursement agreements between agencies. Unlike the GAO report, this study includes the cost of reduced power generation (the amount of hydropower forgone) due to salmon recovery efforts.

Most agencies do a poor job of accounting for salmon recovery expenditures. Thus, the most accurate figures are those of the BPA and the Corps, but they must be carefully tracked. The BPA records expenditures as a salmon recovery-related project when it allocates money to the Corps for cost reimbursement. The Corps records the same money as a salmon-related expenditure when funds are allocated. The end result would be an overstatement of expenditures unless the funds are tracked. In 1998, the BPA (including money it allocated to the Corps) spent $342 million on salmon and steelhead recovery. With 856,000 of these fish entering the mouth of the Columbia River in 1998, the average cost per salmon was $399.14.

And, of course, these figures not only exclude non-BPA expenditures, but they understate expenditures per fish. Some salmon and steelhead can be expected to enter the Columbia River system regardless of BPA's recovery efforts. Ideally, the government's costs should be applied to just those additional fish that the government has been able to protect. No one knows what that would be. But if the BPA were credited for the return of half the fish (a generous assumption), then the cost per fish would double to $800. Based on BPA and Corps expenditures, federal spending is on the rise (from $131 million in 1990 to $342 million in 1998), while fish numbers tend to dwindle. Although numbers fluctuate each year, 1,262,000 salmon and steelhead were counted in 1990; in 1998, the figure was 856,000 (BPA Fish and Wildlife Program 1999; Washington Department of Fish and Wildlife and Oregon Department of Fish and Wildlife 1999).

What undermines salmon recovery efforts is a construction bias. The Army Corps, the Bureau of Reclamation, and the BPA like to build new, big concrete structures. As reported by the GAO (2002, 20), to "recover" salmon, the Corps busied itself constructing new juvenile bypass systems for the

Estimated Expenditures on Columbia System Salmon & Steelhead, 1998-2002

Agency	Expenditures (Millions of Dollars)
Bonneville Power Administration (BPA)	
Direct Programs	$ 533.1
Capital Expense	409.2
Forgone Power Production	616.3
Total BPA	**$1,558.6**
Total BPA	$ 1,558.6
Army Corps of Engineers	559.0
Department of the Interior	569.0
Department of Commerce	112.6
Department of Agriculture	50.2
Environmental Protection Agency	29.1
Total Expenditures	**$2,878.5**

Source: Landry (2003).

dams, the Bureau of Reclamation constructed new fish screens and fish passage facilities, and the BPA funded the construction of a new fish hatchery by the Yakama Tribe.

Barging, too, has a construction bias—it's a technique that maintains the current level of concrete on the river. Barges are used to transport juvenile fish across reservoirs. When the barges reach a dam, the fish are off-loaded into tanker trucks and transported around the barrier.

What salmon need is water. But of all the actions taken by federal agencies for salmon recovery in the Columbia basin, there is just one example of money spent to directly increase the amount of water in the river. The BPA provided 7.2 million acre-feet of water annually for flow augmentation (GAO 2002, 64). More actions like this are necessary for effective salmon recovery.

The best hope for salmon lies in what are called "non-structural water management strategies." These include reduced conversion of agricultural water, more-efficient management of existing agricultural water facilities, and water marketing, which includes both temporary and permanent voluntary water transfers, usually from agriculture to instream use. With these strategies, no new structures need to be constructed (Diamant and Willey 1995, 21) Indeed, breaching of dams to let more water through should also be considered.

In parts of the region, tensions over agricultural water are so incendiary that making decisions in Washington, D.C., that exclude interested parties could result in vandalism, violence, or sabotage, to say nothing of compliance problems. By implementing a strategy of voluntary water transactions, however, each farmer could decide whether to lease or sell water, and the government would avoid the conflicts that arise when decisions are handed down from above.

In many cases, the market price paid for water left instream is higher than the value added by irrigation water to crop production. In those cases, farmers have an incentive to provide water to the river system. Environmental groups could get in on the action if they wished and buy instream water just as federal agencies are beginning to do in some western states. This is already done in a small way by Environmental Defense and the Oregon and Washington Water Trusts.

A water bank could enhance this trading. The primary role of a water bank is to obtain water from willing sellers and then market it to other water users. It facilitates the transfer of water from low-valued to higher- valued uses by bringing buyers and sellers together and negotiating the legal and regulatory procedures necessary to change the location and/or use of existing water rights.

Saving salmon and steelhead is not an impossible task. But the way the federal government is going about it today is both costly and largely futile.

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Clay J. Landry is the principal of WestWater Research LLC of Laramie, Wyoming, and an adjunct research associate with PERC. Mathew Johnson of WestWater assisted with this article.

MAINTAINING TRUST

The Challenge Facing Private Land Conservation

By Dominic P. Parker

As with many nonprofit organizations, questions emerge about whether land trusts actually serve the public interest. Are the fiduciary constraints under which they must operate really binding? Who monitors land trust behavior—and if mismanagement is detected, what recourse does the public have?

One of the most striking environmental trends of recent decades is the growth of land trusts.[1] These nonprofit, mission-oriented organizations preserve valuable open space primarily by acquiring property rights from landowners through voluntary exchange. Their market approach is in stark contrast to government regulation, which can impose restrictions on landowners against their will, as well as government ownership, where management is often political.

Mandy-Scott Bachelier

But not everyone is comfortable with the growth of land trusts. As with many nonprofit organizations, questions emerge about whether land trusts actually serve the public interest. Are the fiduciary constraints under which they must operate really binding? Who monitors land trust behavior—and if mismanagement is detected, what recourse does the public have? Critics such as Zane Walley want more regulations to control what he calls "unrestrained land trusts" (Walley 2000). And recent *Washington Post* articles assailed the ethics of the Nature Conservancy, by far the nation's largest land trust (Stephens and Ottaway 2003).

Over the past two years, I have studied land trusts, focusing on those that do not generally transfer land to government agencies. One of my goals was to gain insight into whether land trusts are managing their resources efficiently. Do the incentives for good stewardship outweigh shortsighted goals such as increasing donations and influence? I assembled a database of state and local trusts operating throughout the country. The data include information about where each trust operates, the types of amenities it seeks to provide (e.g., recreational trails, bucolic views, and wildlife habitat), and whether it

seeks to restore ecological functions or simply preserve land. Using regression analysis, I examined which factors explain the percentage of land trust acres held in conservation easements, as opposed to fee simple (see Parker 2002).

I learned that land trusts' choices between easements or fee-simple ownership reflect efforts to reduce costs over the long term. In other words, land trusts have generally been conscientious stewards of the resources entrusted to them.

For example, I found that land trusts that focus on providing scenic views are more likely to hold conservation easements rather than land in fee simple. The immediate cost of acquiring an easement is lower than acquiring full ownership, and the long-term stewardship burden is minimal because the easement can readily be monitored and enforced. The easement need only prohibit conspicuous construction in viewsheds—violations will be easy to detect and easy for courts to verify. Thus, in these cases, conservation easements are the low-cost choice.

If a land trust wants to provide public access in densely populated areas, however, it usually chooses full ownership. Landowners are rarely willing to allow public access without substantial compensation. Because this compensation accounts for a significant portion of the land's value, full ownership provides public access without the costs of monitoring and enforcing an already-expensive agreement with the landowner.

In general, when they want to protect productive agricultural land, land trusts hold easements rather than full ownership. The reason is that land trusts rarely have experienced farmers or ranchers on their staffs. Without such expertise, if the land trusts owned the land, they would probably lose agricultural profits. An easement that allows the landowner to continue to run a profitable business may be far less costly. (Of course, a land trust could own land outright and lease back farming rights to a third party. But it would have to conduct an expensive search for the appropriate rental price and tenant.)

These and other findings (Parker 2002) suggest that land trusts take into account stewardship costs and landowner specialization when making decisions. Even though they are not-for-profit organizations, they search for ways to reduce costs, motivated by concern for their reputation, armed with local knowledge, and constrained by self-regulation. Such factors tend to be weaker for governmental agencies. It is not surprising then, that studies indicate that land trusts are better stewards of conservation easements than are government agencies (Guenzler 1999; Pentz 2001).

Land trusts do face pressures, however. Most land trusts enjoy charitable status and exemption from federal and state income taxes. In addition, federal, state, and local tax incentives are a primary reason why landowners donate land or conservation easements. These tax exemptions can encourage land trusts and landowners to capitalize on tax benefits instead of fully weighing long-term costs and benefits. I am studying the impact of taxes on the easement-vs.-full ownership decision. The evidence shows that land trusts that use their own dollars to finance acquisitions are somewhat more economical (Parker 2003). This is consistent with expectations. We are all more disciplined when we bear the full costs of our decisions.

There is another problem with relying on tax exemptions. Internal Revenue Service rules require perpetual easements, and IRS penalties for changing perpetual easements can be high. Yet amending or extinguishing an obsolete provision or easement when circumstances change may be in the public's best interest. Imagine, for example, that new homes have grown up around a small, 25-year-old wildlife habitat easement. A developer offers to pay a hefty sum to extinguish the easement. The public at large would support extinguishment if it could be assured that more or better habitat would be acquired

elsewhere. Yet, with tax-supported conservation easements, land trusts can't freely initiate such trades without IRS scrutiny.

Rather than continuing to increase federal and state tax incentives, experimenting with alternative funding mechanisms seems appropriate. One alternative for continuing public support without tax benefits is to offer matching grants to land trusts wishing to conserve strategic tracts of land. The Department of Agriculture and the Forest Service offer such grants, as do several state-level government programs.[2] Under such programs, purchase decisions are less distorted than when land and easement acquisitions are funded through the tax code. Grant-receiving trusts are apt to consider more carefully how and where they will spend their dollars. Not doing so would put at risk dollars that could be used to successfully achieve their mission.

To be sure, substituting matching grant programs for tax code funding has its risks. Montana attorney Andrew Dana,[3] who has drafted conservation easements for several years, is concerned that some land trusts measure their success by the acreage they acquire or by the number of transactions completed. If land trusts focus on only these measures of success, they may compromise their fiduciary duties to their public beneficiaries. They may acquire easements over land with marginal conservation value simply to close deals or may accept easements without securing the resources necessary to steward them over time. Dana is already concerned about a "race to the bottom" as a result of such competition, and competition for government grants could exacerbate this race.

This problem could be mitigated, however, if government agencies offering such grants are local and work with local trusts. Local entities are better qualified than federal agencies based in Washington to evaluate the success of projects. They know best the open-space desires of their communities and are disciplined by a concern for their local reputations.

Land trusts have enjoyed widespread public support for good reason. To sustain public support in the years to come, they must continue to be creative, productive, and responsible. True success will be measured by satisfied landowners, willing donors, and an informed public. We can help them succeed by thinking of ways to ensure that their incentives are sustainable.

NOTES

1. From 53 in 1950, the number of land trusts increased to 1,263 in 2000 (Land Trust Alliance 2000).

2. See Natural Resource Conservation Service (2002) for a description of the Farmland Protection Program. See American Farmland Trust (2002) for examples of state programs.

3. Personal interview with Andrew Dana, attorney, Bozeman, MT, December 8, 2002.

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GREENER PASTURES

By Linda Platts

Garbage to Oil

A great meal for many Americans is a Butterball turkey. A great deal for ConAgra, the company producing Butterballs, is to turn all its turkey waste into marketable products. Its Carthage, Missouri, turkey plant accumulates 1.3 million gallons a day of turkey grease, guts, fat, and feathers that is stored in lagoons and sent to waste treatment facilities.

Finding a better way to dispose of the effluent and to keep it from seeping into nearby waterways is the task of Changing World Technologies of Philadelphia. Using a process called thermal depolymerization (TDP), the company will be able to transform turkey waste into high quality oil, clean-burning gas, and purified minerals that can be used for fertilizers and specialty chemicals.

The TDP process uses pressure and heat to mimic the natural processes that create oil. Polymers, the long chains of hydrogen, oxygen, and carbon-bearing molecules, are broken into short chain petroleum hydrocarbons. With an energy efficiency of 85 percent, TDP works with almost any waste product from harbor sludge, corn stalks, and old computers to medical waste, tires, and oil-refinery residue.

The $20-million plant in Carthage is the first commercial application according to Brian Appel, CEO of the Philadelphia technology firm. He expects to process 200 tons of ConAgra turkey waste every 24 hours and extract 600 barrels of oil, 11 tons of minerals and 21,000 gallons of water clean enough to discharge in the municipal wastewater system. The resulting gas will be used to power the plant.

If the TDP process works as anticipated, the possibilities are staggering. For example, if all U.S. agricultural waste were processed, it would yield the equivalent of 4 billion gallons of oil a year. Consider that in 2001, the U.S. imported 4.2 billion gallons of oil. TDP will not only be able to provide critical fuel, but also clean up massive amounts of waste.

—Discover magazine

Indoor Sunshine

Cabela's, one of the world's largest outfitting companies, is shedding new light on its indoor facilities. In Prairie de Chien, Wis., a 400,000-square-foot retail store and 600,000-square-foot distribution

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center, have been equipped with full spectrum, energy-efficient light fixtures that spread indoor sunshine while reducing utility bills.

Full spectrum light is the equivalent of sunlight at high noon. Medical professionals recommend full spectrum light for people who suffer from Seasonal Adjustive Disorder (SAD), a type of depression brought on by low-light winter conditions. Installed by Orion Energy Systems of Plymouth, Wis., the Illuminator fixture provides 36 percent more light while using 70 percent less energy. The Illuminator won Wisconsin's Spirit of Ecology Award and has several U.S. patents.

Cabela's predicts the new lights will reduce electricity usage by 4.05 million kilowatt hours per year and save the equivalent of about 368,000 gallons of gasoline. In addition, emissions of carbon dioxide, sulfur dioxide, and nitrogen oxide, which have been associated with global warming, acid rain, and smog, will also be reduced.

The company anticipates improvement to its bottom line through improved working conditions and greater customer satisfaction. Savings on utility bills should pay for the project in less than two years, according to Cabela's executives.

—www.EnergyVortex.com

Back to the Future

Surrounded by the magnificent blue waters of the Pacific Ocean, Santa Cruz Island, just 25 miles west of Santa Barbara, is the scene of a life-and-death drama that pits feral pigs against the dainty island fox. The introduction of non-native species to one of California's isolated Channel Islands has led to the near extirpation of native species and the destruction of archaeological ruins dating back some 6,000 years.

The Nature Conservancy, which owns about 75 percent of the island, in cooperation with the National Park Service, which owns the other 25 percent, is leading a project to restore ecological balance to Santa Cruz and save the island fox from possible extinction, or at least from being listed as an endangered species.

This tangled web begins with the introduction of pigs to this 62,000-acre island in the 1800s when it was home to several ranches. The pigs, now wild, can number as many as 4,500 and root in the soil for their food. In the process, they destroy wildlife habitat and disturb historical sites belonging to the Chumash Indians, the island's first human inhabitants. The disturbed landscape is ripe territory for sweet fennel, a European herb that has encroached on native island plants.

The pigs have opened the door to further upheaval by attracting golden eagles who feed on the piglets until they grow too large and then move on to the island fox, which is no bigger than a house cat. The resident population of bald eagles, which nested on the island and lived off fish and other marine life, plummeted during the 1960s presumably because DDT thinned their eggshells. Without these normally territorial birds, which make their homes on the island's bluffs, the golden eagles have had a heyday.

The solution as planned by the Nature Conservancy's project ecologist is far from simple. The golden eagles are being relocated to the mainland, while bald eagles are being reintroduced to the island. Meanwhile, the feral pigs are being hunted and the imperiled island fox is being bred in captivity to boost its population.

Finally, the fennel will be treated and removed, allowing native plants to recolonize these areas. Without the disturbed soil conditions created by the pigs, the fennel should be less invasive and more easily controlled.

If all goes as planned, the island will be restored to conditions that existed before it was transformed by ranches. This effort is one of the largest and most complex ecological restoration projects ever attempted in the United States.

— U.C. Santa Cruz Currents

THE COSTS OF REGULATORY STRINGENCY

By Daniel K. Benjamin

economist, *n. a scoundrel whose faulty vision sees things as they really are, not as they ought to be.*

—after Ambrose Bierce

Daniel K. Benjamin is a PERC senior associate and professor of economics at Clemson University. His regular column, "Tangents—Where Research and Policy Meet," investigates policy implications of recent academic research. He can be reached at: wahoo@clemson.edu.

Environmental aspects of oil and gas drilling in the United States are subject to at least a half dozen major federal statutes, ranging from the National Environmental Protection Act to the Antiquities Act. These laws apply to oil and gas activities on all lands, public or private, but observers contend that enforcement is more stringent on federal land than on private land. It appears, for example, that federal regulators apply tougher standards on federal lands than private lands when either Native American historical sites or wildlife habitat might be disturbed. This greater stringency presumably yields benefits, but does so at a cost. Recent research by Mitch Kunce, Shelby Gerking, and William Morgan (2002) reveals that this added regulatory burden drives up oil and gas drilling costs by $200,000 per well on federal lands—an increase of some 20 percent.

The authors estimate these added costs with great precision by taking advantage of the "checkerboard" pattern of land ownership seen in many portions of the West. The Wyoming Checkerboard, for example, an important site of recent oil and gas activity, is a 40-mile wide strip of land, composed of 20 miles on each side of the Union Pacific Railroad right-of-way that runs through a 200-mile stretch of southwest Wyoming. The Pacific Railway Acts of 1862 and 1864 conveyed to the railroad both surface and mineral rights to the odd-numbered square-mile sections of land in this area, but kept the even-numbered sections as federal property. The alternating pattern of rights gave ownership maps of the area the appearance of a checkerboard—an appearance retained today, because the ownership pattern is virtually unchanged.

This area is ideally suited to studying the effects of federal regulations, because the law allocated the land without regard for environmental amenities, likelihood of mineral deposits, location, topography, or any of the other factors that might normally be expected to affect drilling costs. To confirm this, Kunce et al. check to ensure that the key determinants of drilling costs are indeed the same on both federal and private lands. These include depth of wells, location, incidence of dry wells, mix of gas versus oil wells, and so forth. Because these other conditions are independent of ownership status, it is reasonable to attribute observed differences in drilling costs to differences in the regulatory stringency applied to activities on federal and private lands.

The authors find that drilling on private land in Wyoming costs about $900,000 per well, while drilling on federal land costs about $1.1

Drilling on private land in Wyoming costs about $900,000 per well, while drilling on federal land costs about $1.1 million per well. Over the sample period (1987–99) the added costs of the wells drilled on federal lands amounted to about $120 million.

million per well. Over their sample period (1987–99), just over 1400 wells were drilled in this area, roughly 600 on federal land and 800 on private land. Thus, the added costs of the wells drilled on federal lands amounted to about $120 million. It is worth emphasizing that these added costs represent only the *extra* costs of drilling on federal lands due to the *extra* stringency of the regulations as applied to federal lands. The authors make no attempt to estimate the *total* costs of federal regulations for the oil and gas industry.

The authors investigate only drilling costs, because cost comparisons are most direct here. It is more difficult to accurately estimate the impact of stricter regulatory enforcement on oil and gas production costs. For example, production conditions change over time as subsurface pressure declines, causing wells to lose their natural drive. Hence, current production costs can depend on current production and the past pattern of production over time.

The existence of the added drilling costs on federal lands raises a significant issue. If the purpose of the regulations is to provide environmental and historical protection, then regulatory enforcement on the two types of land should be similar. The results of Kunce, Gerking, and Morgan imply that it is not. This suggests that either federal lands are overprotected, or private lands underprotected.

As the authors note, one impact of the higher costs on federal property is a reduction in oil and gas output in an area of the country not particularly noted for its historical or environmental importance. This loss in output surely adds to the pressure to explore in far more sensitive areas, such as national monuments and wildlife refuges, pressure that could be relieved if regulations were eased on federal lands in less sensitive areas. Moreover, the added stringency of regulations on federal lands has resulted in reduced output of oil and gas, which has a cost in itself. Kunce et al. estimate this loss to be nearly $1 billion for Wyoming alone—a state that accounts for only about 10 percent of natural gas reserves in the United States and less than three percent of oil reserves.

If federal lands elsewhere are suffering from output losses proportionate to those found in Wyoming, the nationwide costs of this regulatory stringency are obviously considerable. Perhaps future studies will reveal whether we are receiving comparable benefits in return.

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LETTER TO THE EDITOR

Language Matters: Management vs. Preservation

James Shikwati blunted the impact of his article on "How to Protect People and Wildlife in Kenya" (March 2003) by failing to distinguish between conservation and preservation, and between management and total protection. Whereas conservation and sustained-yield management offer the best long-term hope for both the people of Africa and their wildlife, preservation and "no-take" protection generally lead to poaching and the willful destruction of resources.

Unfortunately, Shikwati is not alone in his failure to use words carefully. A favorite example of mine is Dan Rather's regular use of the phrase "quote—unquote" when he of course means to say "quote—end quote." After all, when you "unquote" something, you're taking back what you just said—something Rather has surely wanted to do on more than one occasion!

On a deeper level, I tried to cut a path through this semantic tangle in the early 1970s when I was a conservation lobbyist affiliated with the National Wildlife Federation. A number of us were hammering out the wording of what became the Marine Mammal Protection Act. Although I argued hard on behalf of the word (and, therefore, concept of) *management* over *protection*, the latter word was actually a compromise to avoid the term *preservation* preferred by people like Christine Stevens of the Animal Welfare Institute.

Mrs. Stevens insisted that "management means only killing things." I conceded that, indeed, that was sometimes the case. But I also noted that some of the whale species we were fighting to save would hopefully recover—most have—and that the world might someday need the protein these great animals represent.

Today, approximately 500,000 minke whales roam the North Atlantic (the worldwide estimate is 1.95 million). Yet when Iceland and Norway proposed taking a smaller number of these whales *annually* than die *weekly* of disease and old age, preservationists began calling their congressmen to impose punitive tariffs on the importation of Icelandic sweaters and Norwegian sardines. Harvesting fewer than 300 minkes each year would not only create jobs and help feed people, it would aid the restoration of certain fish stocks (e.g., the Atlantic mackerel—initially plundered by Soviet factory ships, but now decimated by overly abundant minke whales). Management is the best, and sometimes the only, route to protection. Yet that's not going to happen so long as sentiment rules over science in international politics.

George Reiger
Locustville VA

Reiger is the conservation editor for *Field and Stream* and *Salt Water Sportsman*. The White House recently appointed him as a U.S. commissioner for the Interstate Commission on the Potomac River Basin.

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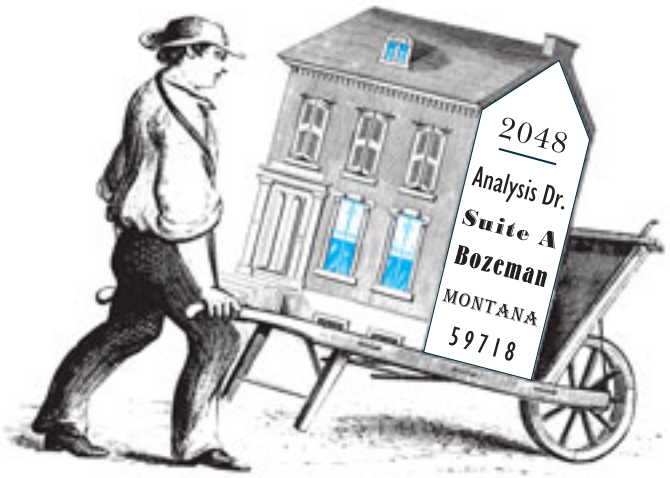
PERC REPORTS

For PERC, this spring marks our first move in more than twenty years. Our newly finished offices are in a handsome building only a few blocks from our former location. We'll be unpacked in time to welcome our many summer visitors. Hope you'll stop by.



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