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PERC REPORTS

FOR FREE MARKET ENVIRONMENTALISM

Halibut dilemma

Shooting the wild

Markets for water quality

Revitalizing African agriculture



**GROWING GREEN
in brown China**



PERC REPORTS

For Free Market Environmentalism
Spring 2008
Volume 26, Issue 1

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The haze hanging over Beijing made the headlines as athletes and visitors gathered for the 2008 Summer Olympics. China's efforts to reduce pollution during the 17-day festival were notable, but what happens after the athletes go home? Seasoned economist **JEFF BENNETT** looks beyond the Olympic spotlight to see markets working to improve China's agricultural lands.

In addition to the Olympics, the rising price of food has captured worldwide attention. Long-term Kenyan resident **MIKE NORTON-GRIFFITHS** demonstrates how secure land tenure can raise agricultural productivity and the standards of land management throughout Africa.

Closer to home, wildlife expert **BRIAN YABLONSKI** zooms in on a new conservation strategy involving photographers, ranchers, and wildlife. If you're looking for a good photo op this fall, consider visiting southern Texas.

Heading East, PERC senior fellow **BRUCE YANDLE** praises the Environmental Protection Agency for its willingness to experiment with incentives and markets to address water quality challenges in Pennsylvania, Connecticut, and North Carolina.

Looking North and West, PERC's fisherman extraordinaire **DONALD LEAL** highlights his Alaskan hunt for halibut and angles for shares between the commercial and recreational fishing sectors.

Harvard's **EDWARD GLAESER** offers his "Impressions" of Paul and Anne Ehrlich's latest book, *The Dominant Animal*. While **REED WATSON**, PERC's resident attorney and research fellow, delivers a jargon-free brief of Utah's latest stream access case in "On the Lookout"—a new column featuring recent court cases concerning property rights and resources.

Our regulars have once again conveyed complex information in a straightforward fashion. **TERRY ANDERSON** explains how property rights pay public dividends while **DANIEL BENJAMIN** points out that regulation trying to save endangered species may be doing more harm than good. And **LINDA PLATTS'** "Greener Pastures" focuses on energy—from solar power in rural Laos to London nightclubbers gyrating to generate electricity for lights and air conditioning.

Laura E. Huggins | EDITOR

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Photo by Mike Sloat, 2006 ICF Pro-Tour

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FORESTRY IN THE GARDEN STATE

I just finished the summer special forestry issue and found it most refreshing! I am a professional forester working in, of all places, New Jersey. I do most of my work within the Pinelands National Reserve—a million-acre area of land regulated by a state commission. Forestry has all but been eliminated as a permitted land-use tool on all lands both public and private. Forest management is regulated as “major land development.”

As our forest is one of the most fire adapted forest ecosystems on the planet, one can imagine the results of this hands-off preservation policy.

We have had some great success with a few of the sixth generation cranberry farmers who actually manage their forests for the watersheds for their farms. These are the people sustaining endangered species and the forests.

We are also having success applying an ecological approach to our silviculture practices (in the ultimate urban interface). Yet even that is viewed as “radical.” Regulators simply oppose tree cutting, although the Pinelands Act clearly points out the need for forest management!

*Bob Williams
Glassboro, New Jersey*

ALPHABET SOUP OF FOREST PLANNING

Doug Crandall explains how the US Forest Service (USFS) experimental forests have contributed to a wealth of knowledge about forests and rangelands. However, he notes that the knowledge they generate and its application on the ground certainly is stymied by the well intentioned, but grossly overlapping alphabet soup of forest planning and environmental rules.

One way to administer, disseminate, and apply this great storehouse of research information would be to consolidate pilot projects, various tests, research stations, and experimental forests under one banner. Daniel Kemmis, director of the Center for the Rocky Mountain West in Missoula, MT, has suggested dusting off USFS Region 7 and using it as the jurisdictional entity for this purpose.

This and other novel approaches to land allocation and use would continue the great investigative legacy of bread-and-butter research about natural resources and the environment.

*Jerry Okonski
Libby, Montana*

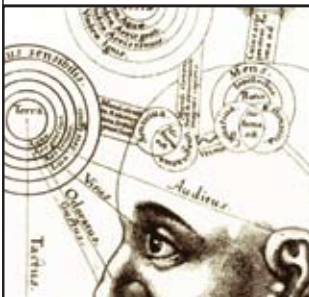
FIRST GENERATION GREENIE RECONSIDERS

I have been “PERC’d Up” (excuse the deliberate pun) by your organization. I marched in the 1970 Earth Day in D.C., worked for an environmental policy group, obtained a doctorate in Environmental Policy, and was a Deputy Commissioner of Environmental Conservation in Alaska. With those bona fides from the environmental movement, I had the view that government could solve our problems—not those “wicked” people in private industry.

But a change of heart and mind took place over the decades. As I studied and worked with private industry, I discovered that government is NOT the answer. Independence and flexibility governed by citizens in the marketplace can more effectively oversee the continuance of a stable environment. Not only is it geographically and administratively far away, government is too affected by the swings of the policy pendulum to provide a sustainable environment. The free market is not governed by “policies” but principles.

Needless to say, I believe Terry Anderson said it all in the recent “On Target” article, “Are you really green?” There is no disputing the salient points about the Kuznets Curve, addressing hypothetical extinctions, bogus modeling, global warming, and “greener than thou” cocktail parties. The approach by the “Me First Greenies” would be comical, if their impact on the rest of us was not so serious.

*Christopher Noah
Augusta, Georgia*



Tell me what you think!

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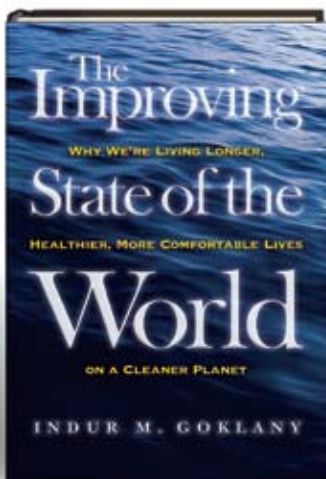


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PRIVATE RIGHTS PUBLIC BENEFITS

Economists devote page upon page of their textbooks to discussions of “public goods,” arguing that markets won’t supply them. Public goods are those for which consumption is “non-rivalrous.” Jargon aside, this simply means that a public good is one that can be consumed or enjoyed by one person without diminishing the potential consumption or enjoyment by another.

Environmental examples abound. Clean air is an obvious one. Once produced for one person, it is available to all at no cost. Views of mountains is another. The enjoyment you get from knowing that wolves now roam in Yellowstone does not preclude others from the same enjoyment. Environmentalists and economists refer to this public good as an “existence value,” and everyone can enjoy that existence at the same time.

The non-rival nature of public goods leads people to conclude that such goods will be underproduced in the marketplace because the producer will have a hard time capturing the value enjoyed by all. In other words, consumers of public goods are free riders. If I contribute my land to a land trust that preserves open space, I bear the cost and many others enjoy the benefits. If you contribute to saving an endangered species, you bear the cost and many others reap benefits from knowing that the species has been saved.

The implication from this way of thinking is that markets fail, thus leading to a rationale for government intervention. Hence the Endangered Species Act, the Wilderness Act, the Clean Air Act, the Clean Water Act, and on and on, are justified on the grounds that markets will not produce enough species, wilderness, or clean air and water.

But just how bad is the market at producing environmental public goods? PERC senior fellow David Haddock enlightened me on this issue. Visiting Bozeman, Montana, he noted that Ted Turner’s Flying D ranch, with its 114,000 acres of open space and herds of bison, provides private enjoyment and income for Turner. At the same time, his investment pays public dividends



to others who, like David, enjoy the open space, bison, and sheer beauty while driving through the ranch on a public road.

Did Turner need to have a toll booth to induce him to make this investment? No. Apparently he anticipated capturing sufficient private value to induce him to invest in the Flying D and millions of other acres around the world that also provide public benefits.

When it comes to providing environmental amenities, it is not just rich people such as Turner who produce public goods. Montana farmers and ranchers, big and small, are private stewards of their land—supplying some of the best wildlife habitat, wetlands, and open space that we call “Big Sky Country.”

Montana’s Constitution guarantees its citizens a right to “a clean and healthful environment.” From this, many conclude that governmental regulations are the cornerstone to this guarantee. Doing so fails to recognize the important role of private property rights in providing public goods. Private property rights create wildlife habitat, open space, wetlands, and clean water assets husbanded by landowners and enjoyed by the public at large.

Private landowners produce a multitude of environmental public goods because their private benefits, like Turner’s, are sufficient to motivate them. In some cases, they do so because such provision adds to their profits, as is the case with access fees for hunting and fishing. In other cases, they do so because they have a “land ethic,” which Aldo Leopold (the father of wilderness preservation) considered fundamental to conservation.

Whether it is profits or ethics or both, we cannot lose sight of the importance of private property to the provision of environmental quality. Respecting and supporting private property rights will add to the stream of public goods we all enjoy. Eroding them will reduce the private landowner’s reward and, therefore, his or her incentive to produce public environmental goods.

In his “On Target” column, PERC’s executive director TERRY L. ANDERSON confronts issues surrounding free market environmentalism. Anderson can be reached at perc@perc.org.

SHOOTING THE WILD

BY BRIAN YABLONSKI



Photo by Rolf Nussbaumer, 2004 VLF Wildlife Photo Contest

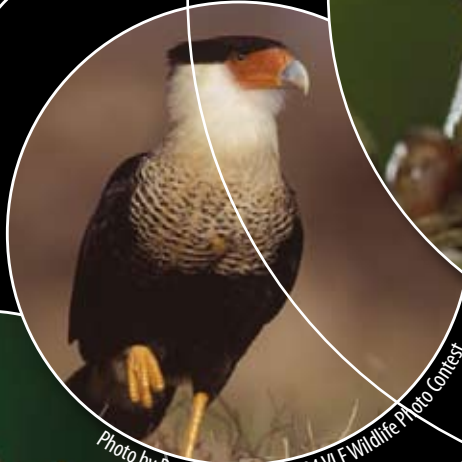


Photo by Rolf Nussbaumer, 2004 VLF Wildlife Photo Contest



Photo by Rolf Nussbaumer, 2004 VLF Wildlife Photo Contest





Photo by Gary Vestal, 2006 ICF Pro-Tour

*There is a crossroads in Texas.
Down along the Mexican
border, in a four-county
area, sits the Lower Rio
Grande Valley—a
merger of tropics and
subtropics.*

*“The region is a
convergence of
ecosystems and
habitats all coming
together in a small
area,” says Carter
Smith, executive
director of the
Texas Parks and
Wildlife Department.
“Chihuahuan desert,
Tamaulipan thornscrub,
the Central Flyway, and
Gulf Coast influences, the
Laguna Madre bay system. It is
the epicenter of biodiversity.”*

*To be more precise, it is the most
biodiverse spot in the second most
biodiverse state in the nation. And the
birds love it.*



Photo by Sean Fitzgerald, 2006 ICF Pro-Tour

So much so, that the Lower Rio Grande is one of those “bucket list” destinations for bird watchers and wildlife viewers. They come from around the world to see nearly 500 species of birds, including Great Kiskadees, Altamira Orioles, Plain Chachalacas, the rare Hook-billed Kites, Ferruginous Pygmy Owls, and the iridescent greens and blues of the Green Jay. In his book, *Fifty Places to Go Birding Before You Die*, Chris Santella writes that the Lower Rio Grande is “geographically blessed from a birding perspective.” In any given year, a half dozen species of birds not found anywhere in the United States could show up in South Texas.

The Lower Rio Grande and South Texas also is the land of big cattle ranches. The famous 825,000-acre King Ranch can be found just north of here. And since 95 percent of Texas is privately owned, most of this valued biodiversity is under private stewardship, currently facing huge urbanization pressures.

The area also is one of the fastest growing

regions of the state. Families that have run cattle on these lands for generations confront increasing challenges in keeping up with their management costs. Ranchers do not want these vast stretches of land to be a financial burden on their children and their children’s children. The threat to this special place is not just the displacement of a culture, but the fragmentation and loss of wildlife habitat. Lose the ranch and you lose the habitat.

A NEW FOCUS

Fortunately, at this crossroads, stands a group of environmental entrepreneurs taking a free market approach to saving the region’s wildlife habitat and ranches. Led by John and Audrey Martin, landowners in Edinburg, their efforts combine the tradition of Texas hunting leases with the growing popularity of wildlife viewing and nature photography. The solution: Create a steady stream of income for ranchers by day-leasing private lands to nature and wildlife photographers.

It is an idea that ties revenue directly to the quality and preservation of habitat. “With the exception of hunting leases, private landowners in South Texas have never had an economic reason to preserve wildlife habitat,” explains John Martin. “With photography, we can give pure economics to wildlife.” In practice, the concept joins some of Martin’s guiding principles. First, that “conservation is accomplished through the creation of wealth,” and second that “photography is the most powerful conservation tool on the planet.”

The use of photography to save wild places is not a new concept. In 1872, proponents of a bill to create the first national park strategically placed in the Rotunda of the United States Capitol photographs of Yellowstone’s wonders taken by William Henry Jackson. The vintage photographs left a marked impression on the public and their congressmen, and helped seal the fate of Yellowstone.

For Martin, his rotunda moment came in 1994 through his involvement with the Valley Land Fund, an organization he helped found to preserve land in the Lower Rio Grande. To raise money for the fund, Martin organized a wildlife photo contest. It paired nature photographers with private landowners. The winning team split the purse down the middle. The images were celebrated in a coffee-table book, which created additional photographer interest and demand to photograph Lower Rio Grande wildlife.

The contest was just the beginning. After that first event, Martin spent the day with a friend who had created an intimate one-acre photography setting on his ranch, complete with a watering hole and photography blind. Sitting in the blind gave Martin an up-close wildlife viewing opportunity. He calls it “the single greatest nature experience in my life.” A retired financial planner and business professor, Martin thought, “This is marketable. People would pay \$100 to \$200 dollars a day for this experience.”

In 2002, with Martin leading the way, five landowners, calling themselves Lens and Land, began to advertise their ranches to wildlife photographers, charging them \$100 to \$125 dollars a day for a more intimate nature setting than is available on nearby public lands. The ranchers created photo opportunities by providing things like photography blinds. Some would offer lodging and guide services. The idea proved such a hit that six landowners to the north, representing 24,000 acres, created the Texas Hill Country Nature Photography Alliance to provide the same opportunity in a different habitat.

RANCH ECONOMICS

Ranching is a hard business. In South Texas, grossing \$35 to \$50 an acre is a good year for a cattle rancher. More often than not, a cow-calf operation brings less than \$10 an acre, and usually closer to \$4 an acre, according to the state’s chief wildlife officer Carter Smith. To make ends meet, ranchers look for additional streams of revenue to offset costs. With hunting leases, cattle ranchers can get close to \$20 an acre, but hunting has its seasonal limits and, in some circumstances, can also mean higher overhead.

A long-time conservationist, Martin also has 35 years of experience in the world of finance. “There’s not enough money for government or charities to buy all of the biodiverse habitat. So, if we are going to preserve biodiverse systems, we need to give private landowners a competitive rate of return.”

His optimal economic model has large landowners dedicating 500 acres for photography day-leasing.

Hosting ten photographers a day for 200 days a year at \$100 a day, a rancher could bring in \$200,000 a year—or \$400 an acre. This year, Martin was booked from March to May with five to ten photographers a day.

According to a 2006 U.S. Fish and Wildlife Service survey, nearly one-third of the U.S. population 16 years and older, or 71 million people, participated in wildlife viewing compared with 12.5 million Americans in the same age class participating in hunting. Of that number, 11.7 million U.S. residents traveled specifically to photograph wildlife. In my home state of Florida, half a million nonresidents came to take pictures of wildlife bringing with them an average household income of \$73,000. The Martins have hosted photographers from as far as Europe and Canada.

RENT A COWBOY

While the economics of wildlife photography is still an evolving proposition, the wildlife benefits have been immediate and meaningful.

In addition to giving a visual voice to nature, the photo contests and leasing of lands for wildlife photography are helping to inform, educate, and motivate private landowners to conserve wildlife



Photo by Tom J. Ulrich, 2006 ICF Pro-Tour



Photo by Larry Jones, 2006 ICF Pro-Tour

habitat. "Families are recognizing they have something special on their ranches," says Smith. "I can't tell you the number of times a rancher has said, 'I've ranched here my entire life and had no idea that species existed on my land.'"

As ranchers help photographers with the lay of the land, nature photographers and state wildlife experts are helping ranchers appreciate the value of wildlife in their own backyards. Some are hiring biologists to further enhance their properties.

And, as Audrey Martin notes, the eight Valley Land Fund photo contests and seven subsequent photograph books since 1994 have resulted in 7,000 acres of conservation easements.

"You find

people changing their attitudes," explains John Martin, telling the story of one rancher who had a policy of killing every rattlesnake on his property. "One of our photo contests yielded that rancher a \$2,300 prize winning photo of a rattlesnake on his land. From that point forward, the rancher's policy was to only kill rattlesnakes found near his house."

Bob Petersen is another Texas ranch owner who was inspired by Lens and Land and thought that photography could be used on his land to generate income for improved habitat management. His 800-acre ranch now offers photography opportunities for \$125 a day as well as photography workshops.

With habitat management programs designed by Texas Parks and Wildlife, the Environmental Defense Fund and the Nature Conservancy, Petersen offers nature photographers habitat for 140 different bird species on a property of savannah prairies with native grasses, wildflowers, and stately live oaks. He also entered into a safe harbor agreement with the U.S. Fish and Wildlife Service to dedicate 200 acres to the preservation of the rare Black-capped Vireo songbird, another draw for wildlife watchers. Says Petersen, "Some people think you shouldn't make money on nature, but I think the free market is going to have to play a larger role."

LENS AND LAND

Leasing private lands for nature photography is still a business in its embryonic stage. The numbers are still fairly modest. Income for the five properties in Lens and Land hit \$75,000 this year, up from \$5,000 at its inception. Thanks to the Martins, Petersen, Smith and others, many landowners are becoming aware of its potential. The revenue from photo leasing alone will not make these lands self-sustaining, but it offers landowners another stream of money to help offset the cost of operations. And unlike hunting in Texas, the revenue potential can last year round.

The big question remaining is whether enough people will pay. But, as Petersen notes, "Twenty years ago, people thought paying for hunting was crazy." That said, nobody is waiting around for twenty years for trends to evolve. To help boost the supply and demand for this fledgling industry, the landowners have already embarked on their next big idea—Images for Conservation Fund Pro-Tour. The Pro-Tour is an exclusive series of nature pho-



Photo by Dave Welling, 2006 ICF Pro-Tour

tography contests modeled after the PGA Tour and bass fishing tournaments.

Like the Valley Fund contest, the ICF Pro-Tour event matches ranch owners up with professional wildlife photographers. In 2006, in the Hill Country of Texas, the inaugural competition awarded \$160,000 in prizes split between the landowners and the photographers. "At that time, [it was] the richest nature photographic event on the planet," says Martin. Ninety-three landowners applied for 17 slots. After this first contest, Martin says three participating landowners began the process of putting lands into conservation easements. And 10 of the original 17 are now actively establishing photo eco-tourism businesses.

The tour's second event, held this year in the Coastal Bend region of Texas, raised \$300,000 in sponsorships. Tour organizers increased the minimum acreage required for landowner entry from 500 to 1,000 acres, and still 40 landowners applied for 20 spots. The event kicked off with a symposium for ranchers and photographers and drew 45 South Texas landowners interested in learning more about leasing their lands.

WIDE MARKET

The state's wildlife agency is at the crossroads too. Smith is encouraged by what he sees in nature photography leasing. "I am excited by this trend and where it is going. Philosophically, it is where we want to go as an agency—voluntary, non-regulatory, incentive-based programs for wildlife."

As a landowner, Bob Petersen is also inspired. "Conservation for profit is a neat idea. I would rather do conservation through a usage model than a taxation model any day."

In giving Texas landowners additional income and pride in the habitats they provide while giving wildlife photographers solitude, closeness to nature, and convenience, nature photography leasing may prove to be the next new thing in free market environmentalism.



Photo by John Goodspeed, 2006 ICF Pro-Tour



Photo by Sean Fitzgerald, 2006 ICF Pro-Tour

And that would suit one of its pioneers, John Martin, just fine: "For the last 15 years I have been searching for a tool that would offer the opportunity to develop a sustainable industry. Nature photography is already in place but not directed. It is like bass fishing before professional bass tournaments.

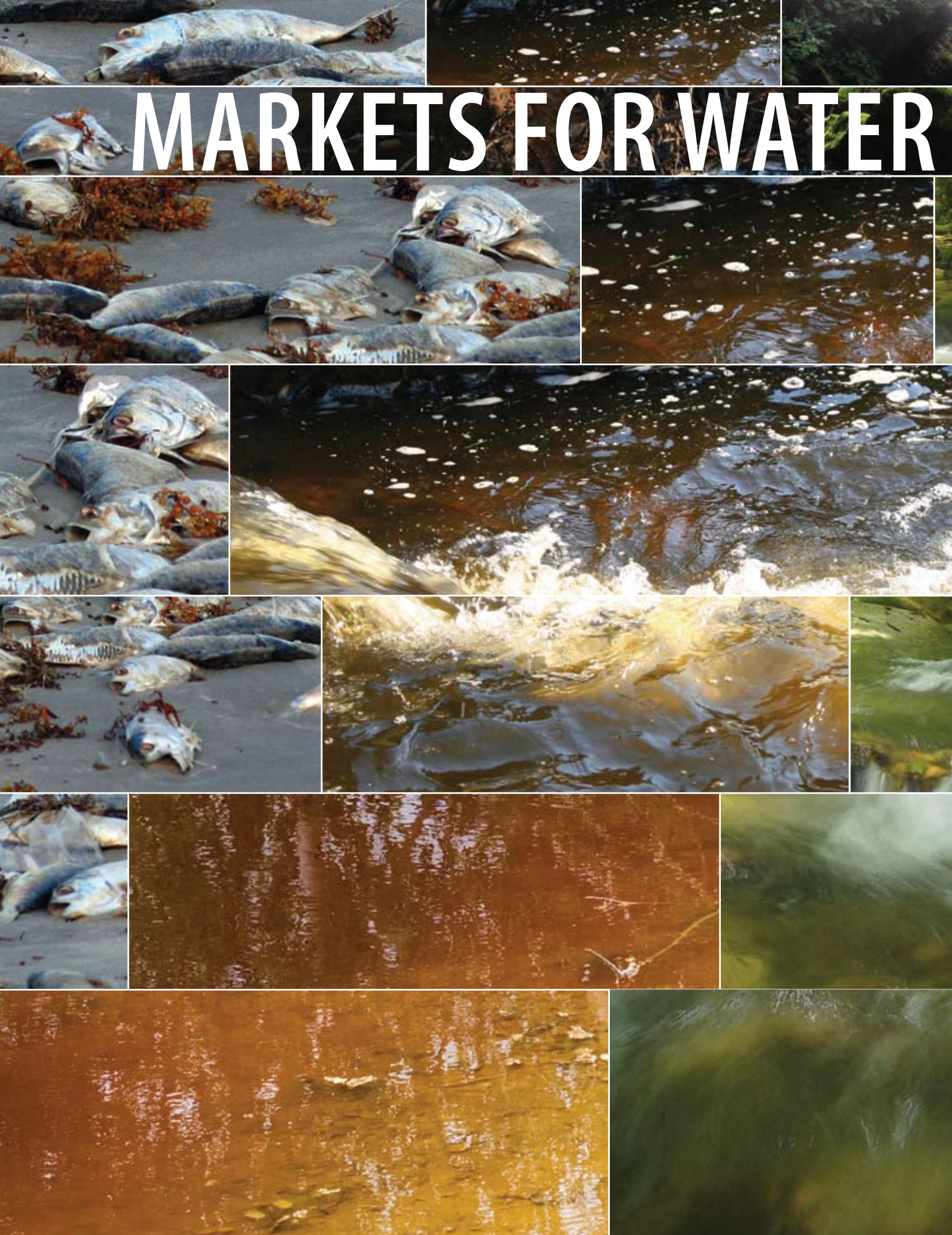
"Our latest trip to Alaska drove home this point. We were around thousands of people, all of whom carried digital cameras. The number one reason they were there was for the wildlife of Alaska. This is a huge undirected constituency with great economic power."

"I believe we have an opportunity to develop a \$100 billion industry around private lands nature photography tourism. If that can be accomplished we will save enough biodiversity to allow nature to survive."



BRIAN YABLONSKI is an adjunct fellow with PERC, and Vice-Chairman of the Florida Fish and Wildlife Conservation Commission. Brian can be reached at Brian@perc.org.

MARKETS FOR WATER



QUALITY

In the late 1990s, the U.S. Environmental Protection Agency (EPA) began encouraging the use of market forces to improve water quality in rivers, streams, and coastal waters. The EPA realized that the command-and-control, point-source regulations prescribed by the Clean Water Act were not working.

In some cases, every point source such as discharge from a pipe at an industrial facility was operating within the limits of EPA-sanctioned permits, but the river was still polluted. Uncontrolled nonpoint-source discharge such as excess fertilizers and insecticides from farming was generally the culprit, but agriculture was outside the EPA's regulatory authority. In other cases, the activities of large numbers of publicly owned treatment works were not under the control of one coordinating authority.

To the EPA's credit, the agency has encouraged experimentation with incentives and markets to address growing water quality challenges. Three different approaches in Pennsylvania, Connecticut, and North Carolina serve as examples.

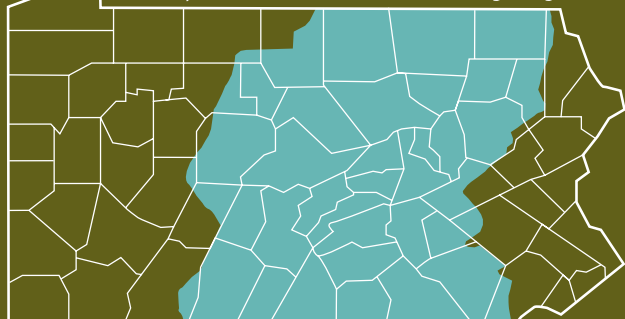
PENNSYLVANIA'S PROGRAM

In November 2007, the state of Pennsylvania approved a transaction under a nutrient trading program that illustrates how a third party can facilitate water quality improvements. The transaction involved a five-year trade between a farm operation and a real estate developer. The developer wanted to move some earth, build a community, and put in a compact sewage treatment plant. Doing so would generate nutrient discharge in the watershed. The farm operator, looking for additional positive cash flow, saw an opportunity to go to no-till farming, thereby reducing runoff. The transaction brought improved water quality, gains from trade for the buyer and seller, and a commission for the Red Barn Trading Company, the firm that organized the transaction. The geographic area covered by the Pennsylvania trading program is shown in the map below.

Red Barn Trading Company emerged when Pennsylvania embarked on a market-based journey to improve water quality. There was no problem determining what might be an acceptable trade and how the transaction would be approved and registered. The state Department of Environmental Protection had that base covered. What was missing was a supply of potential nutrient reductions and a way to connect buyers and sellers. Red Barn played the counterpart of a real estate broker in a nutrient permit trading world. Today, Red Barn's website (www.redbarnag.com) lists suppliers and prices for nitrogen and phosphorus reductions. The website also provides step-by-step instructions for determining how many credits one might need to offset actions that would increase nutrient loadings in watersheds. Drawing on a real estate analogy, the Pennsylvania case has buyers, sellers, agents, and a courthouse function played by the state Department of Environmental Protection.

It turns out Pennsylvania has a long tradition in making markets for environmental quality. The state organized one of the nation's first air quality offset transactions in 1978 when Volkswagen (seeking to build a Westmoreland County plant for producing Rabbits) encountered hydrocarbon emission constraints. Pennsylvania moved from petroleum-based to water-based asphalt paving and in doing so provided "room" for the Rabbit plant to operate. Market forces helped bring cleaner air, employment growth, and the production of fuel efficient autos in Pennsylvania.

Pennsylvania Watershed Trading Regions





LONG ISLAND SOUND

Long Island Sound has a hypoxia problem at the intersection of New York and Connecticut. Hypoxia is a situation of extreme oxygen deprivation where fish cannot live. The loss of oxygen comes from increased discharge of nitrogen and phosphorus that encourages algae growth and blooms, which eventually decay and consume oxygen in the water. Working together with the EPA, in 2001, Connecticut and New York authorities found that most of the nutrient loads were coming from 79

publicly owned treatment works (POTWs) in Connecticut. As is generally the case, the POTWs were managed by different local authorities. In a way, having a problem confined to 79 similar sources made things simpler. But there was

no single coordinating manager with authority to take a systems approach in operating all of the plants.

Using the EPA's watershed management tools, the two states identified the Total Maximum Daily Load (TMDL) of nitrogen for the Long Island Sound. In 2002, Connecticut's Department of Environmental Protection established a Nitrogen Credit Exchange for the purpose of reaching the TMDL and achieving a targeted 65 percent reduction in nitrogen discharge by 2014.

Legislation establishing the exchange built a process of payments that gave powerful incentives for POTWs to discover ways to reduce nutrient discharge. The process works like this: Each year, the exchange evaluates the cumulative record for daily discharge and annual operating cost data for each POTW. Those POTWs that have exceeded their discharge goal pay the exchange for each unit above

the allowable amount. And those POTWs that have discharged less than their goal are paid by the exchange for each unit below the limit. The amount paid is based on the average cost of reducing nitrogen discharge from the 79 plants. In 2006, the average cost was \$3.40 a pound. The exchange received \$2,394,956 in payments and paid out \$3,828,114. Although there was a deficit in the account that year, there have been surpluses in other years. By 2007, the community of POTWs was approaching the goal set for 2008, but still had a way to go to reach the 2014 target.

The Connecticut Nitrogen Credit Exchange illustrates how a community of POTWs that individually and collectively affect water quality can be reorganized around market incentives so that one manager coordinates outcomes. Unlike the Pennsylvania case, this example does not involve nonpoint-source dischargers and brokers but instead focuses on POTWs. But like Pennsylvania, Connecticut has found a way to achieve extraordinary water quality improvements at a lower cost. In the absence of taking a system approach, each POTW operator would have faced the prospect of installing higher cost, advanced waste treatment technology for achieving the water quality goal.

TAR-PAMLICO BASIN

In 1989, following a large fish kill, community leaders in the North Carolina Pamlico Sound region faced a serious problem. As one of the largest salt water fisheries on the Atlantic coast, the Pamlico Sound was sought after by sport and commercial fishermen. And with a lovely rural setting enriched by the Tar-Pamlico River, the community enjoyed a pleasant and productive lifestyle. All of this was threatened by one fact—the Tar-Pamlico River was dying from oxygen depletion. Unlike the Long Island Sound, which faced a similar problem, the source of Tar-Pamlico's demise was 80 percent related to nonpoint-source discharge. The more than 20 POTWS and the few industrial dischargers located in the basin were operating within the limits of their EPA-approved permits, and even if they shut down completely, the beautiful Tar-Pamlico River might still be threatened. The map on page 17 shows the location of the Tar-Pamlico basin.

The communities faced the fact in 1989 that they would either have to install advanced treatment technology to the tune of several hundred million dollars and still not get the desired result, or discover a new way to manage environmental quality. With assistance from the EPA, Environmental Defense Fund, North Carolina Environmental Management Commission, and other state agencies, the folks in the community discovered another way. Using an existing river basin foundation as a vehicle, community leaders organized the Tar-Pamlico River Basin Association. Publicly owned treatment works and industrial plant operators were given the choice to join or deal

separately with the EPA. The majority of the operators joined the association.

Joining the association was not cheap. Point source dischargers paid a fee for each unit of nitrogen or phosphorus emitted to the river. And much like the 79 POTW operators in Connecticut, each member of the association was required to cooperate in an association-sponsored effort to upgrade plant maintenance and operating procedures. Indeed, this effort alone led to significant discharge reductions. In December 1989, the association set a goal of reducing nutrient discharge by 20 percent by 1994; they accomplished this while the region experienced population growth.

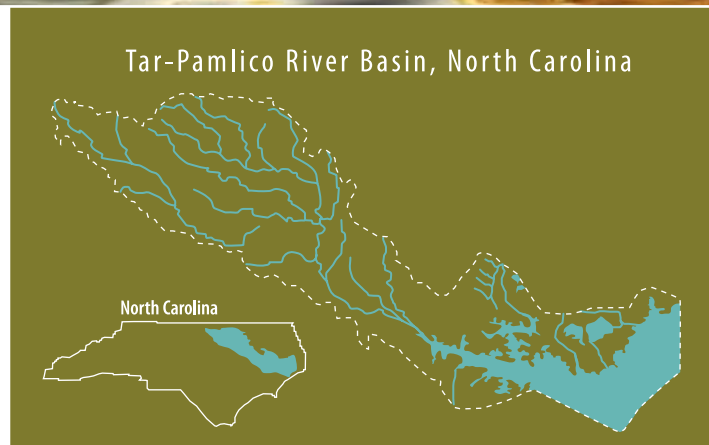
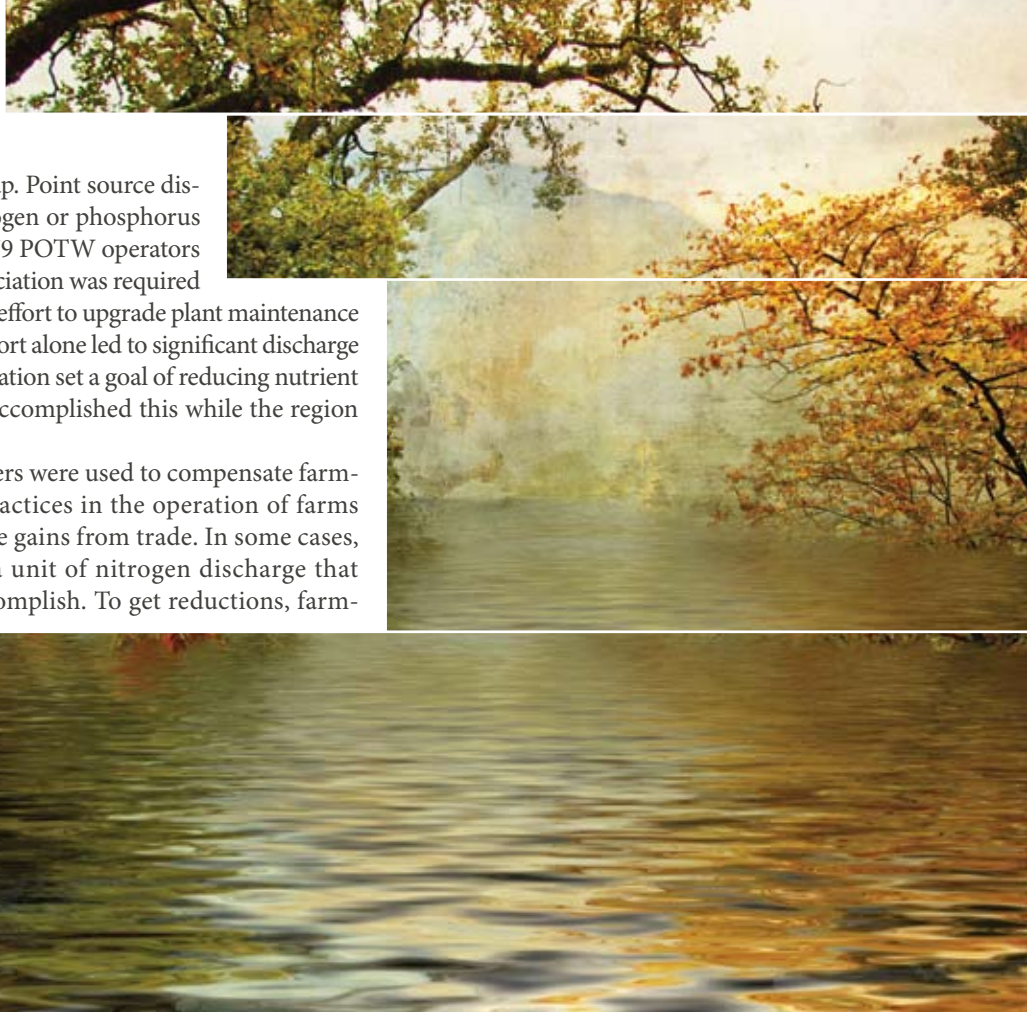
The fees paid by association members were used to compensate farmers for installing Best Management Practices in the operation of farms and dairies in the area. There were large gains from trade. In some cases, a farmer could spend \$13 to reduce a unit of nitrogen discharge that would cost a POTW nearly \$35 to accomplish. To get reductions, farmers installed buffer strips along creek sides and found ways to use discharge from swine operations for fertilizing pastures. By way of improved POTW operations and contracting with farmers, the Tar-Pamlico River Basin Association achieved major reductions in point- and nonpoint-source nutrient discharge. As time passed, Tar-Pamlico became a key player in a larger state enterprise that focused on setting standards for nonpoint-source nutrient dischargers.

The Tar-Pamlico story is distinguished by the use of an association for gathering revenues and then contracting with farmers to reduce nutrient discharge. Unlike the Pennsylvania Red Barn examples, Tar-Pamlico is its own agent. But in ways similar to the Pennsylvania story, Tar-Pamlico works closely with the state in coordinating and operating the trading process. Like the water quality programs in Pennsylvania and Connecticut, North Carolina's program is heavily affected by state and federal regulation. Even so, market incentives provide a better way to improve water quality at a lower cost.

RISK AND REWARD

The three case studies reported here illustrate what can happen when states are given flexibility in achieving environmental goals. In each case, market incentives have been used to induce cooperation, innovation, and accountability. These experiments did not always come easy. Sometimes regulators looked the other way to encourage experimentation. By taking on risk, the regulatory authorities helped deliver improved institutions for managing water quality. Think what might happen if state and federal legislative bodies provided a process for granting waivers for more controlled experiments where the sponsoring organization would demonstrate the superior potential for alternative approaches for achieving improved water quality.

Markets don't always emerge with experiments, but when they do, they can contribute to the discovery of lower cost environmental quality.



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IT'S OUR EARTH, NOW WHAT DO WE DO WITH IT?

Political movements are often built on literary foundations. Abolitionism owed much to *Uncle Tom's Cabin*. Progressivism had Upton Sinclair and Ida Tarbell. Books, fiction or not, have the power to convince us impressionable readers that we face dire threats, such as unclean meat or pesticides. Political entrepreneurs, promising to protect us from those threats, can then work on the fertile ground of our fears.

The environmental movement has been very successful at making America afraid. Forty-five years ago, Rachel Carson's *Silent Spring* convinced the public that DDT was a great threat to our ecosystem; more recently, Vice President Gore's "An Inconvenient Truth" created widespread alarm about global warming. In 1968, Paul Ehrlich's *The Population Bomb* terrified millions with its claim that humans had overtaxed the environment and that "in the 1970s and 1980s hundreds of millions of people will starve to death in spite of any crash programs embarked upon now."

Inconveniently for Mr. Ehrlich, but luckily for the rest of us, his prediction did not come true. Yet still, despite its empirical failings, "The Population Bomb" was in many ways a great success. By convincing its many readers that ignoring the environment was a perilous course, the book advanced the cause of green activism and set the stage for the landmark environmental legislation of the Nixon era.

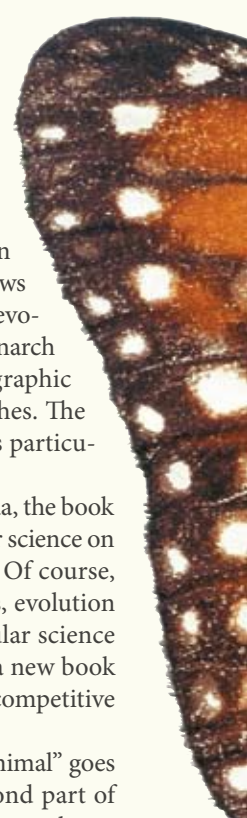
It seems particularly appropriate that in this year of rising commodity prices, exactly 40 years after "The Population Bomb," Paul Ehrlich is back. Together with his wife Anne, he has written "The Dominant Animal" (Island Press, 428 pages \$35), a book that is being billed

as a new and vital environmental warning from the once consummate Cassandra.

Luckily, the book is better than its publicity. Paul Ehrlich is a distinguished entomologist, an expert on lepidoptera. The book's first 200 pages provide a well-written presentation of evolutionary science that shows the depths of Mr. Ehrlich's knowledge. Co-evolution is taught through the poisonous monarch butterfly and its mimic, the viceroy. Geographic speciation is explained with hermit thrushes. The Ehrlichs' description of island equilibria is particularly compelling.

Stripped of the Ehrlichs' political agenda, the book could have been a very nice piece of popular science on the rise of mankind to world dominance. Of course, from Thomas Huxley to Richard Dawkins, evolution has long attracted some of the finest popular science writers. And there was no guarantee that a new book on evolution would survive in the highly competitive world of Darwinian literature.

Perhaps as a result, "The Dominant Animal" goes beyond its evolutionary origins. The second part of the book once again sounds the environmental tocsin. I found this part of the book unobjectionable, but the warnings are hardly as exciting today as they were 40 years ago. Enough books on environmental doom have been printed to kill off a forest of giant redwoods. Moreover, the Ehrlichs are no longer making exciting, if irresponsible, claims about the imminent demise of millions. Instead, their more moderate warnings have become the conventional wisdom.



Most of my Republican friends would now agree with the Ehrlichs' view that climate change is a real danger, and that people do not internalize the full environmental costs of producing toxic chemicals and driving. Today, we need sound policies that will make us better stewards of our "natural capital," as the Ehrlichs call it, more than we need more alarms.

Unfortunately, the authors' forays into policy making are the most painful part of the book. The authors have thrown together a left-wing wish list crammed with proposals that stray far from their science. How can environmental issues get better treatment in America? The Ehrlichs propose we "stop gerrymandering." Ah yes. The best thing to save the spotted owl would be to spend millions of hours trying to pass a constitutional amendment that would prevent legislatures, which seem likely to be overwhelmingly Democratic after the next census, from redrawing the political map.

On foreign policy, they recommend that "congress should insist in the short term that the executive branch work with Russia on what may be the most crucial environmental problem of all—the threat of a humanly and ecologically catastrophic nuclear war." Is it really wise, or constitutional, for Congress to pass a resolution that forces the hand of the executive branch in conducting

diplomacy? Such a resolution would do wonders to ensure that the State department has as little bargaining power as possible in its dealings with Russia.

The authors are particularly ardent in their opposition to population growth. It is true, as they point out, that there are environmental costs of having more people—all of us use natural resources and energy and bear some responsibility for greenhouse gas emissions. But there are also benefits, especially to the people being born. Each new person has a brain that might come up with new technologies that could reduce humanity's environmental impact. As an urban economist, my life's research has focused on the many ways in which we are all enriched by the people around us. Are there many parents who think that the world would have been better off if they had decided to have one less child?

The Ehrlichs are right that we face real environmental threats, but there are better and worse ways of facing those threats. Today, we need sophisticated policies that weigh costs and benefits, not more warnings. Ironically, the very success of environmental alarmism has convinced many of us that the environment is too important to be left to the environmentalists.

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Growing green in brown China

BY JEFF BENNETT

The statistics are startling. The People's Republic of China (PRC) constitutes 22 percent of the world's population but only 7 percent of the world's arable land. And 50 percent of that area has been severely eroded. Desertification is occurring in almost 30 percent of China and salinization affects 10 percent of the nation.

It is tempting to conclude that this situation has come about simply because of population pressure, but there are many other countries in the world with even higher population densities that don't have the same problem. Rather, the resource degradation phenomena, particularly in western China, has come about through the imposition of a raft of policies beginning in 1949 with the Mao regime.

The requirement for grain self-sufficiency in each province pushed ill-suited lands into unsustainable agricultural production. This was exacerbated by an industrialization policy that located factories in the less populated and strategically secure western provinces, and an associated policy of forcibly moving people into the hinterland.

COLLECTIVISM AT WORK

Most significantly, agriculture was collectivized. State ownership of the land and the products of the land, right through to state monopoly control of the distribution process, meant that individual farmers had no financial incentive to be productive. Nor did they have an incentive to care about the condition of the natural resources—the soil and water—which were once central to the sustainability of their livelihoods.



Even the introduction of the Household Responsibility System (HRS) in 1978, which served as a key component to economic reform, was not able to stem the tide of resource degradation. Under the HRS, farmers were given rights to the products of their labor. These so-called “use rights” did not, however, extend farmers’ incentives to care for the natural resources they used. These incentives were further weakened by frequent compulsory seizure of land without compensation.

The degradation of China’s agricultural lands—particularly those in the western provinces with their fragile soils and harsh climate—presents a multitude of issues. Environmentally, the rivers are choked with silt, the air is polluted by sand storms on top of motor vehicle exhausts and factory wastes, plants and animals are being pushed to extinction, and the western landscape has taken on a lunar quality. Socially, the livelihoods of millions of farming families are being jeopardized by diminishing productivity and an increasing frequency of natural disasters such as floods and mud slides. Politically, the pressure of dissatisfied, poor, rural households seeking to relocate

to wealthier urban areas is unnerving to the Central Council of the PRC.

GRAIN FOR GREEN

In recognition of these issues, in 1999 the Chinese Government instituted the Conversion of Cropland to Forest and Grassland Program (CCFGP) in an attempt to stabilize the soils of highly erodable areas. Under the program—often called the Grain for Green Program—farmers are paid a combination of cash and grain to plant tree seedlings or perennial grasses (provided free) on previously cropped or barren land.

The program has been enthusiastically embraced by more than 15 million farm households across 25 provinces. Between 1999 and 2005, 55 million acres were converted. The Chinese government has budgeted US\$43.6 billion for CCFGP and it is expected to increase forest and grassland areas by 93 million acres by 2010.

A chief concern regarding the program is whether the land-use changes it has generated will be continued once the payments of grain and cash are stopped. For



UNDER THE GRAIN FOR GREEN PROGRAM,
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farmers to refrain from simply returning to their previous practices, the net income stream resulting from the newly established trees (from fruit and lumber production) and grass (from grazing enterprises) must be greater than the old patterns of annual cropping.

Surveys of farmers across four provinces in northwest China, reported in *Environmental Protection in China: Land Use Management* (2008), show that, in general, the profitability of the new land uses over a ten-year time frame, including tree crops (apples, apricots, and persimmons) and perennial pastures for tethered livestock, is superior to those generated by the continuation of old practices such as annual cropping of wheat and unconstrained grazing.

This result is good news for the sustainability of the program's land use changes and the continuation of the environmental and social benefits they bring. However, it begs the question: If the alternative land uses offered better livelihoods, why didn't farmers adopt the changes without the need for the CCFGP?

PIECING THE PUZZLE

The answer to this question is multifaceted. Undoubtedly, a lack of knowledge regarding the alternatives promoted the continuation of the status quo. Also, the costs of change—including the costs of tree seedlings and pasture seed as well as the years of foregone income during the establishment phase of tree crops and grazing enterprises—presented a barrier to many farmers without personal savings or access to credit.

Another important element of the answer relates to the weak definition and defense of the property rights held by farmers. Without clearly defined and defended rights to the land, farmers are constantly concerned that they will lose their access. Farmers can limit the risk this presents to their livelihood by reducing the time period between the planting effort and the harvest reward. Annual cropping is therefore a low-risk option compared to establishing pastures for grazing and, even more so, the planting of tree



crops. A crop of wheat, for example, takes just one season to provide an income, but an apricot or an apple tree will not bear a financially rewarding crop for at least three years. Chinese farmers know that a lot can happen, politically, in three years that may cause them to lose access to the trees they planted.

What the CCFGP did for farmers was to provide an assured source of annual income in the period when the new land uses were being established and before they could yield readily accessible annual income streams. In essence, the program lowered the risks of land use change created by the insecure property rights.

The message relating to property rights has not been lost on the Chinese government. One component of the CCFGP has been an extension to 70 years of the use rights farmers have over their outputs if they enroll in the program. In 2007, the annual meeting of the Central Council discussed the prospect of instituting private property rights over more intensively used agricultural land. Should this occur, the extent of the government's budgetary commitment to the continuation of the CCFGP, and numerous other resource protection schemes (including the Shelter-

belt Development Program and the Sand Control Program for Beijing and Tianjin) could be reduced while more environmental protection is being achieved.

This article is based on a project Bennett has been leading with the Chinese Forest Economics and Development Research Centre, with funding from the Australian Centre for International Agricultural Research. More details of the project can be found in Bennett, Wang and Zhang, *Environmental Protection in China: Land Use Management* (2008).



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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

SPECIES PROTECTION

The Endangered Species Act (ESA) has been hotly debated for 40 years. Supporters call it the “crown jewel” of American environmental legislation, essential to biodiversity preservation. Opponents argue that the ESA imposes high costs on society while delivering few benefits. New research brings important evidence to bear on this debate. Ferraro, McIntosh, and Ospina (2007) find that the ESA has, in fact, failed to protect endangered species. Indeed, their evidence indicates that for a large majority of the species studied, listing under the ESA has actually harmed the species’ chances of recovery.

Ferraro *et al* examine two different elements of the ESA’s operation: the impact of listing a species as being endangered, and the effects of species-specific government recovery expenditures. After taking both listing and spending into account, the authors find that the overall effect of the ESA has been to reduce listed species’ chances of recovery, although this negative effect is small. They go on to show that there are quite dramatic differences in outcomes depending on the level of spending on species recovery programs. For the 25 percent of the listed species that garner about 95 percent of all government recovery funding, the ESA seems to have produced improvements in the chances of recovery. But for the other 75 percent of species, those that are largely ignored by the funding process, the ESA has sharply reduced species’ viability, compared to unlisted species that are otherwise similar except for listing status. Thus, for most of the species studied, the ESA has had perverse consequences, reducing rather than enhancing survival chances.

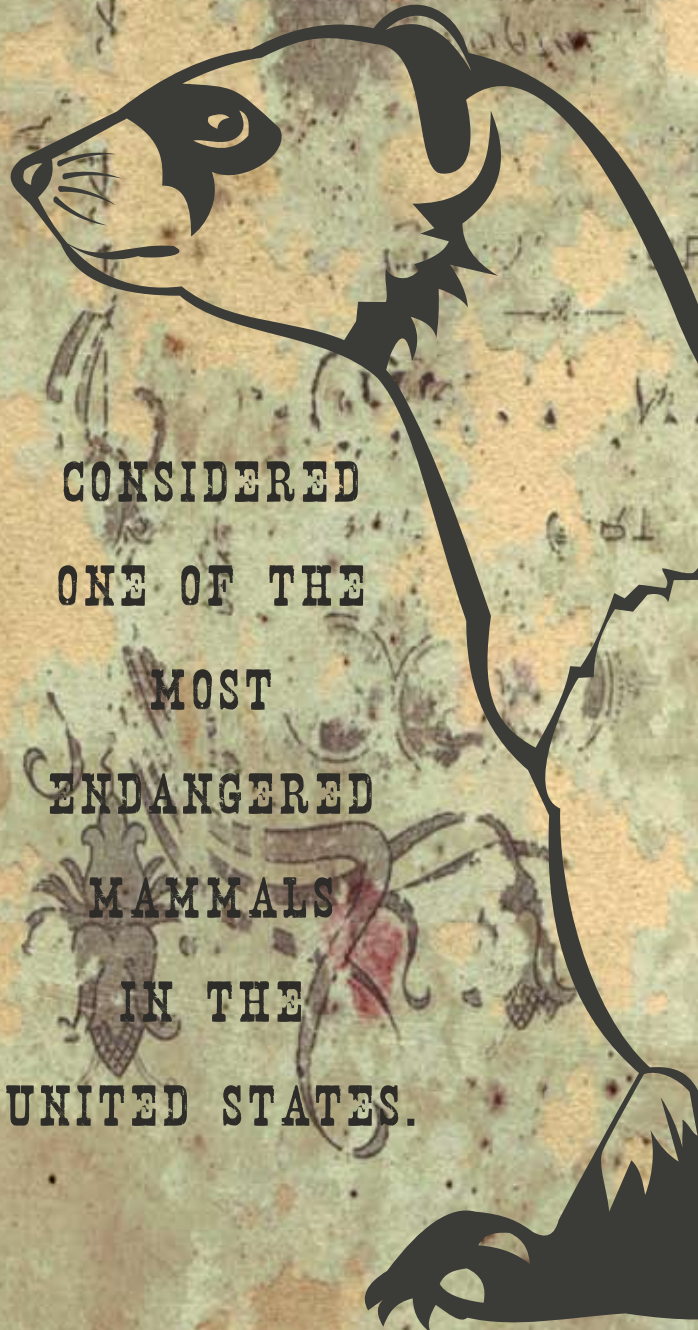
Prior studies of the impact of the ESA have been flawed by their failure to adequately address the question: What would have happened to a listed species had it not been listed? Ferraro *et al* have answered this question by matching each listed species with one or more unlisted species that are substantially identical to the listed one. They do this match in terms of scientific, political, and charismatic features influencing the decision to list. For example, a charismatic, critically endangered species located in a state whose inhabitants strongly favor environmental policies is matched with one or more unlisted species that have the same attributes. The authors then compare the performance of the listed species with the performance of their matched but unlisted “twins.” Ferraro *et al* are limited by the available data for the study of native terrestrial and freshwater vertebrates that have full species status; even so, they are able to closely track over time the performance of 135 listed species and 295 unlisted but matching species.

The results are striking: For the overwhelming majority of listed species—those that receive little funding for recovery—listing under the ESA markedly reduces the species’ chances of recovery, compared to their unlisted twins. For the 35 or so well-funded species, recovery chances have been enhanced, but it is recovery expenditures, not listing per se, that is doing the work.

One weakness of this study is that the authors do not examine whether alternative types of recovery fund-

WANTED

BLACK FOOTED FERRET



CONSIDERED
ONE OF THE
MOST
ENDANGERED
MAMMALS
IN THE
UNITED STATES.

ing make a difference in the expected survival of a species. For example, funding data are not separated by source (state and local versus federal), nor is the exact use of the funds distinguished. It would be valuable to know, for example, whether habitat acquisition was more or less protective than is enforcement spending. Similarly, one cannot rule out the chance that some funding creates the illusion of protection because it simply results in the discovery of more members of the listed species.

It may seem odd that a law ostensibly designed to protect species could end up harming them. Yet there are at least two mechanisms through which this may occur. First, there is the well-known “shoot, shovel, and shut up” response to the ESA: When species on private land are listed, property owners may attempt to rid themselves of the species to avoid government restrictions on the use of their land.

But there is a more subtle effect that may be at work here. Some species are under threat from other non-human species or from climate-forced habitat change, rather than from assaults by landowners. The best long-term hope for these species may be proactive assistance (e.g., control of exotic species) from the owners of the land on which they reside. As Wilcove and Chen (1998) noted, “maintenance-dependent” species such as these can disappear without the landowner ever lifting a finger. In fact, they may disappear precisely *because* of landowner inaction—inaction the owner may find attractive if a private recovery program undertaken by the owner would invite intrusion by the Fish and Wildlife Service.

This brings us back to the importance of species-specific recovery expenditures. Enforcement activities might well deter active hostility toward listed species on private land. But only spending for programs such as habitat acquisition is likely to boost private efforts to aid maintenance-dependent species.

Although Ferraro *et al* have left some important loose ends, their message is ominous. The ESA does not merely fail to provide widespread species protection; it is positively harmful for most endangered species. Given the widely acknowledged costs of the ESA, perhaps it is time to change the way we think about—and behave toward—species conservation.

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SNAGGED

HALIBUT DILEMMA GETS ATTENTION

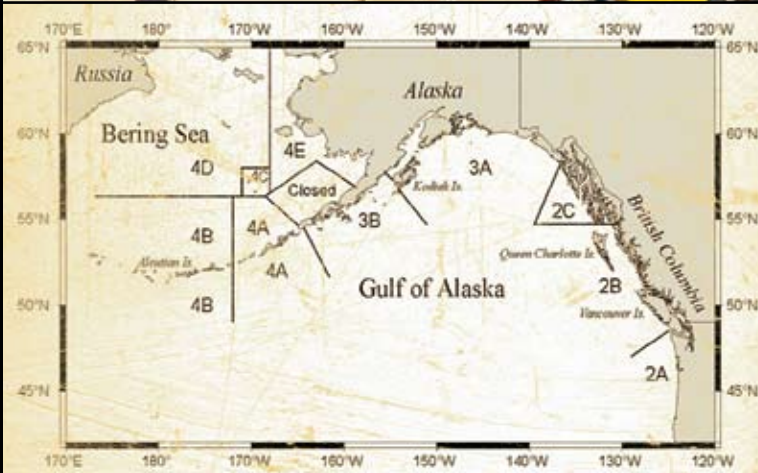
BY DONALD R. LEAL

A few hard tugs on my line prompted me to set the hook on the hungry fish. I remember the struggle I had reeling in the hefty halibut from a depth of 150 feet. The struggle was worth it—I packed home 30 pounds of delicious fillets and, of course, the delicacy of halibut “cheeks.” The halibut was not a monster by any means, especially compared to the 300-pound behemoth caught earlier in the week off the coast of Homer, Alaska. But counting the other three halibut my wife Sandy and I caught, we were happy with the fruits of our chartered fishing trip last year. The only “downer” was the warning by our skipper: “Enjoy today’s haul folks because next year’s regs may not allow as many halibut.”

For charter anglers off Juneau and the rest of southeast Alaska, the skipper’s warning proved true in early June of this year, when the harvest limit was exceeded in area 2C (see map, page 28) and the National Marine Fisheries Service cut the bag limit for a charter boat angler from two to one halibut per day. A temporary restraining order was issued by the U.S. District Court on June 20, lifting the one-fish-per-client daily limit and restoring it to two. The move may be only temporary, however. A group that includes commer-







cial halibut fishers, subsistence fishers, two Alaskan coastal communities, a state legislator, and charter boat operators plans to intervene, concerned that restoring the daily bag limit to two fish will result in the recreation sector continuing to exceed the yearly harvest limit.

Unfortunately, the debate over daily bag limits overlooks the two real problems plaguing the halibut fishery—failure to control the recreational catch and failure to reconcile conflicting demands for halibut.

A daily bag limit controls a fisher's catch for the day, but it does little to control the total number of anglers or days fished in a fishery. Halibut's growing popularity among resident and nonresident anglers alike has resulted in an increasing share of total halibut landings by commercial and recreational fishers, subsistence fishing by natives, and incidental catches in other fisheries. In the 1970s, the recreational catch represented a mere 2 percent of the total annual catch; in the 1990s, it made up 18 percent of the catch.

The other problem is reconciling the two main uses of halibut. Commercial fishers seek halibut knowing that it is a profitable venture. Consumers enjoy fresh halibut most of the year thanks to the efforts of commercial fishers. Processors and other support services and coastal communities also ben-

efit from the commercial demand for halibut. On the other hand, tens of thousands of anglers, like my wife and me, also enjoy halibut. We pay charter businesses to help us find them, and other businesses to help process and deliver them to our homes. Both sectors lead to economic gains.

So how is the allocation of the halibut catch reconciled? Economists say that markets provide the best way of satisfying various demands. Buyer and seller will agree to a transaction only if both sides benefit. Unfortunately, a market for allocating shares of the allowable halibut catch is not available to satisfy commercial and recreational demands. Instead, the political process determines allocation. Those familiar with the fishery know that, over the years, this has entailed acrimonious battles. Commercial interests argue that the recreation sector's growing share of the catch threatens their livelihoods and the lack of control over the recreational catch is a conservation concern. Angling interests counter that commercial fishing still takes the lion's share of the total allowable catch set by managers. Neither side wants to give an inch.

Fortunately, there is a way to create a win-win situation for both sectors. It is built on a market-based fishery management tool called individual fishing quotas (IFQs). Under this system, each quota holder is entitled to catch a percentage share of the



THE DEBATE OVER DAILY BAG LIMITS OVERLOOKS THE TWO REAL PROBLEMS PLAGUING THE HALIBUT FISHERY—FAILURE TO CONTROL THE RECREATIONAL CATCH AND FAILURE TO RECONCILE CONFLICTING DEMANDS FOR HALIBUT.

total allowable catch set each year by fishery managers. Limiting individual catches in this manner has proven to be a more precise way of controlling the overall annual catch than traditional restrictions such as limiting season length. The system also provides a way to reduce the acrimony by letting the marketplace allocate fish among users. If an operator of a charter boat or commercial fishing vessel wants more fish to catch for the season, he or she can simply augment it by purchasing quota from someone willing to sell or lease their quota. This could be a two-party transaction between a commercial and charter operator or through a broker.

Pioneered in New Zealand and Iceland in the 1980s, IFQs have proven effective in improving economic performance in commercial fisheries. With IFQs and less restrictive fishing seasons that come with them, New Zealand fishers have time to target large snappers and improve product quality. For example, they began to use containers with a water supply so they could deliver live snappers to market. By catering to the high-end fish market in Japan, fishers were able to triple their revenues. Before IFQs, competition among fishers caused a race for fish, which resulted in catching large quantities of fish of varying size.

Because they are tradable, IFQs in the herring fishery in Iceland allowed more efficient fishers to buy up the quota from less efficient fishers, thereby eliminating the problem of fleet overcapacity in the fishery. Since the introduction of IFQs, the total tonnage of the fleet has been reduced by 25 percent, and fishing effort has tapered, with total days at sea reduced by 25 percent.

In British Columbia's halibut fishery, individual vessel quotas (a modification of IFQs) were introduced in the commercial sector in 1991. They helped spread out the harvest over a nine-month period, rather than six days under the prior regulatory approach. Now, fishers supply the market with fresh halibut for a much longer period during the year, and their catch commands a much higher price.

Despite IFQs' growing success in commercial fisheries, they face political hurdles when it comes to implementation. In 1996, Congress imposed a moratorium on using IFQs in federal fisheries (excluding those where IFQs already existed—halibut, sablefish, surf clam, and wreckfish fisheries) in response to complaints by various interest groups that IFQs needed national guidelines. Eventually, support from fishing and environmental groups like the Environmental Defense Fund was enough for Congress to let the moratorium lapse on October 1, 2002. IFQs can now be applied to a federal fishery for economic or conservation purposes, if a majority of commercial fishers vote to use them.

There are also challenges to using IFQs in the recreational sector of marine fisheries. In 2001, the North Pacific Fisheries Management Council (NPFMC) approved a proposal to implement IFQs in the charter boat sector of Alaska's halibut fishery. As envisioned, the IFQs would have been transferable between the sport fishing charters and commercial fisheries under conditions intended to provide stability to both sectors. In December 2005, however, the NPFMC rescinded its approval of the charter IFQ program because of concerns that the initial allocation of IFQs would not cover recent operators in the sector. Since then, NPFMC has imposed restrictions such as preventing harvests by charter crew members to try to constrain the recreational halibut catch. But the actual catch continues to exceed the recreational catch limit.

Given the immediate political hurdles to implementing a full blown IFQ program in the recreational charter sector, a modified approach is an option. According to economists Ragnar Arnason and Peter Pearse, such an approach is being tried in the British Columbia halibut fishery. Individual vessel quotas are being used in B.C.'s commercial halibut sector with positive results. However, like the Alaska halibut fishery, there has been growing anxiety over unconstrained catches in the fishery's recreational sector. By the year 2000, the recre-



PERC and Environmental Defense Fund (EDF) will publish *Evolving Approaches To Managing Marine Recreational Fisheries*, co-edited by Donald Leal and EDF's Vishwanie Marahaj, in the fall. The book features experts in fisheries, economics, and natural resource policy exploring the theoretical and practical aspects of applying rights-based strategies to improve management of marine fisheries.

**EVOLVING APPROACHES
TO MANAGING
MARINE RECREATIONAL FISHERIES**



EDITED BY DONALD R. LEAL & VISHWANIE MAHARAJ

ational catch had grown to 9 percent of the total allowable catch (TAC). In response, the Minister of the Department of Fisheries and Oceans (DFO) assigned a cap on recreational anglers of 12 percent of the TAC—giving it room to grow. If recreational anglers wanted to increase their share of the TAC in the future, they would be expected to purchase quota from commercial fishers. Furthermore, the Minister announced that if the recreational catch continued to grow and they failed to correspondingly expand their entitlement by purchasing quota, he would impose regulatory measures on fishing to constrain their catches to the desired limit.

Meanwhile, the commercial sector leased quota from the recreational sector's surplus in return for cash payments based on the price of quota in the commercial sector. In 2005, payments for the recreational sector's surpluses approached \$2 million. The money is in a fund set up by a commercial fisher organization that can be used by recreational fishing interests to purchase quota from commercial fishers to increase their share beyond the 12-percent cap. The recreational fishing sector's share is currently near or at the cap.

One difficulty in this approach has been the absence of an organization to represent recreational halibut fishers in bargaining with commercial fishers for purchasing quota. DFO left it up to commercial

and recreational interests to come up with their own approach. Commercial fishers have an organization to represent them (the Groundfish Commercial Industry Caucus), which negotiated trades for the previous recreational surplus from the recreational sector. There is a Minister-appointed sport fishery advisory board, but the board lacks the authority to represent recreational fishers or to hold money, a problem addressed by the trust fund established by the commercial organization.

Time will tell whether this arrangement is enough of a foundation for recreational interests to organize themselves to purchase additional quota from commercial fishers when needed. Hopefully, we may soon see North America's first demonstration of a market-based, catch allocation between commercial and recreational fishing interests in a marine fishery.



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CONATSER V. JOHNSON THREATENS STREAM BANKS AND PROPERTY RIGHTS

On July 18, Kevin Conatser became the poster child for trespassing fishermen everywhere. He earned that reputation when the Utah Supreme Court ruled that public ownership of state waters gave him—and every other Utah resident—the right to stand, wade, and fish on the privately owned stream beds beneath those waters. Touted as a coup for access-minded environmentalists, the ruling erodes private property rights and threatens the health of Utah's fisheries and streams.

The story begins in June 2000, when the Morgan County sheriff cited Conatser and his wife for criminal trespass. While floating the Weber River, the couple had intentionally left their raft and removed portions of fencing so they could wade and fish along privately owned stream beds and banks. The Morgan County Justice Court found the Conatsers guilty but, on appeal, prosecutors dismissed the charges, citing “uncertainty” as to whether the couple was actually trespassing.

Their uncertainty was well founded.

According to Utah law, the public owns all water in the state “whether above or under the ground . . . subject to all existing rights to the use thereof.”¹ But land under non-navigable rivers can be privately owned and taxed just like dry land. For this reason, “private property owners in Utah [sic.] thought their property was, well, private.”² The Conatsers disagreed and filed a separate civil suit against the Weber River landowners, seeking a declaration that the public's ownership over the water trumped the landowners' rights over the land.

Again, the Conatsers lost. The trial court concluded the scope of the public's easement in state waters was—quite logically—limited to the water and that “wading or walking along the river, where such conduct is not incidental to the right of flotation upon natural waters, would constitute a trespass of private property rights.”

On appeal, the Utah Supreme Court declared the “doctrine of public ownership” gives the public “an easement over the water regardless of who owns the water bed beneath.” This easement, the court concluded, provides “the public the right to float, hunt,

fish, and participate in all lawful activities that utilize the water [and] to touch privately owned beds of state waters in ways incidental to all recreational rights.” Thus, the court declared that the public rights over state waters trump the property rights of private landowners along those waters.

While environmentalists and recreationists hail the ruling as a victory for public stream access, *Conatser v. Johnson* removes the incentives of private landowners to maintain the stream beds and banks along non-navigable waterways by granting the public unlimited recreational access to those resources.

Public access to environmental resources promotes overuse, which reduces environmental quality. Private ownership, on the other hand, promotes good resource stewardship because owners capture the benefits of their investments. This explains why rental companies wash their cars but renters do not.

Even worse, the opinion fails to define the legal boundaries of the public's new access rights. As recreationists test the limits by traipsing across the yards of riparian property owners, tensions between these two groups will only worsen.

A far better solution would have been to allocate full property rights over the beds, banks, and water to private landowners along non-navigable water ways. If these landowners could charge recreation fees, their economic incentives to manage the resource would match the public's interest in healthy streams.

NOTES:

- 1 Utah Code Ann. § 73-1-1.
- 2 Come on in: Public can play on private stream beds, *The Salt Lake Tribune*, July 22, 2008.



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DIAGNOSES AND PRESCRIPTIONS ABOUND, BUT NOWHERE ARE TWO KEY PARAMETERS TO SUCCESSFUL AGRICULTURE PRODUCTION MENTIONED—LAND TENURE AND SECURE PROPERTY RIGHTS.

REVITALIZING AFRICAN AGRICULTURE:

BY MIKE NORTON-GRIFFITHS

T

he skyrocketing price of oil and basic food-stuffs has captured worldwide attention. In Africa especially, it has prompted questions concerning the low economic returns to land under agricultural production; the lack of investment in agricultural infrastructure, technology, and education; the poor standards of land management; and the seeming inability of African farmers to respond efficiently to economic opportunities in domestic and world markets.

Diagnoses and prescriptions abound, but nowhere are two key parameters to successful agricultural production mentioned—land tenure and secure property rights. These are highly political issues throughout Africa, which agricultural “experts” tend to shy away from, preferring instead to seek refuge behind the façade of technical fixes.

In Kenya there are abundant data showing the striking gains to be made in economic productivity and environmental management on land farmed under secure property rights. These data are of real significance to the debate on raising agricultural productivity and the standards of land management throughout Africa.

EVOLUTION OF LANDSCAPES

In the 1930s, rural population densities in Machakos District, Kenya, just east of Nairobi, were around 40–50 persons to the square kilometer (0.4 square miles). Photographs (page 34) show eroded landscapes with poor standards of land management, and the dramatic transformation 50 years later. Rural population densities, at 500 people per square kilometer, are now ten times higher, standards of land management have improved, the bare areas are no longer evident, and there is significantly more tree cover.

There has been considerable investment in terracing, a technique which increases rainfall infiltration, and thus the moisture available for crop growth, by controlling runoff. Terracing requires hard, manual labor and is undertaken only when the returns to that labor are worthwhile.

Three factors underlie these dramatic changes in land management. First, the growth in the human population creates an “internal” market for higher production—more mouths to feed off the same area require higher productivity and, therefore, investment in land management. Second are the burgeoning “external” markets—local markets in neighboring towns and, more recently, the vast urban markets of Nairobi and other large towns. Finally, and most important, is the evolution of property rights from the customary tenure regimes of the 1930s to private, freehold tenure, with secure property rights enshrined in and enforced by secular law (specifically the amendments to the Registration of Titles Act of 1959).





Kilima Hill, Machakos District, Kenya, 1936 (photo courtesy Kenya National Archives)

ECONOMIC PRODUCTIVITY

Throughout the 80,000 square kilometers of the agricultural lands of Kenya, the tenure regime under which the land is being managed has a clear effect on net economic productivity.

Nearly 14 percent of this land is held by individuals or commercial companies under leasehold tenure with 999-year or 99-year leases. Economies of scale and access to capital (both domestic and overseas) on these large (200–5,000 hectares) commercial farming units (see photo on page 35, lower left)—typically tea, coffee, or wheat—create net returns to agricultural and livestock production of \$415 per hectare (2.5 acres) per year and gener-

ate 25 percent of total net agricultural and livestock revenues. Land under commercial leasehold tenure represents the most efficient farming system in Kenya, relying on high capital inputs rather than raw labor, and producing high value outputs for both export and domestic markets.

A further 36 percent of the land under private freehold tenure creates returns to agricultural and livestock production of \$347 per hectare each year and generates 52 percent of annual net revenues. Labor is important to this intensive farming system, which supports nearly 66 percent of the rural population. Millions of smallholder (1–50 hectares) farmers in Kenya hold their land under private freehold tenure. They are a key pillar to the Kenyan economy and supply high value outputs to the burgeoning export and domestic markets.



Kilima Hill, Machakos District, Kenya, 1989 (photo courtesy M. Mortimore)

The remaining half of the agricultural land is under a variety of traditional customary tenure regimes (see photo on page 35, upper right). This land produces the lowest net returns to agricultural and livestock production—\$110 per hectare per year—and contributes to only 23 percent of annual net revenues. Moreover, population density is low, supporting only 24 percent of the rural population.

Kenyan landowners with secure property rights obtain higher net economic returns from their land. For every dollar of net agricultural production on land under traditional, customary tenure, \$3.15 is produced on land under private freehold tenure, and \$3.78 from land under commercial leasehold tenure.

RESOURCE MANAGEMENT

There are clear differences between these tenure regimes in the investment in long-term land management (table 1, page 36). Investment in perennial crops with long planting cycles (tea, coffee, orchards) is highest on land under commercial leasehold tenure, while the greatest investment in managed woody vegetation (woodlots, wind-

rows, trees, and hedgerows) is found on land under private freehold tenure. Furthermore, as the proportion of land under private, freehold tenure increases, so too does the total area of land under active soil conservation—land managed with contour ploughing, tied ridging, or terracing.

These long-term perspectives in investment decisions about land management and production provide, in turn, significant environmental benefits, for the land is now being managed in a sustainable manner rather than with shorter-term time horizons. Clearly, landowners with secure property rights have a longer time perspective and invest more in land management and soil conservation.



Land under traditional, customary tenure: generally lower standards of land management.

THE GREAT ECONOMIC DRIVER

Today, the great economic driver in Kenya is the burgeoning domestic market, itself a byproduct of urbanization. Nairobi alone transfers some \$400–\$500 million a year to the agricultural and pastoral hinterlands to meet its demand for agricultural and livestock products. The demand for greater quantity and quality of such goods and services is growing throughout Africa. Today, the Food and Agriculture Organization for the United Nations estimates the value of the urban market for food in Africa to be \$47 billion—five times greater than the combined markets for exported food and commodities. They further predict this urban market to grow to \$156 billion by 2030.

Rangeland production in Kenya has shown the same sort of response to the growth in both “internal” (population growth on rangelands) and domestic (primarily urban) markets. With more than 50 percent of the rangelands with agricultural potential now supporting cultivation, agricultural production is growing 8 percent per year, livestock sales at 4 percent per year, and wildlife is being eliminated. Associated with these changes is a rapid evolution of rangeland property rights from communal or group tenure to private tenure. The entire pastoral production system is in a state of flux with a fundamental switch from an extensive pastoral production system to a more intensive agro-pastoral system.

A further impact of urbanization is to drive up the value of land that lies on the periphery of cities so that it becomes dislinked from its agro-ecological potential. Twenty-five kilometers from Nairobi, in the middle of the semi-arid rangelands of the Athi-Kapeti plains, land is now worth nearly \$9,000 a hectare, increasing in value at 12 percent per year—a rate better than treasury bonds. It is now simply too valuable for agriculture, livestock, or wildlife production, except as a holding operation until it realizes its new potential as housing estates or industrial parks.



Large scale, commercial leasehold: tea estate with shade trees

Investment in long-term land management and production as a function of land tenure.

INVESTMENTS IN . . .	CUSTOMARY TENURE	FREEHOLD TENURE	LEASEHOLD TENURE
Long term, perennial cash and woody crops such as tea, coffee, and orchards (percent cover)	2.33	12.90	26.90
Managed woody vegetation such as woodlots, plantations, and windrows (percent cover)	3.07	12.72	9.84
Kilometres of hedgerows per square kilometre (a key indicator of sustainable land use)	5.21	23.55	3.54

AFRICA AND BEYOND

Sub-Saharan Africa has changed beyond all recognition over the past 20 years. From the viewpoint of the producer, internal (population density) and external (domestic rather than export) markets are burgeoning, primarily as a response to urbanization; information, transport and market networks are expanding; opportunities for investment abound; and credit is more freely available. Yet as we have seen in the agricultural lands of Kenya, only those with secure property rights and private freehold tenure have been able to latch onto these emerging opportunities. In western Africa, recent studies demonstrate how market demands, also driven by urbanization, are simply overwhelming traditional tenure regimes and forcing an uncontrolled transformation to private tenure—the essential prerequisite before the necessary investments can be made to take advantage of growing market opportunities.

Despite this trend, a vast dichotomy in the attitudes toward agricultural property rights in Africa still persists. On the one hand are the neo-classical economists promoting the case for private property rights and the associated potential for economic and social gain. On the other are the social engineers arguing that private property rights are somehow inappropriate for Africa and lead to social losses and few economic benefits, except to elites.

Africa is littered with the failed efforts of governments to impose state control over land allocation and land use, while the rural poverty over vast tracts of Africa serves as testimony to the price those still blighted by customary tenure regimes are expected to pay. Weak tenure regimes under centralized control are naturally favored by political and economic elites as they enable takings.

As Kenya demonstrates so clearly, people do what they do in response to economic incentives, but their ability to respond efficiently depends on the security of their property rights.



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LET THE SUNSHINE IN

While wealthy industrialized countries are struggling to convince their populations to adopt solar energy, dozens of villagers in rural Laos are standing in line to sign up with a small energy company that provides solar power.

Less than half of the 5.7 million people living in Laos are connected to the electrical grid, and most of them live in cities and towns. The majority of the population, who are without electricity, live mostly in the countryside and depend on firewood and kerosene for energy, according to the Integrated Regional Information Network.

The government has pledged to electrify 90 percent of the country by 2020, yet the prospect of bringing expensive transformers and electrical lines to remote rural villages is daunting to the officials in charge. In contrast, the entrepreneurs at Sunlabob Rural Energy are not at all discouraged, and instead see a promising business opportunity. By renting out solar-based systems, it can help poor villagers access electricity without huge government expenditures and subsidies or conventional foreign development assistance.

The company began by renting solar-powered lanterns to individual villagers. The lanterns are competitive in cost with polluting kerosene lamps and, after 15 hours, the lanterns can be recharged at the village's central solar collection facility for a small fee. All the fees go toward maintaining the recharging station.

On a larger scale, Sunlabob rents equipment to entire villages. The company contracts with one franchisee in the village who is trained to do the installation. Sunlabob also trains one villager as a technician to provide technical support. A village committee rents the equipment and then sublets it to individual households. In return for their rent, the families receive the equipment along with all servicing and repairs.

By renting, the village avoids the high costs of purchasing a start-up system. Maintenance is provided by the technician with back-up from the franchisee. The combination of sunshine and guaranteed maintenance makes the solar system sustainable and opens technical and entrepreneurial opportunities to the village.

Building on its success in Laos, Sunlabob is seeking to expand to Cambodia and Indonesia with the future possibility of even more franchises in Africa and Latin America.





DANCE REVOLUTION

On the European front, a battle is raging over the rights to the title of first ecological nightclub. London's Surya brags that its dancers generate electricity for lights and air conditioning, while Wvatt in Rotterdam insists that it is the only truly sustainable club. Does that mean it could exist in perpetuity?

Despite the hissy fight, the two clubs are attracting young, wealthy clubbers who know the right place to be seen on a Saturday night. Surya opened its doors in early July with a high-tech dance floor that makes its own electricity. As the dancers gyrate, the floor bounces on ceramic blocks that generate a current fed into a bank of batteries. The batteries power the lights and air conditioning. Vigorous dancing can provide 60 percent of the club's energy needs, while wind turbines and solar panels provide the rest.

Patrons who arrive on foot or bicycle are admitted free, and everyone who enters must sign a pledge to help curb climate change. Club owner and business magnate Andrew Charalambous, a.k.a. Dr. Earth, claims his approach to environmental problems is both positive and inclusive. "Club culture is the gateway to a younger generation," he says. Proof that Dr. Earth's plan is working can be substantiated by the number of dancers asking for meters to monitor their personal energy production. Unfortunately, no such device is yet available.

Surya's environmentally correct design is a constant reminder to clubbers to recycle and reuse. The table legs are made from rolled-up magazines, an old ceramic tub serves as a couch, and smashed CDs and cell phones are used as building material for the walls.

Even though a spokesman for competing club Wvatt insinuated that Surya is less than sustainable, and Friends of the Earth pronounced the club's activities incompatible with the environmental group's work to promote low-carbon living, bored aristocrats and small-time celebrities jetted into London for opening night.

Jade, daughter of Rolling Stone Mick Jagger, told the BBC, "Green things and ecology are very important to me. ... I'm glad it can come into a forum of fun, because I think a lot of people think being environmentally friendly is boring."

Apparently, Surya is not boring.

FAST FOOD FINDS A NEW GROOVE

When America's favorite and most garish eateries begin serving burgers made from grass-fed beef at the drive-through window, prepare for a revolution. Hundreds of small farmers and ranchers around the country are supplying fast food restaurants with free-range chicken, all natural beef, and pork from barnyard pigs. As the restaurant chains have grown and expanded into new markets, the small producers have prospered as well.

Consumers, who once voted the Big Mac their favorite Thanksgiving dinner, are increasingly wary of what might be lurking inside the bun. Reports about diseased animals from factory farms, ponds filled with reeking livestock waste, and new drug-resistant bacteria do not build consumer confidence. So, surely it is no surprise that residents of the fast food nation are looking to upgrade their dinner menu.

Some fast food restaurants now insist on meat from animals raised in actual pasture without the benefit of growth hormones and antibiotics. Others are going even further, offering shakes made from fresh seasonal berries and onion rings from local produce. As they make the switch to more natural products, their clientele is growing. Let's Be Frank, a small chain of "natural" hot dog stands in San Francisco is beginning to infiltrate the hot dog market, while Chipotle Mexican Grill has gone big time with 730 outlets in 30 states and still growing.

If food reviewers have anything to do with it, these newfangled fast food chains and their suppliers will be a smashing success. A reviewer from roadfood.com recently sampled the fare at Burgerville, an expanding chain of fast food restaurants in Washington and Oregon. He reports, "Burgerville's burgers are superb, especially the Colossal Tillamook Cheddar Bacon Cheeseburgers." As for the fish and chips made from North Pacific halibut, he waxes, "Deep fried until brittle-crisp, each piece feels featherlight and flakes into pearl white hunks that drip flavor."

Admittedly, the prices are a bit higher than at the traditional fast food restaurants but, so far, consumers seem willing to pay a premium to feel better about their fast food.



New from Hoover Press

GREENER THAN THOU

Are You *Really* an Environmentalist?

BY TERRY L. ANDERSON AND LAURA E. HUGGINS

There are two ways to show you are green. One is to preach, sue, lobby and spend; the other is to find ways to nudge people in environmental directions by changing their economic incentives. Greener Than Thou demonstrates with fascinating case histories—ranging from Alaskan halibut to Bolivian bees to Mexican jaguars—how much more can be achieved the second way.

—*Matthew Ridley, scientist and author of
Genome: The Autobiography of a Species in 23 Chapters*

In six insightful essays, Terry Anderson and Laura Huggins make a powerful argument for free market environmentalism. They break down liberal and conservative stereotypes of what it means to be an environmentalist and show that, by forming local coalitions around market principles, stereotypes can be replaced by pragmatic solutions that improve environmental quality without increasing red tape.

The authors point out that people don't take care of resources they don't own. Conservation, they explain, boils down to rewarding the private landowner who protects the environment. They illustrate how such incentives are leading to environmental improvements and show that, whether the issue is management of public lands, water or air quality, or even global warming, free market environmentalism provides an alternative to command-and-control regulation.

Terry L. Anderson, the John and Jean DeNault Senior Fellow at the Hoover Institution, is the executive director of PERC (the Property and Environment Research Center), a think tank in Bozeman, Montana, that focuses on market solutions to environmental problems, and professor emeritus at Montana State University.

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