SPECIAL ENVIROPRENEUR ISSUE

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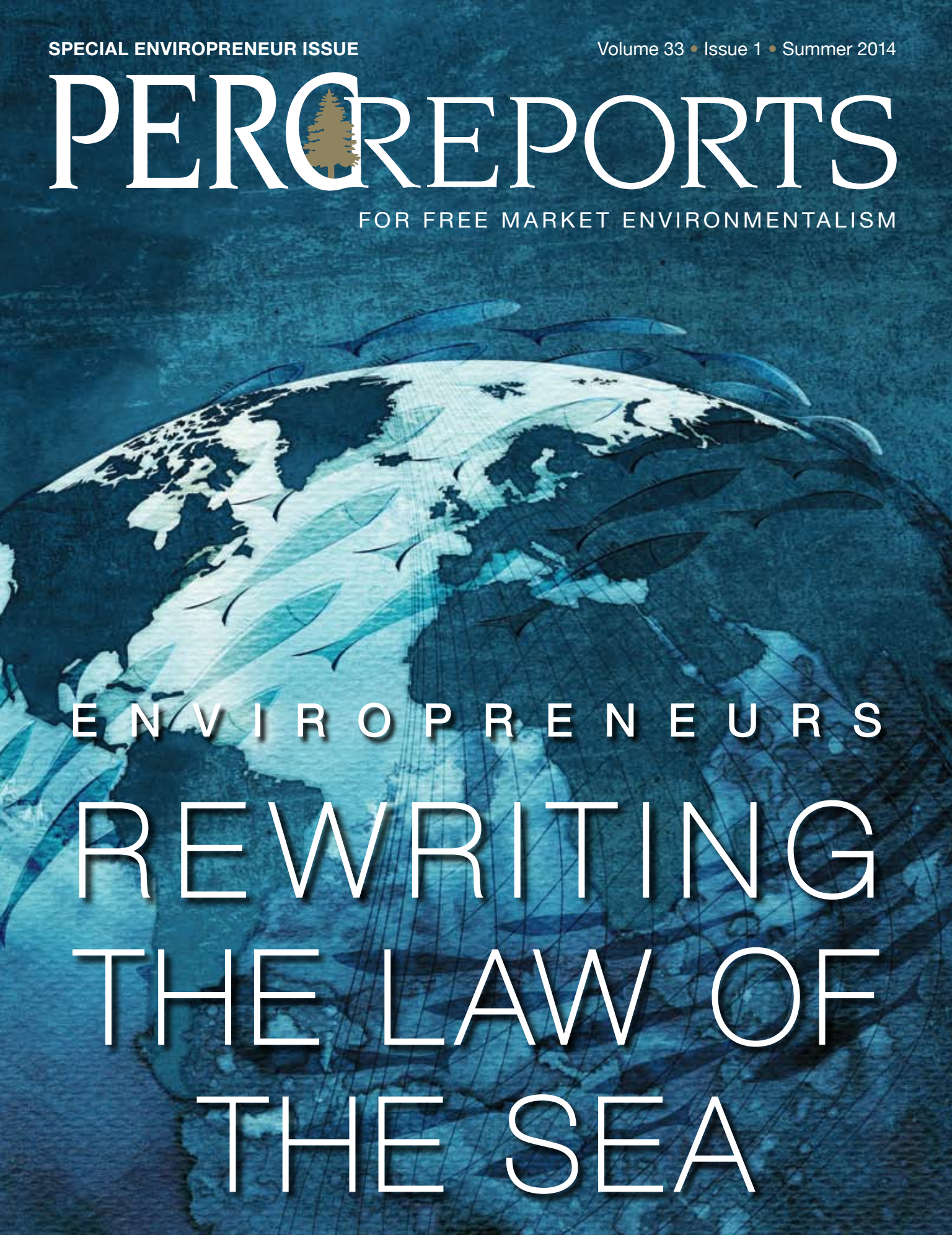
# PERC REPORTS

FOR FREE MARKET ENVIRONMENTALISM



## ENVIROPRENEURS

# REWRITING THE LAW OF THE SEA

PERC

*The Property and Environment Research Center is a nonprofit institute dedicated to improving environmental quality through property rights and markets.*

*PERC REPORTS*
For Free Market Environmentalism
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En·vi·ro·pre·neur: difficult to pronounce but easy to conceptualize. This opening line is how our inaugural enviropreneur™ issue—and my first issue of *PERC Reports*—began, so I find it appropriate to end with the same phrase for my final issue as editor.

The enviropreneur stories are fun and challenging to work on—always a creative clash of property rights, markets, and contracts being applied in innovative ways to environmental challenges. Some projects succeed, such as Rhino Ark *(PERC Reports* 2011), while others fail, such as the Remediators (*PERC Reports* 2006). But we have learned from each and every one of these risk-takers; a few readers have even found inspiration to launch their own ventures.

Speaking of new ventures, JAMES WORKMAN, who is in the middle of creating his next business, found time to showcase eight fellow PERC Enviropreneur Institute alumni from the fisheries sector—ranging from the class of 2003 to 2013 and spanning seven organizations. These individuals are working tirelessly to change the course of global fisheries management.

New to the PERC team, Annie Ireland skillfully weaves together a story about a farmer/artist/scientist-turned-enviropreneur. SARAH BELLOS, class of 2013, is altering the textile dye industry one pair of jeans at a time.

LOGAN YONAVJAK, class of 2012, is helping connect people who want to "do well by doing good" to financial capital. In this issue she focuses on her classmate DANIEL CLAUSSEN who is "creating opportunities for investors to find breakthrough technologies in the markets that will define our future."

Last but not least, PERC outreach associate Charlotte Huus-Henriksen courageously dives into the mind of engineer, NASA scientist, and competitive skier DAVID HOFFMAN. In "A Fresh Idea for Dirty Air," she reveals his innovative approach to evading emissions in our most polluted cities.

Thank you to the 200-plus enviropreneurs who have come to PERC and who have inspired so many want-to-be environmental entrepreneurs over the past 14 years of the program. I, for one, am planning to take what I have learned from you and the rest of the PERC team and apply these ideas on the ground in my new career.

**Tell us what YOU think**
perc@perc.org

Laura E. Huggins

*Laura E. Huggins* | Editor

For more information about PERC's Enviropreneur Institute, visit www.enviropreneurs.org


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## FEATURES



## COLUMNS



## PERSPECTIVES

# Tigger Environmentalism

At a recent reunion of alumni from PERC's Enviropreneur Institute, Jeff Masten (class of 2008) took us back to our childhood memories, thinking of environmentalists as either Eeyore or Tigger. To understand his profound analogy, recall that Eeyore is one of Winnie the Pooh's friends, a pessimistic stuffed donkey who sees a world of problems, whereas Tigger is an optimistic stuffed tiger who energetically bounds around on his tail.

Here is how Jeff explained his analogy. "For years in the nonprofit world I noticed that there were generally two choices—illuminating problems or offering opportunity for success. Clearly, there are times when one is more relevant or appropriate, but hands down, when I have the choice, I work to seek opportunities, not conquer problems." Jeff is clearly a Tigger, not an Eeyore.

Most economists, however, fall in the Eeyore camp, seeing market failure behind every tree in Pooh's Hundred-Acre Wood. As economist A. C. Pigou put it in 1932, individuals don't fully account for the costs they impose on the rest of society, "owing to the technical difficulty of enforcing compensation for incidental disservices." In today's economic vernacular, economists call these uncompensated, incidental disservices "externalities," and look toward political solutions to fix the problems.

Consider the seemingly endless conflict over winter management of bison when they migrate from Yellowstone National Park. Bison, whose numbers have increased dramatically in the past 15 years, leave the park's deep snow in search of forage, but bison can carry brucellosis, a bacteria which, if transmitted to cattle, can cause them to abort their young. Needless to say, ranchers who graze livestock near the park see bison migration as a problem and want it stopped. To them the bison are an externality. On the other side of the debate are environmentalists who see cattle grazing in the Greater Yellowstone Ecosystem as the problem and want cattle removed. Cattle impose an externality on bison. Both sides often act as Eeyores by turning to the government to resolve the conflict.

Fortunately, "Tigger environmentalism" is at work on bison migration. The National Wildlife Federation's Wildlife Conflict Resolution Program is "finding solutions to livestock-wildlife encounters." It believes "a fair market approach to

changing grazing patterns can turn opponents into partners and provide a win-win solution for ranchers and wildlife." As a result, they have partnered with ranchers to retire 36 grazing allotments on federal land totaling more than 624,197 acres around Yellowstone.

PERC's Enviropreneur Institute can take some credit for growth in "Tigger environmentalism." The coordinator for National Wildlife Federation's grazing program is Hank Fischer, an inspiring speaker at the institute and at other PERC programs who epitomizes environmental entrepreneurship. Proving that some acorns do not fall far from the tree, Hank's son, Andy, an alumnus of the 2009 Enviropreneur Institute, is a project manager for the Clark Fork Coalition where he "partners with water right holders and irrigation groups on projects that benefit both fish and farmers."

Matt Ridely, the quintessential "rational optimist," recently wrote in the *Wall Street Journal*:

> Almost every global environmental scare of the past half century proved exaggerated including the population "bomb," pesticides, acid rain, the ozone hole, falling sperm counts, genetically engineered crops and killer bees. In every case, institutional scientists gained a lot of funding from the scare and then quietly converged on the view that the problem was much more moderate than the extreme voices had argued.

Part of the reason that environmental problems prove to be more moderate than extreme is that Tigger environmentalists see problems as opportunities.

Jeff ended his analogy saying, "Just my two cents worth." To the contrary, Jeff; by focusing on opportunities, you and other enviropreneurs are adding tremendously to the bottom line of our environmental balance sheet. Thank you!

In "On Target" PERC's President Terry L. Anderson confronts issues surrounding free market environmentalism. He can be reached at perc@perc.org.

# THE OCEAN'S OFFSHORE ENVIROPRENEURS

## An Upwelling of PERC-trained Innovators Quietly Replenish the Sea

*BY JAMES G. WORKMAN*

If ecological gains come from placing value on natural resources, and value comes through voluntary trade, and trade requires secure property rights…. From where do property rights come?

More appropriately: from *whom*?

The answer points to a rather obscure and unglamorous—yet emphatically important—cadre of PERC Enviropreneur Institute alumni who have sought and found ways to unlock the vast potential of the wild. These people don't launch business ventures for nature or set up green enterprises. They don't buy or sell outdoor products or contract for environmental services. Instead, they pry open opportunities for others.

More specifically, they devote careers to fencing off living portions of the ocean. They replenish marine life and diversity to robust health. And they do so by establishing tenure-based programs of transferable quotas of fish: a diverse portfolio of management systems now commonly known as catch shares.

By catching fewer fish over longer seasons, safer fishing practices earn higher profits, better wages, and contribute more back to society.

A catch-share fishery operates by establishing an annual "total allowable catch" with portions of the limit divided among participants. With a secure privilege to the total catch, fishers or fishery associations have the ability to catch a certain amount of fish each year. This system ends the insanity of a reckless, dumb, wasteful, and frenzied open-access "race for fish."

First in theory, then in practice, scholars in economics and political science from H. Scott Gordon to Elinor Ostrom to Don Leal have long shown the transformation that occurs when fishing communities gain secure, exclusive rights to a portion of the marine resources they harvest.

The alchemy is dramatic and fast. The value of the fish left in the sea becomes apparent. Ensuing ecological benefits generated by catch shares include less waste, cleaner harvests, faster recovery, gentler gear, fewer impacts, higher-quality products, and a reduction in the amount of unwanted and unintentionally captured animals, known as bycatch.

Economic payoffs are equally powerful: By catching fewer fish over longer seasons, safer fishing practices earn higher profits, better wages, and contribute more back to society through tax revenues and fees for science and monitoring.

In fact, if the United States established restorative catch shares nationwide it could generate $31 billion and create 500,000 jobs, while "meeting our national goal of rebuilding and sustaining" all fish stocks, said former assistant Administrator of the National Marine Fisheries Service, **Eric Schwaab**. Does his name ring a channel marker bell? It should. He was a 2003 PERC enviropreneur.

Eric Schwaab achieved far more to secure free market environmentalism from inside the Beltway than a Tea Party protester outside of it.

Schwaab is far from a guvmint-bashing libertarian. The urban Democrat from liberal Baltimore spent decades in state agencies and park police before joining the Obama Administration as a high-ranking official who oversaw policymaking and enforced federal regulations to protect coastal environments. Yet there, working long hours behind the scenes, he aligned private profits with public interests, embedded marine tenure access rights in national policy, and boosted future prospects of fishers and fish. Schwaab achieved far more to secure free market environmentalism from inside the Beltway than a Tea Party protester outside of it.

He hardly accomplished this change alone. Help—both at home and abroad—came from other alumni. If Harriet Beecher Stowe was, in Lincoln's words, "the little woman who wrote the book that made this Great War," **Pamela Baker** was the little marine biologist who wrote the letters and pamphlets that triggered a catch-shares revolution in the Gulf of Mexico. After a summer at PERC in 2004, Baker sharpened her enviropreneurial tools to build a coalition of Gulf reef snapper fishers until a regional council approved rights-based quotas.

That system went live in 2007. "Everyone was holding their breath," recalled Baker, "wondering, 'What's going to happen now?' It was eerily quiet." Days then weeks went by. The world didn't come to an end. Finally, someone called up Baker and said, "You know, it's just working. People are just out fishing. The overall limit was smaller than expected, but individual operating costs went down… revenue went up, and so hundreds of fishers made more money catching fewer fish."

Americans weren't the first to collaborate for a national catch-shares policy. That honor belongs to the Kiwis. **John Willmer** arrived in Bozeman in 2005 as a researcher and returned home to New Zealand as a well-equipped enviropreneur. As a policy analyst for the New Zealand Seafood Industry Council, he worked closely with government and environmental NGOs to improve the value and integrity of wild-capture fisheries, "integrating environmental,

Jingjie Chu aims to meet the ambitious goal of having 50 percent of global fisheries under catch-share management in ten years.

social, and economic goals" and making sure private funding helped fund the science behind setting appropriate catch limits.

Catch-share policies are controversial even in well-governed and affluent nations with a long history of property rights. So what happens farther afield, or further down the scale of the human development index? What do you do in Indonesia, let alone socialist Cuba?

Funny you should ask. **Daylin Muñoz-Nuñez**, a marine scientist who worked for the Cuban Ministry of Science, Technology and Environment, applied her enviropreneurial skill set to coordinate solutions for key fisheries in Mexico, Belize, and her home country of Cuba. Further offshore, she advanced the tri-national collaborative management of shark fisheries in the Gulf of Mexico, using innovative market-based tools that were modeled after catch shares.

Her fellow 2011 enviropreneur **Jingjie Chu** works to scale up local lessons by encouraging agencies in places such as Vietnam, China, and Myanmar. "Rights-based fishery management works and a well-designed catch-share system customized to the local culture and history will work even in underdeveloped countries," argues Chu, a natural resource economist in the Global Program on Fisheries at the World Bank, which aims to meet the ambitious goal of having 50 percent of global fisheries under catch-share management in ten years.

Her reference to a customized, well-designed catch-share system was far from hypothetical. A step-by-step "here's-how-to-bake-a-perfect-catch-share" cookbook really does exist, bound up with dozens of proven recipes from Chile to Alaska and Spain to Japan. And **Kate Bonzon** is the


Kate Bonzon customized a "here's-how-to-bake-a-perfect-catch-share" cookbook that transformed small scale, commercial, and recreational fisheries globally.

2003 enviropreneur who wrote it, along with several other related manuals, which are now marketed to the world.

After a summer at PERC, Bonzon went on to develop a nonprofit lending institution to smooth fishermens' scary and financially painful transition from open-access regulation to a catch-share system. She then assembled and led a team—which, in the interest of full disclosure, includes your correspondent—who transform small scale, commercial, and recreational fisheries globally. As an authority on rights-based systems, cooperatives, and Territorial Use Rights to Fisheries, she knows what will or won't perform.

Performance outcomes involve more than economic metrics. Ecologically careful, scientifically sound, and socially inclusive design can make or break a developing world's fishery, noted **Mark Gibson**, class of 2012, who helped strengthen property rights in Latin American fisheries. To unlock a lasting market you must build in long-term resource health, take community needs into account, and plan bycatch measures to ensure diversity and abundance of non-commercial species.

**Fred Sondheimer**, class of 2013, is building on Gibson's lessons, especially in Ecuador, to increase stewardship incentives for shrimp and finfish harvesters. Both embrace conservation markets, but as a practical means, not an ideological outcome. "Catch-share programs and other rights-based management programs can be excellent tools for improving social well-being and ecosystem health," maintains Gibson, "but they've got to be designed right."

You start to detect linkages between these policy enviropreneurs. The findings of one here inform the actions of a second there; risks taken by a third make room for a fourth to negotiate with regional officials. That helps a fifth to scale a national policy, or a sixth build an institutional program that empowers a seventh to go farther offshore, bringing order to the largest and yet increasingly least tragic commons on earth. As each one makes waves, they collectively exert a tidal pull on marine politics, moving fisheries in progressive directions.


Like fishing nets, or the Internet, peer-to-peer network bonds may be invisible, but without them progress is impossible.

That's the paradox of their silent upwelling. We snorkel out on reefs teeming with biodiversity. We press the firm, fresh meat on ice at a fish market. We admire the black ink on the balance sheets of commercial harvesting businesses. We celebrate all these visible gains from conservation markets. Yet all too often we ignore or downplay the human infrastructure, the boring incremental policy work, and the secure foundation on which they stand.

That's a mistake. You find neither freedom nor fish where governance is weak and institutions absent. Like fishing nets, or the Internet, peer-to-peer network bonds may be invisible, but without them progress is impossible. Fishers look past the whitecaps to appreciate the currents and habitat contours deep beneath the waves. That's where energy becomes life.

So next time you order a king crab sushi roll, or take home a grouper or halibut steak for the grill, or grab a Filet-O-Fish at McDonald's, give thanks to the fishers who harvest the wild.

But then take a moment to recognize those people quietly working below the surface to ensure ocean harvests endure: the men and women who are literally rewriting the law of the sea.

JAMES G. WORKMAN, PERC Enviropreneur Alum '05, is a pioneer in utility-based conservation markets, wrote the award-winning book *Heart of Dryness: How the Last Bushmen Can Help Us Endure the Coming Age of Permanent Drought*, and is co-author with Amanda Leland of the forthcoming book, *The Quiet Sea Change: How America's Hunter-Gatherers Are Transforming the Rules of the Wild*.

# GLORIFICATION OF COST-BENEFIT ANALYSIS

Cass Sunstein, a high-profile law professor at Harvard, reflects on his years in the Obama administration as administrator of the Office of Information and Regulatory Affairs (OIRA) in *Simpler: The Future of Government*. He explains how the application of economics to regulation allows the development of more sophisticated, effective regulation that avoids the pitfalls of brute regulations, which may have good intentions but are often poorly executed. The result can be rules that produce greater benefits at lower cost.


His examples seem less glorious than advertised. For instance, Sunstein discusses the ban of Primatene Mist in 2011. It was "the only over-the-counter asthma medicine," but its propellant was a CFC banned under the Montreal Protocol. When the prospective ban was announced in 2008, it was presumed that a substitute propellant would be available by 2011. None was forthcoming, so the decision was whether to prolong the exception to the ban or ban the product.

Sunstein explains that regulators had to wrestle with the tradeoff of environmental damage from the CFC emitted by Primatene Mist users against the health benefits to those who used the product. It was the only over-the-counter product and was much cheaper than alternative prescription drugs. Since some people do not have regular health care, this made access to alternatives even more difficult and costly. The FDA wrestled with the costs and benefits. It knew that banning the product would result in more hospitalizations and could result in significant costs. Nevertheless, the agency decided not to extend the life of the product because "asthma sufferers would do better to find doctors and to use the prescription medicine that really was right for them."

How this differs from old-style, non-simple regulation is not clear, but Sunstein asserts that being more scientific about cost-benefit (C-B) analysis is "a little like a plea for sense rather than nonsense." More sophisticated C-B analysis allows OIRA and other cost-benefit practitioners to consider subtle information about costs and benefits that could not be known previously.

In Executive Order 13563, Improving Regulation and Regulatory Review, President Obama instructed agencies to take into account nearly every imaginable value when doing C-B analysis. Agencies are to include "values that are difficult or impossible to quantify, including equity, human dignity, fairness, and distributive impacts."

This opened the door to throwing in any value that may be asserted by advocacy groups in the calculation of benefits from regulations. Human dignity has real value but has no market price. Fairness and equity are elusive concepts subject to endless argument and exploitation. Sunstein celebrates the inclusion of such values in C-B analysis but does not explain how they can be quantified.

He gives examples of a ban on discrimination on the basis of sexual orientation and of easier bathroom access for employees in wheelchairs. Would such rules be based on fairness, human dignity, or equity? Sunstein says the former is an example of fairness and the latter is an example of dignity. Flip the order; does it change the value of either? Philosophers may have thoughts about such matters, and such rules may strike us generally as the right thing to do, but that does not mean they have a logical part in a nuts-and-bolts C-B analysis based on market values.

When real prices do not exist, government C-B practitioners now make up prices. Most noteworthy is the "price" of $CO_2$. No price for it exists, so in 2011 a panel of experts declared that it has a price. That provides the primary justification for the blizzard of recent regulations aimed at the use of coal and demanding ever tighter energy use standards for a wide range of products.

Making up prices and declaring values for dignity as part of C-B analysis cannot be justified as good economics. Economists are not that smart. They cannot predict stock prices tomorrow, let alone estimate the theoretical value of the loss of an endangered bug or plant. Taking C-B analysis to the level endorsed by Sunstein and increasingly employed by the Obama administration is central planning in new, more-scientific appearing clothes.

Some prominent economists hail Sunstein's declarations. That is natural. There is personal, intellectual, and financial self-interest for members of a profession to be more highly valued and made part of the process for guiding our society. We should be more modest.

ROGER MEINERS, PERC senior fellow, is the Goolsby Distinguished Professor of Economics and Law at the University of Texas–Arlington. Meiners is the coauthor of *The False Promise of Green Energy*.

# FARMER-GROWN COLOR

## The Intersection of Agriculture, Economics, and Textiles

*BY ANNIE IRELAND*

Ever wonder what makes your blue jeans blue? The answer is indigo dye—but it's not as harmless as it sounds. Most dyes used today are synthetically derived from petroleum and coal tar, and their creation requires large amounts of energy, water, and chemicals. For each ton of fabric dyed, 200 tons of wastewater is produced. As the dyes break down in the water, toxic chemicals are released.


Sarah Bellos, a 2013 PERC enviropreneur, thought there had to be a way for the fashion industry to dye textiles without generating massive amounts of chemical-laden water.

Photos courtesy of Gina R. Binkley

The international textile dye industry is no small business. Approximately 1.3 million tons of dyes and pigments are used each year, valued at around $23 billion. When such a large industry contributes to industrial wastewater, the impact is noticeable.

Sarah Bellos, a 2013 PERC enviropreneur, thought there had to be a way for the fashion industry to dye textiles without generating massive amounts of chemical-laden water. Hoping to provide the solution, she created Stony Creek Colors in 2012 on her farm in Tennessee. Her company aims to deliver reliable plant-based dyes to the global textile industry. The natural colorants are made from renewable sources such as leaves, roots, and wood—much of which can be grown or sourced in the southeastern United States.

As more and more global fashion brands "go green," Stony Creek plans to be on the forefront of the natural colorant market as the leading provider of safer dyes. "I see bio-based textile colorants as an ideal vehicle to solve the environmental problems faced by fashion brands while creating a sustainable economic opportunity for farmers growing the specialty industrial crops," says Bellos. The company is developing a complete agricultural supply chain in order to offer a consistent product usable in commercial equipment at a scale that major industrial players demand.

## A PALETTE OF IDEAS

Bellos started her first business with her sister under the name ASK Apparel. The duo sold their screen-printed, naturally dyed goods at farmers markets, artisan fairs, and Whole Foods. At first, people asked how they were getting naturally dyed items; they explained that they created the dyes and dyed the products themselves. Soon, people asked if Bellos and her sister would dye things for them.

The company became Artisan Natural Dyeworks, providing dye services at a scale

The company uses madder (left) for making red dye, indigo for blue, and tannin sources such as sumac for gray.

suitable for independent designers. While her sister preferred the craft work, Bellos thrived on the operations side of things. She began another company, Southern Hues, to supply naturally dyed fabric and products such as scarves and wraps.

As she grew these companies, Bellos dreamed of making a big impact on the textile dyeing industry as a whole. But something was standing in her way: she was having trouble achieving uniform colors from sampling to production. Bellos knew she couldn't scale up until she could manufacture consistent colors. She was determined to solve that problem.

Plant sources for creating a range of yellows: weld (far left) is used to make bright yellow and Osage orange (left) is used to make golden yellow.

The time was ripe to create a company built around reliable natural dye extracts that were easy to use in industrial machinery. And why not get farmers on board to grow the raw material while she was at it? A company like this, she determined, would make natural colorants viable for global brands, making them less dependent on chemical dyes and creating an incentive for nearby farmers to grow specialty dye crops such as indigo and black walnut. As she began moving her bio-based dyes from a niche market to the mainstream, Stony Creek Colors emerged.

## SETTING THE TONE

Stony Creek is conducting agronomic research, doing trials with brands in industrial dyehouses and improving its extraction and production processes. These efforts are laying the groundwork for Bellos's plans to increase the local supply of dye crops and to sell products to big textile manufacturers. Stony Creek is already retailing small amounts of natural dye to artisans in the short term to generate income while the company sets up for the jump from farm-scale production to mechanized production and industrialized extraction.

Bellos knows that for natural dye extracts to be good enough to be used by big brands, several things need to happen. First, the colorants need to be made in a refined powder form. Producing dyes in this form makes them storable and allows them to be used in commercial equipment.

Second, the natural colorants need to be consistent over large batches and different periods of time. This is hard to accomplish, as many variables affect how much pigment each plant contains. Stony Creek has consequently invested in research and development to improve its extraction methods as well as to compensate for pigment variations to increase consistency.

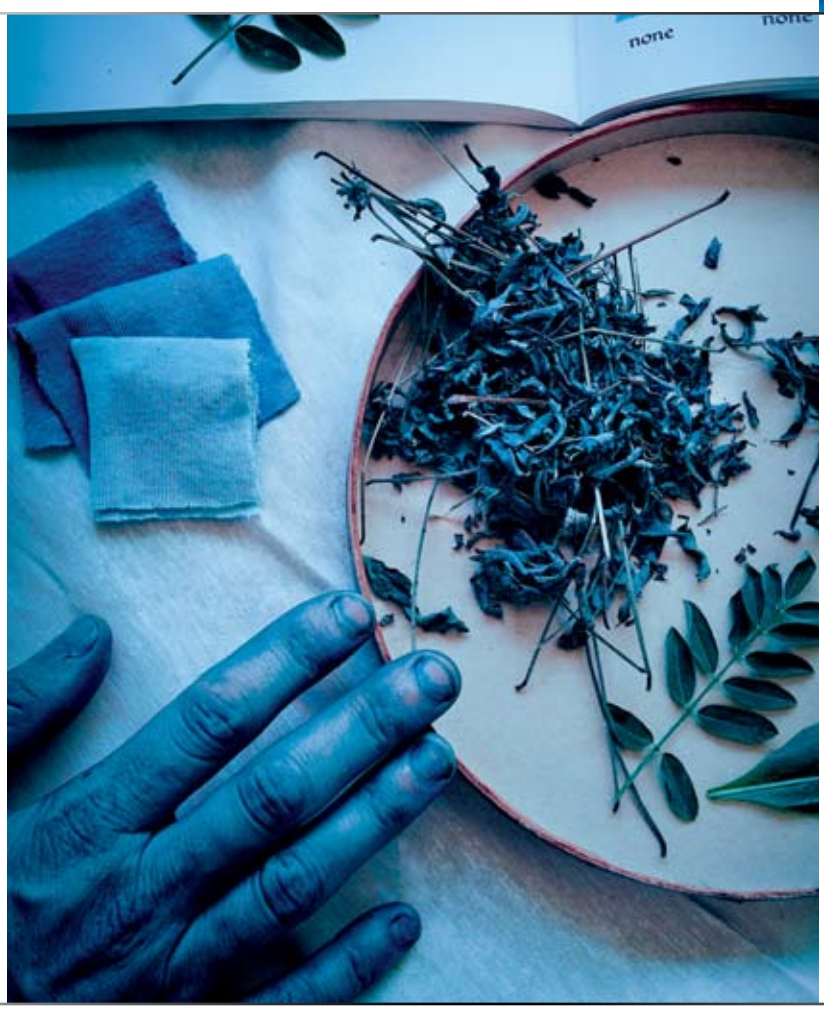
Bellos says the new techniques "bring enough standardization into the process to allow us to offer a consistent, and thus scalable product without losing the bit of alchemy inherent in such a beautiful process as coaxing color from plants."

Black walnut is used to make a natural brown dye.

## FROM PLANT TO POWDER

Stony Creek's colors come from a few plants that provide the majority of the materials necessary to create its colorants. The company uses indigo for making blue dye, madder for red, Osage orange for golden yellow, weld for bright yellow, black walnut for brown, and tannin sources such as sumac for gray.

Stony Creek harvests the leaves from some plants; from others they gather the roots or wood. Bellos and her team then extract the naturally occurring dye chemicals from the plants by soaking them in water or organic solvent. This produces a liquid dye, which undergoes a series of technical filtration, purification, and drying steps to create the final product: a powder dye.



After attending PERC's Enviropreneur Institute, Bellos began the pilot phase of her indigo research project. She is currently processing 1,000 pounds of product and testing it with commercial equipment.

"We are especially excited about our indigo R&D, which will soon make an American-grown dye available for coloring American-made denim."

## A VIBRANT FUTURE

So, what about the blue in your jeans? Bellos has big plans to produce it using less water and no chemicals. "We are especially excited about our indigo R&D, which will soon make an American-grown dye available for coloring American-made denim," Bellos said.

After attending PERC's Enviropreneur Institute in 2013, Bellos began the pilot phase of her indigo research project. She is currently processing 1,000 pounds of product and testing it with commercial equipment to ensure the dyes will work across major production lines. Her findings over several growing seasons will enable her to maximize consistency and grow the crop on a large scale down the road.

Bellos is currently growing and harvesting the indigo on her farm, and plans to increase indigo acreage in the southeast by contracting with farmers over the next several years. Stony Creek will then be the only company growing indigo on an industrial scale in the United States.

And, it seems, her timing is right. Stony Creek is positioned to capitalize on the greening of the industry. A group of major fashion brands recently committed to help lead their industry toward eliminating hazardous chemical discharge by 2020. Bellos will be waiting with her line of natural colorants when big brands start looking for synthetic dye alternatives.

Bellos may live on a farm in Tennessee, but don't picture her rocking her time away on the porch. Talking to her for but a few minutes makes it clear that her wheels are constantly spinning, thinking about managing the different aspects of her business from the agricultural, to the technical, to the economic. Armed with Bellos's passion and drive, Stony Creek Colors looks to be heading down a green path in more ways than one.

Learn more at stonycreekcolors.com

ANNIE IRELAND is an outreach and research associate at PERC. She holds a B.A. in Political Science from Colorado College. She can be reached at aireland@perc.org.

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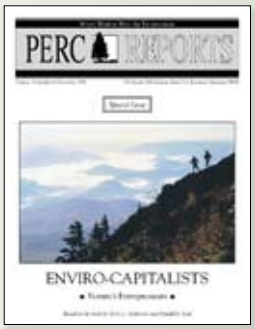

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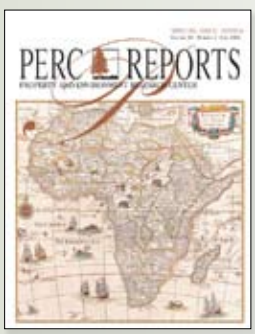

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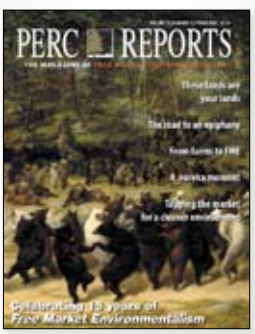

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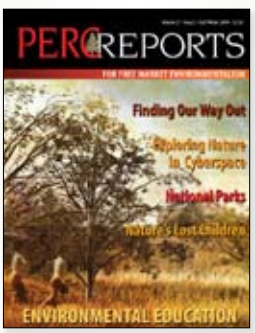

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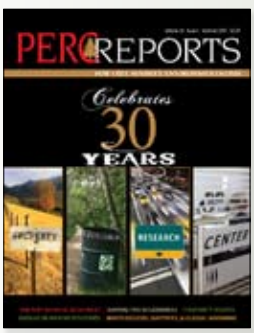

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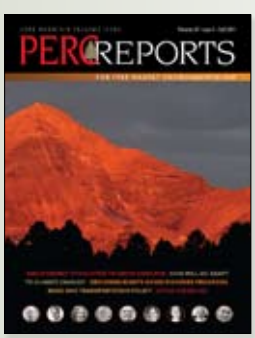

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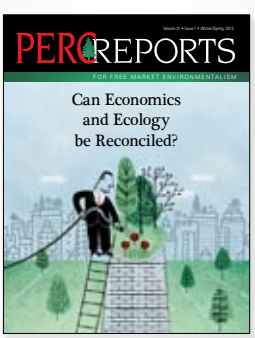

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# Eminent Domain & Energy Infrastructure

The Supreme Court's 2005 *Kelo v. City of New London* decision that a city can use its power of eminent domain to redistribute property in pursuit of economic development drew widespread public opposition, setting off what Professor Nicole Garnett termed "a firestorm of popular outrage." It also prompted many states to adopt measures limiting the use of public domain for such purposes.

Now, the development of both renewable and unconventional fossil fuel energy sources are raising eminent domain issues again, as utilities use state grants of eminent domain power to take land for transmission lines and pipelines. These takings pose even greater challenges than the blatant rent-seeking property owners faced in cases like *Kelo*. Unlike landowners who are forced to sell their property outright, those who find themselves hosting an unwanted transmission line or other infrastructure on their property are locked into a permanent relationship with a hostile partner sharing the rights to their land. Eminent domain law provides no safeguards to address these problems.

Unfortunately, my family is developing first-hand experience with the issue, as the Lower Colorado River Authority (LCRA) used its eminent domain power to take an easement across my in-laws' ranch for a high-voltage transmission line that carries wind-generated electricity from the Texas Panhandle to central Texas.

None of the landowners along the LCRA line had any say in the terms of the easement or any recourse to contest any term other than the price paid for the land. Just 30 miles away, Florida Power and Light (FP&L) built a parallel transmission line to do the same thing. But because FP&L lacks the power of eminent domain in Texas, it had to negotiate with the landowners along its route. The terms of the FP&L and LCRA easements are strikingly different, illustrating the problem with substituting involuntary takings for arms' length bargaining.

Think of a landowner holding a set of rights that property lawyers often term a "bundle of sticks." A utility easement is the removal of some of those sticks from the landowner's bundle and their transfer to the utility. This effectively makes the landowner and the utility co-owners of the land, sharing the rights to the easement. The landowner, for example, loses control of the right of access to the property, because the utility has the right to enter the land without notice to construct and maintain its transmission line. For a landowner earning income from leasing hunting rights, this is significant because utility operations


disrupt hunting, which lowers the value of the leases. Transmission line easements are not just unsightly wires—they require regular access by utility workers, give off a loud buzzing noise, can shock livestock and people, and ruin scenic vistas.

Easements were developed by the common law as a way to enhance property values. Real estate developers often use them to distribute rights among the parcels within a development to provide access to shared amenities such as a park, beach, or trail, or to preserve important features by restricting the type of development subsequent landowners can do. Most residential construction in the United States is subject to such privately agreed-upon restrictions.

The crucial difference is that these restrictions are the result of either negotiation between property owners or by developers seeking to maximize the total value of their land. A restriction on a parcel will be imposed only if the increase in value to the other parcels is greater than the reduced value of the restricted parcel. When an easement is taken by eminent domain, there is no such constraint.

Most states' eminent domain laws are built around models from the 1930s and 1940s. The majority of takings were for things such as highway or school construction, in which the landowner was not forced into a long-term relationship with the entity taking his or her land. Even for things like transmission lines, landowners were often thrilled to be in an area gaining electrical service.

Today's infrastructure projects are both more intrusive—larger, higher voltage, etc.—and more contested in their benefits. For example, the benefits of Texas' state-supported expansion of wind energy are hotly contested by those who doubt the benefits of massive investments in alternative energy. On the other hand, expanding pipelines to increase unconventional oil and gas supplies is opposed by environmentalists.

Gifting utilities with the power to seize private property only exacerbates conflicts. As the FP&L line in Texas clearly illustrates, utilities are capable of building infrastructure without the power of eminent domain through voluntary market transactions. Why aren't all such projects done in the same way?

Learn more here: www.bit.ly/AndyMorriss

ANDREW P. MORRISS is a PERC senior fellow and the D. Paul Jones, Jr. & Charlene Angelich Jones Chairholder of Law at the University of Alabama School of Law. Morriss is the author or coauthor of more than 60 chapters, scholarly articles, and books.

# A FRESH IDEA FOR **DIRTY AIR**:

## Tackling Air Quality Issues One Smartphone at a Time

*BY CHARLOTTE HUUS-HENRIKSEN*

Air quality matters a lot to David Hoffman, and here's why: Hoffman grew up in Salt Lake City—one of the most polluted cities in the United States. On some days, a brownish-gray fog descended over Hoffman's neighborhood. At times the haze was so thick that he couldn't see all the way down his block.

"Poor air quality can cause serious health problems," says Hoffman, who is now working to address the problem. The rate of asthma, for example, is significantly elevated in places like Salt Lake. "I know a lot of people with health complications that are exacerbated, or possibly directly caused by dangerously dirty air," he says. In fact, Hoffman's sister was diagnosed with Hodgkin's Lymphoma, which has been linked to some of the pollutants commonly found in the air around Salt Lake City.

### AIR IN UTAH

The Wasatch Front faces some of the worst air quality problems in the country. The combined weather patterns and unique geography of surrounding mountains creates a bowl effect where dense particulates sink to the bottom and are trapped close to ground level. This dirty outcome is due to inversions, which are created when warm high-pressure systems trap cold air in the mountain valleys and act like a lid to keep it there. Inversions can last from a few days to a few weeks and can occur several times throughout the winter season.

Emissions from urban activities—mostly driving—build up during inversions and can cause health problems. It is no surprise that exposure to particulate matter can lead to cardiovascular damage for individuals whose health is already at risk. This is especially true for children and the elderly. Air pollution affects everyone to a certain degree, irritating the eyes, nose, and lungs, and can lead to asthma, emphysema, and chronic bronchitis.


snowbird ski team

Regulations are inherently slow. This lag time allows an entrepreneur like Hoffman to seize market opportunities that provide "do-it-yourself" alternatives to regulation.

Utah's Department of Environmental Quality has created a multi-year plan to monitor air quality and impose new regulations. Regulations, however, are inherently slow. This lag time allows an entrepreneur like Hoffman to seize market opportunities that provide "do-it-yourself" alternatives to regulation.

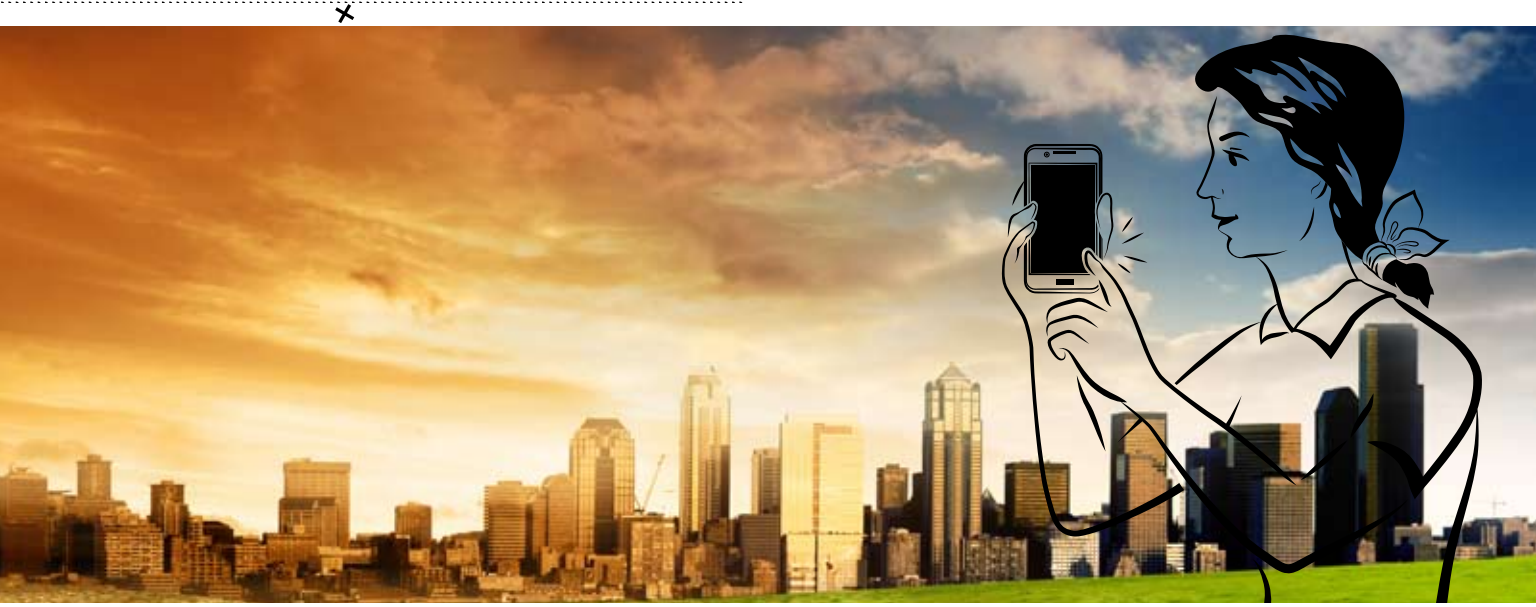
## FINDING THE PROBLEM

As a PhD student in chemical engineering at Montana State University and a researcher for NASA, Hoffman began to explore air pollution in greater depth. At NASA, he helped design and build optical components for a new system to observe particulate matter in the atmosphere. The system uses a remote sensing technology known as LIDAR to measure distance by illuminating the target with a laser and analyzing reflected light.

He found that the health implications of air pollution and particulate matter are highly dependent on the type and concentration of the pollutants, making the study and monitoring of these pollutants especially important. From his experience designing and building LIDAR systems, Hoffman discovered a possible low-cost way to monitor air quality—one that could even attach to your smartphone.

## CREATING THE SOLUTION

Hoffman proposes a network of inexpensive, LED-based solar radiometers—sensors that measure electromagnetic radiation—to map air quality over a given geographic area. The sensors would be user-friendly smartphone accessories as well as standalone stationary units. These would provide a map of air quality that could aid businesses for compliance purposes or help



Data from the network of sensors accessed from a smartphone app would allow people to make informed decisions in their daily lives based on knowledge of local air quality.

concerned citizens monitor the quality of the air they breathe. Data from the network of sensors accessed from a smartphone app would allow people to make informed decisions in their daily lives based on knowledge of local air quality.

According to Hoffman, the solar radiometers he has developed are smaller and more efficient than traditional radiometers. Their portability and low-cost production make them easier to use within networks covering large areas. The radiometers are also based on commercially available LEDs driven by a simple analog electronic circuit.

Each sensor operates on the basis of a multi-wavelength solar radiometer, which means particulate matter is measured using different colored LED light sensors on direct sunlight. This allows the sensors to trace different types of particulate matter and certain gases between the sun and the radiometer.

In short, following basic spectroscopy principles, particles or aerosol gas molecules block the light at certain wavelengths. Each type of pollutant leaves an imprint on the measuring device that will act as a signature for that kind of particle or molecule. This is actually quite simple, according to Hoffman, and has already been used to study and map aerosols around the world.

The more complicated part of the process is properly monitoring the radiometers to ensure reliable and accurate data. According to Hoffman, this can be accomplished with a technique that calibrates the data collected at different times of day to eliminate systematic errors. This creates a model showing how the radiometer's signal differs throughout the day as air masses between it and the sun change.

Once the radiometer has been calibrated, data collected can be used to calculate atmospheric

Once the radiometer has been calibrated, data collected can be used to calculate atmospheric properties and used to make public health assessments based on the particulate matter present in the atmosphere.

properties such as opacity and particle size distribution. These properties can then be used to make public health assessments based on the particulate matter present in the atmosphere.

In the final step, the information is transferred from the radiometer to a format that can be read on a smartphone. The whole device, based on a prototype built by Hoffman, is about the size of a matchbook.

## CHALLENGES

A number of challenges still exist in this early phase of Hoffman's business. Coming up with the capital to pay for seed-stage funding is a heavy burden for a young chemical engineer. The business of securing patents, lawyers, and funding is crucial for the launch of this product.

With a concept and a prototype under his belt, Hoffman has turned his attention to building his business, Awair Inc. In 2013, he attended PERC's Enviropreneur Institute to learn more about introducing new ventures to the marketplace. "I learned how to use market forces to solve environmental problems such as a lack of adequate air quality information," says Hoffman. "The mentoring and network provided by the institute faculty and the other enviropreneurs has proven invaluable in all aspects of my project."

Hoffman is eager to set up and monitor prototypes with a sample population of interested users for this mobile technology. He hopes that by successfully implementing this device with real subjects he will receive better information about how to maximize user experience and

Hoffman believes people will respond to his technology because it will provide them with the freedom to make more informed choices about the air they breathe.

determine any interferences or kinks in the technology. Then he can begin to secure an investment from venture capitalists and bring the product to scale.

## DISRUPTING THE STATUS QUO

Hoffman believes people will respond to his technology because it will provide them with the freedom to make more informed choices about the air they breathe. As he explains, "I see individuals making decisions daily based on their newfound knowledge of air quality. For example, they may choose to recreate in a location where the air is better rather than risking their health by recreating in a location with dangerously bad air. People may choose to keep their kids indoors if the air at their location becomes dangerously polluted."

Enviropreneurs like David Hoffman are disrupting the status quo by moving beyond regulatory solutions to address air quality and working to create new technologies that may someday help solve emissions problems.

For more information on PERC's Enviropreneur Institute, visit www.enviropreneurs.org

CHARLOTTE HUUS-HENRIKSEN is a PERC outreach associate. She earned her B.A. in Environmental Studies at Whitman College and is currently working on her M.S. in Environmental Management and Policy at Lund University in Sweden.

# TAKING THE BULL BY THE HORNS:

## How One Enviropreneur is Harnessing Private Capital for Innovation in Environmental Ventures

*BY LOGAN YONAVJAK*

Daniel Claussen has arguably held the unofficial title of enviropreneur for the past decade. Several seminal experiences inspired him to move away from traditional nonprofit conservation and focus on a road less traveled: leading efforts to harness private capital markets for environmental and social good.

In 2005, after receiving an undergraduate degree in environmental studies from the University of Montana, Claussen found himself in San Francisco brokering conservation land deals. His tenure at the American Land Conservancy came during a period when public funding for land conservation was drying up and the country was edging toward the onset of the global financial crisis. San Francisco was a hotbed for Claussen to glean inspiration from the disruptive and entrepreneurial fervor of Silicon Valley tech startups.

### WATERSHED MOMENTS

It was two former Secretaries of the Interior that ultimately ended the first phase of Claussen's conservation career. The first was Stewart Udall. About six months before the renowned statesman passed away in 2010, Udall bluntly told Claussen that what he was doing just wasn't enough. Udall summarized these thoughts in his famous, final article entitled "A Message to Our Grandchildren." During the same time period Claussen was working on a project with former Secretary Bruce Babbitt, who echoed Udall's message, spelling out how the old model for conservation was broken.

These pivotal conversations put the final nail in the proverbial coffin for Claussen. He began to re-examine the basic environmental equation, as Peter Forbes describes it: protecting nature from people through laws. "The equation was turned on its head: humanity and nature benefit through optimal relationships," says Claussen. "For me, the bottom-line broker in those relationships is the market."

As Claussen's generation was launching the Occupy Wall Street movement, it occurred to him that instead of being the enemy, mainstream finance held the single greatest leverage point for creating positive social and environmental impacts.

"I realized that the growing social needs between government and business would never be addressed at scale through the nonprofit sector," he says. "My generation's

'social entrepreneurs' were really the only great hope I could see. Investment capital for these innovators was the greatest limiting factor. That's when my purpose became very clear: Fund the innovations of my time."

## DISCOVERING A NEW INVESTMENT IDEA

As these ideas were crystallizing, Claussen discovered the emerging field of Impact Investing. Impact investors actively seek to place capital in businesses, nonprofits, and funds that can harness the positive power of enterprise to generate a measurable, beneficial social and environmental impact alongside a financial return. This type of investment can be made across asset classes, occur in developed and emerging markets, and target a range of returns from below-market to market rates, depending on the circumstances.

Specifically, Claussen stumbled onto an investment tool called Program Related Investments (PRIs). These investments are made by private foundations that act like a grant for tax purposes because they are counted toward a foundation's five percent charitable distribution requirement.

Although foundations control approximately $700 billion in assets, they are investing less than 1/10th of 1 percent in impact investing—largely due to a lack of education and structural barriers within the foundations.

Created in 1969, PRIs remained widely unknown until foundations, such as the Bill and Melinda Gates Foundation, used them as an equity investment in a pharmaceutical company creating vaccines for the developing world. To qualify as a PRI, the primary intent of the investment must be to further charitable purposes. As a result, most PRIs are made at below-market rates.

"The big take-away," according to Claussen, "is that PRIs are the only branch of capital in our private markets that can provide the high-risk, below-market rate terms to fund early-stage technology innovation, social ventures in markets with slim margins, and in high-risk emerging markets."

## A TOOL FOR LAND CONSERVATION

How have Program Related Investments been used in a conservation context? Of the nearly 70,000 charitable institutions in the United States, only a

few hundred employ PRIs. Of those institutions, only a handful invest in specific conservation activities. Luckily, this is changing.

There are several ways PRIs can be used to invest in conservation. For example, they can provide subordinated debt capital—a loan that ranks below other loans—for conservation real estate, invest in cap-and-trade fisheries, or invest in natural resource focused companies that create engineered wood products.

At the time Claussen discovered impact investing and PRIs, he began working with Prize Capital LLC, a venture philanthropy group implementing innovative financing techniques to facilitate radical environmental breakthroughs. Prize Capital initiated the INOGO project at Stanford University's Woods Institute for the Environment. The goal is to improve social and economic factors, such as education and employment, while supporting the integrity of both marine and terrestrial ecosystems on which local communities of the Osa Peninsula of Costa Rica depend. Claussen focused on using PRIs to scale a landscape-level land acquisition and social venture strategy—a form of investing that provides capital to businesses deemed socially and environmentally responsible—across the peninsula.

## THE ENVIROPRENEUR INSTITUTE

While Claussen was investigating PRI opportunities with Prize Capital, he fortuitously came across PERC's Enviropreneur Institute. He was excited to find a group thinking about environmental problems from a market-based perspective, and immediately submitted an application with the idea of creating a mechanism to utilize PRIs for his efforts with Prize Capital.

It was during his PERC fellowship when Daniel and I were introduced. I was already working with a team of conservation finance professionals to explore the development of a Conservation Investment Note—a unique fixed-income, fixed-rate instrument, similar to a bank certificate of deposit. This investment tool is designed to offer institutional and retail investors an opportunity

to go beyond charitable donations and earn a modest return from investing in working lands conservation in the United States.

While earning investors a return, the Conservation Investment Note also creates more flexible and longer-term financing opportunities for the land conservation community. Repayment mechanisms can include fee-simple or easement sales to government or nonprofit groups, charitable donations, and sustainable timber sales.

Over the past several months, Daniel and I have been working to advance the note idea, exploring how it could be used to help change the face of public land restoration efforts, timber sales, and partnerships with private land conservation efforts through an investment platform available to both accredited and non-accredited investors.

Daniel has also worked with Stephanie Gripne, a 2006 enviropreneur fellow, to launch the Impact Finance Center, a think tank at the University of Denver focused on market research, education, and philanthropic advisement. This work continued to expand his interest in the use of PRIs.

Today, Daniel is in the midst of pursuing his primary passion for PRIs, what he calls "big step" social innovation. Currently, venture capital is the only investment capital on the market that is focused on innovation. The problem is that venture capital is fixated on technologies that are on the verge of commercialization with the potential for large returns, which results in "small step" innovations and social outcomes as a secondary goal. "You can't put a square venture capital peg through a round social venture hole," says Daniel. "There's this huge R&D and startup funding gap for early stage innovators, and frankly for the emerging social venture sector in general."

Seeing the potential of PRIs for early stage innovation brought Daniel back to work with Prize Capital to advance initiatives addressing technological advancement in the fields of environment, energy, and health. In addition to advancing water and healthcare innovations, Prize Capital is working with large utility, oil, and coal companies to advance technologies that can cost-effectively recycle carbon emissions from power plants. With a long life remaining for the existing energy infrastructure, a retrofit breakthrough is wanted to harmonize the conflicts between providing reliable, affordable baseload electricity and lowering carbon emissions. Prize Capital is working to establish a Carbon Capture and Sequestration (CCS) Test Center at a power plant where top technology teams can accelerate their innovations at scale. The R&D teams working to test new technologies at scale at the test center may need the type of capital required to achieve breakthroughs in CCS technology.

## SUMMING UP THE VISION

It takes an enviropreneur like Daniel Claussen to see beyond traditional conservation approaches and recognize opportunities to leverage private capital into land conservation and technological solutions to solve pressing social and environmental challenges.

In Daniel's words, "My role is straightforward: create opportunities for investors to fund breakthrough technologies in the markets that will define our future."

For more on impact investing watch: http://youtu.be/Mq6GvsmNrMk

LOGAN YONAVJAK is an independent consultant in impact investing and conservation finance, and is currently pursuing her Master of Forestry degree at Yale University. She has worked with numerous private equity and investment advisory organizations, including HIP Investor, Inc., Beartooth Capital, Working Lands Investment Partners, and the Conservation Private Capital Group. Previously, she worked for the World Resources Institute.

# The New Face of Free Market Environmentalism

I had a chance recently to sit down with Reed Watson, the new executive director of the Property and Environment Research Center, to discuss his vision for PERC, one of the nation's leading environmental think tanks, get his take on the status of environmentalism, and get to know him a little better. For those who may be unfamiliar with PERC, it was established in 1980 by some very gifted economists who believed that if markets could produce bread and cars, they should be able to produce environmental quality. Since its founding, PERC has risen to a prominent place on the environmental policy stage, with a willingness to thoughtfully challenge the orthodoxy of traditional environmentalism. Increasingly, mainstream thinking has come much closer to PERC's philosophy.

Watson, 32 years old, is also the director of PERC's Enviropreneur Institute, an educational program and launchpad for environmental entrepreneurs. Watson's research focuses on the implementation of market-based solutions to natural resource conflicts. With Terry Anderson and Brandon Scarborough, he co-authored *Tapping Water Markets* (RFF Press, 2012). Watson holds a J.D. and M.A. in Environmental Economics from Duke University (go Blue Devils!) and a B.S. in Economics from Clemson University. He lives in Bozeman with his wife and two dogs, is an avid outdoorsman and enjoys trail running, skiing, and hunting.

**First, congratulations on your appointment as the new executive director for PERC. You obviously have some big shoes to fill as Terry Anderson hands over the reins and looks to new leadership to advance PERC's important work. Coming into this new role, what are your priorities for PERC and what, if any, changes might we see in PERC's focus, research, or outreach?**

Thank you. It's a tremendous opportunity. As far as priorities, PERC's bread and butter is and will always be research. What makes us unique, what distinguishes us

from other conservation organizations, is our capacity to provide solid, unbiased research exploring how markets and property rights promote environmental quality.

In recent years, PERC's outreach team has done an impressive job of growing our audience. Likewise, our applied programs have spurred real-world demonstrations of free market environmentalism. But research is the starting point, it's our core, and it will remain so under my leadership.

### What do you see as the biggest challenges facing conservation in 2014?

Policies that reduce economic wealth probably pose the biggest risks to conservation. As people get wealthier they demand a cleaner and cleaner environment. The data bear this out wherever you look, across continents and across resources. The notion that economic growth and environmental quality are mutually exclusive is not only wrong, it's also persistent and dangerous. Ironically, environmental policies that inhibit trade and reduce wealth will actually undermine conservation, and that's a real threat.

### A few years back, Michael Shellenberger and Ted Nordhaus wrote a controversial article on the death of environmentalism. Ted and Michael took a lot of heat in the environmental community for that article. Do you share their pessimism about the environmental movement today and, if so, how does the environmental movement need to change?

Yes and no. Shellenberger and Nordhaus hit the nail on the head by describing modern environmentalism as its own special interest, but they failed to mention that modern environmentalism, as a special interest, prioritizes its own preservation over the environment's preservation. Environmentalism

is not dying—the big players are raising more money than ever—but the era of sweeping environmental legislation is probably over.

To be clear, the ineffectiveness of modern environmentalism does not concern me. PERC's research has shown that comprehensive, top-down environmental legislation often wastes more resources than it conserves. Moreover, as sincere conservationists abandon the top-down model, alternative approaches like free market environmentalism should gain even more of a following.

### Can you talk a little bit about the concept of "enviropreneurship," what is it, how did it get started, and why it's needed?

Enviropreneurship is the antithesis of political environmentalism. Enviropreneurs™ are environmental entrepreneurs who use property rights, contracts, and markets to enhance the value of environmental assets. They reject zero-sum tactics such as lawsuits and regulations, choosing instead to hash out positive-sum, voluntary agreements to promote environmental quality. Examples abound on PERC's website (www.perc.org), but suffice it to say that enviropreneurs are the agents of free market environmentalism.

### Last fall, you and David Hawkins of NRDC debated the role of government and markets in offering sustainable solutions. Would you say the proponents of more government solutions are simply wrong or misguided, or is there a role for government and, if so, what?

Mr. Hawkins and I see things very differently. Indeed, our debate exemplified Thomas Sowell's classic, *A Conflict of Visions*. Hawkins, like most proponents of government

"solutions" to environmental conflicts, places enormous faith in the capacity of government experts to determine the socially desirable levels of environmental quality and the most appropriate means of achieving them. The thinking goes that these benevolent and omnipotent maximizers of the public good are immune to special interests, including their own.

Unfortunately, this model doesn't comport with reality. Most of our nation's comprehensive environmental laws are actually the product of Bruce Yandle's "Baptists and Bootleggers" phenomenon. The regulated community (the bootleggers) hides behind environmental rhetoric (the Baptists) to pass anti-competitive laws and regulations which rarely promote conservation in a cost-effective manner. Whether this reality makes the proponents of more government solutions wrong or misguided, I don't know. Perhaps it's both.

There are many who remain mistrustful of markets for a variety of reasons. Can environmental markets be entrusted to achieve the best results for the environment and advance the public good?

Yes, when the property rights to environmental resources are clearly defined, enforced, and transferable, markets can't help but allocate resources to their highest valued uses. It's like gravity. As for engendering trust in markets, skeptics should read some of our enviropreneur success stories. The proof is in the pudding.

In your book, *Tapping Water Markets*, which you co-authored with Terry Anderson and Brandon Scarborough, you explore ways in which water markets can be improved and implemented further. What are the top two or three things that can be done to further these markets?

To unleash the power of water markets, the first and most important thing is to define and enforce property rights to the resource. Without property rights, markets don't work. Period.

The second key to unlocking water markets is to prevent people who don't hold water rights from contesting, delaying, or preventing water trades. Only water right holders should be able to block a water trade; otherwise, socially beneficial trades will be sacrificed at the altar of "externalities," those gripes and complaints that lack any legal basis.

Of all the historical figures that have contributed to conservation over the years, e.g., Roosevelt, Pinchot, Muir, and Leopold, to name a few, what prominent figure do you personally relate to the most and why?

Does Ronald Coase count?

He does indeed. Thank you, Reed Watson. We appreciate you taking time to share your thoughts here on Conservefewell. And I wish you all the best in your new position.

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BRENT FEWELL, a former environmental scientist and senior U.S. EPA official, is a partner and environmental attorney with the law firm Troutman Sanders LLP and a frequent lecturer on 21st century environmental leadership and innovation.

# BAREFOOT CONSERVATION

In the Indian Ocean, among the islands of the Seychelles, an exclusive resort is helping to protect endangered island habitat. Four-poster beds made of driftwood, bamboo showers, and personal outdoor spas overlooking the beach keep the richest of the world content at this African getaway. But more than a private island retreat for the rich, the North Island is a conservation experiment—a modern-day Noah's Ark. The proceeds from the wealthy visitors pay for the protection of the local species.

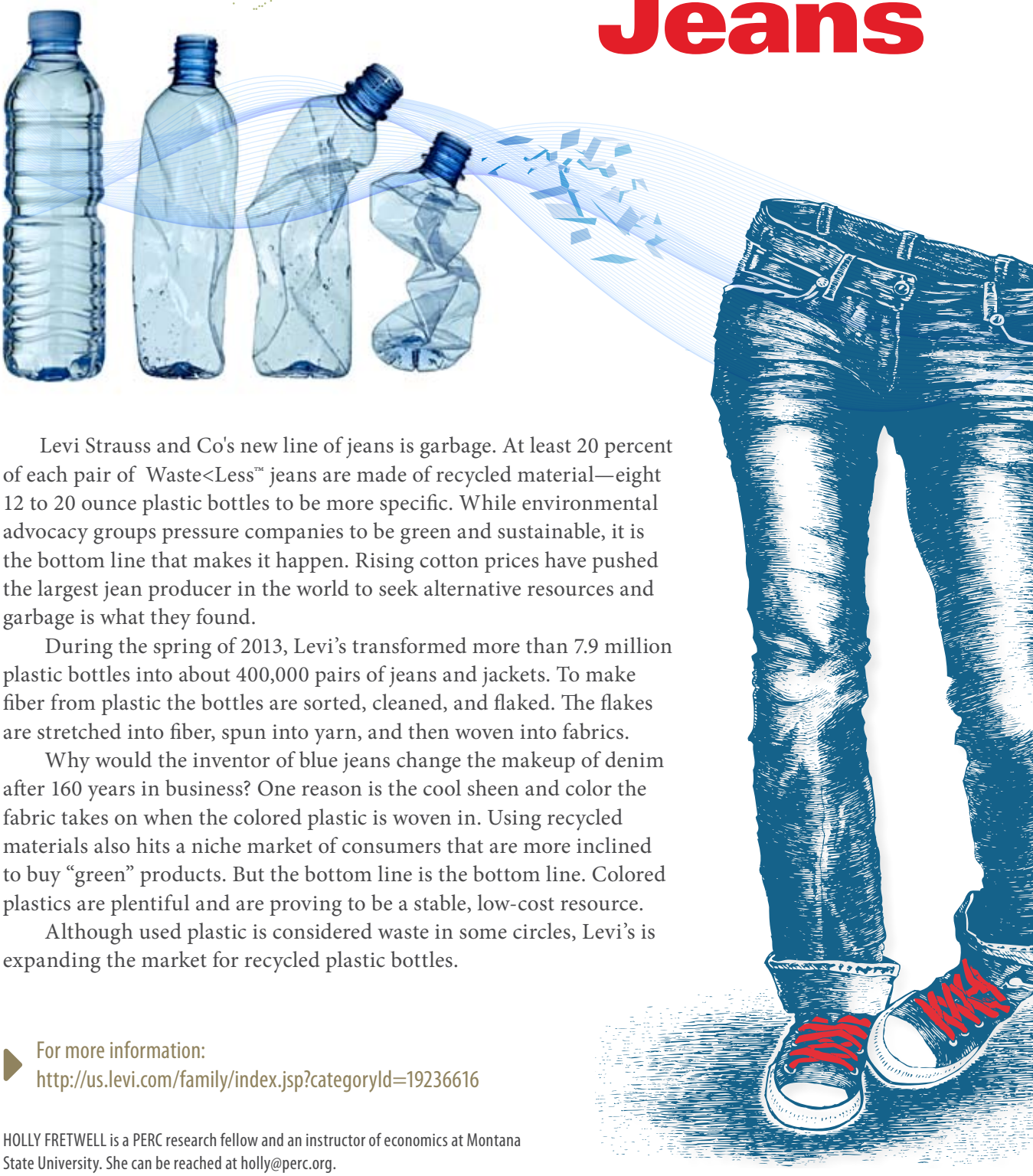
Wilderness Safaris purchased North Island in 1997 with a goal of rehabilitation. The then rat-infested island was overrun by exotics—as in non-indigenous plants and animals—that outcompeted the local species. After three years of research, a long-term transformation project began to bring back native flora and fauna.

This eco-tour outfit is not new. It is celebrating its 30th year. Nor is it small. Its biodiversity projects cover more than 7.6 million acres with 72 destinations in nine African countries. Additionally, Wildlife Safaris supports more than 50 conservation projects each year with the help of nearly 3,000 employees.

As a profit-driven, publicly held company, making money while protecting the environment is fundamental to what Wilderness Safaris does. It has evolved from a tourism business with conservation concerns to a business that is building sustainable conservation economies. "By doing good we can do well," says one founder. The company's short-term goal is to double the number of guests so that they can double their stewardship reach.

For more information:
www.wilderness-safaris.com/camps/north-island

# Green Jeans



Levi Strauss and Co's new line of jeans is garbage. At least 20 percent of each pair of Waste<Less™ jeans are made of recycled material—eight 12 to 20 ounce plastic bottles to be more specific. While environmental advocacy groups pressure companies to be green and sustainable, it is the bottom line that makes it happen. Rising cotton prices have pushed the largest jean producer in the world to seek alternative resources and garbage is what they found.

During the spring of 2013, Levi's transformed more than 7.9 million plastic bottles into about 400,000 pairs of jeans and jackets. To make fiber from plastic the bottles are sorted, cleaned, and flaked. The flakes are stretched into fiber, spun into yarn, and then woven into fabrics.

Why would the inventor of blue jeans change the makeup of denim after 160 years in business? One reason is the cool sheen and color the fabric takes on when the colored plastic is woven in. Using recycled materials also hits a niche market of consumers that are more inclined to buy "green" products. But the bottom line is the bottom line. Colored plastics are plentiful and are proving to be a stable, low-cost resource.

Although used plastic is considered waste in some circles, Levi's is expanding the market for recycled plastic bottles.

For more information:
http://us.levi.com/family/index.jsp?categoryId=19236616

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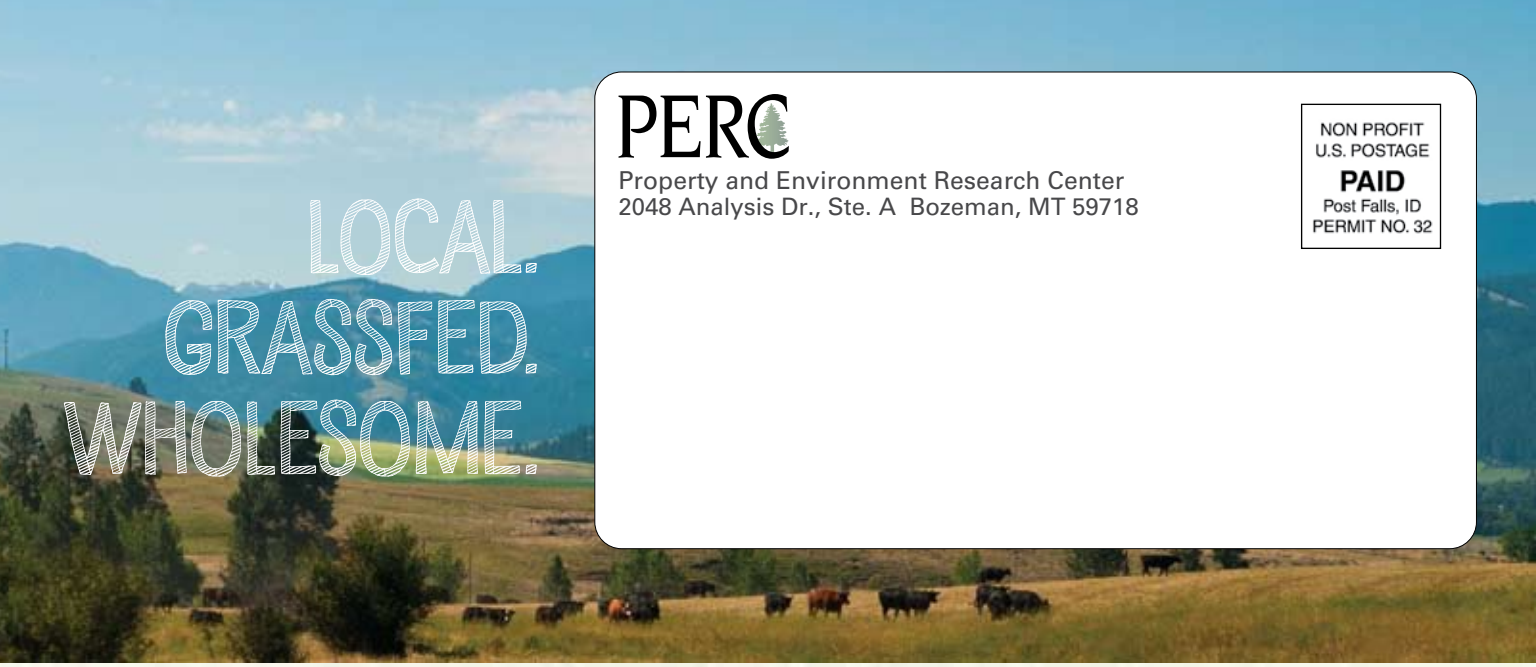


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# Grassfed BEEF CRISPS™

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## Our roots run deep at PERC

Co-founded in 2011 by a PERC Enviropreneur, Grassfed Beef Crisps is a strong supporter of market-based solutions to entrenched environmental problems. Through PERC's unique lens, we recognized that the rapid loss of small-scale family ranches and the stewardship they represent is of deep environmental consequence. Our solution? Enter the marketplace and influence spending and consumption choices from the bottom up.

We've created a national brand of thin-cut, preservative-free, beef 'crisps,' and source our beef from as many responsible ranchers as we can, from as many states as possible, sending a nation-wide market signal that conscious stewardship pays. We support the best producers with price premiums, not plaudits. So far, we have successfully localized sourcing and preparation of our product from the Canadian border clear to Mexico, with ambitions for much more to come.

Grassfed Beef Crisps is also a proud member of 1% for the Planet, a coalition of forward-thinking companies who donate at least 1% of their sales to environmental causes. We donate ours to PERC.


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