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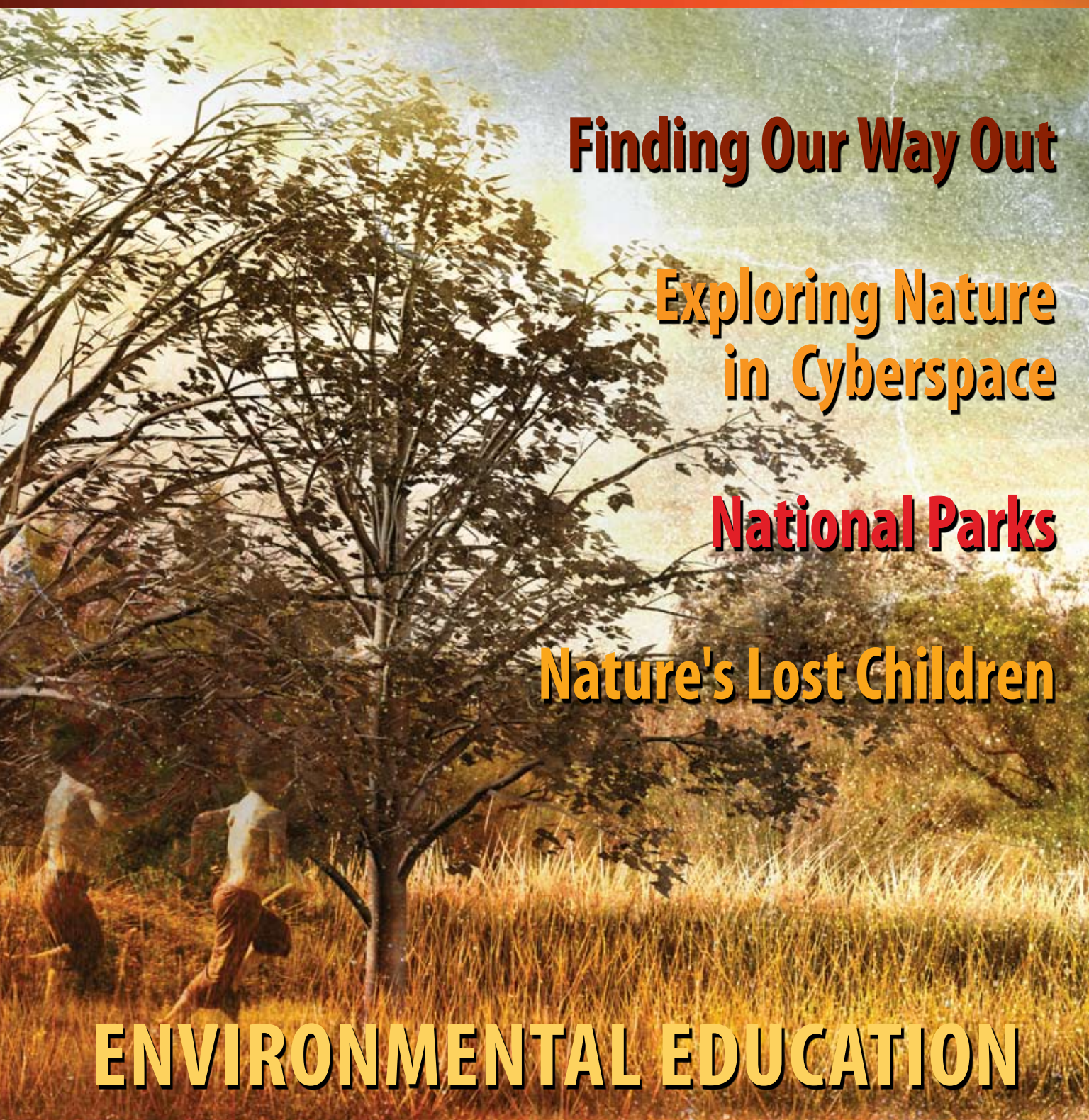
PERC REPORTS

FOR FREE MARKET ENVIRONMENTALISM



Finding Our Way Out

Exploring Nature in Cyberspace

National Parks

Nature's Lost Children

ENVIRONMENTAL EDUCATION

FROM THE EDITOR | BY LAURA E. HUGGINS

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

PERC REPORTS
For Free Market Environmentalism
Fall/Winter 2009
Volume 27, Issue 3

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It's back to school—the time of year when the cool autumn air rolls in, crisp apples fall from the trees, and my 5-year-old daughter comes home from school asking "Mommy, what corporation started the sun on fire and made global warming?"

Turns out there are all sorts of "scary green monsters"—from carnivores to villainous corporations—discussed in schools and in children's books. MEGHAN COX GURDON, who reviews books for the *Wall Street Journal*, elaborates in this issue on the excess of eco-propaganda for kids.

Children are also quick to absorb green mantras: eat local, recycling is good, stop global warming, and the list goes on. PERC's HOLLY FRETWELL suggests another route—teaching kids *how* to think and not *what* to think.

Rather than scaring kids about the environment, WHITNEY TILT has another idea: get them outside. Americans are spending less time outdoors, which may have significant ramifications for people and nature alike as we become increasingly disconnected from our natural environment.

Along with not spending time outdoors, BRIAN YABLONSKI points out that the number of people visiting national parks has been rapidly declining since 1987. He discusses a few market mechanisms that could help the parks' funding challenges and increase visitation.

CAROL FERRIE concedes that technology is indeed swallowing up kids, but posits that videophilia doesn't have to be a bad thing. Going with the flow rather than against it—using a child's much beloved technology to whet their appetite for nature—is the approach being taken in the classroom and beyond.

Reconnecting society with the outdoors is not the job of government. So what can individuals do? KIMBERLEY YABLONSKI offers three examples of how people are fighting "nature deficit disorder."

Some of the private individuals who have made this issue possible and who PERC would like to thank for their generous support include: Gerry Ohrstrom, Dwight Mutschler, John and Edna Good, Donald Fell, John Holaday, Marc Johnson, and the Friedman Foundation for Educational Choice.

For nearly thirty years, PERC's magazine on free market environmentalism has been delivered to people interested in the principles, challenges, and applications of market solutions to environmental problems. Due to funding constraints you will notice our fall and winter issue is combined. Please take a moment and make a contribution to *PERC Reports* today to help ensure its continued publication (envelope enclosed).

Laura E. Huggins

Laura E. Huggins | EDITOR

? Is "nature deficit disorder" a pandemic or a farce?

Go to www.percreports.org and give us your answer.

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GOING AFTER GOVERNMENT HANDOUTS

I enjoyed "Green jobs: Boom or bust?" There is one point that I can add based upon work that I have done for a small entrepreneurial company that produces carbon fibers used in the biggest and most advanced wind turbines.

My client has long-term supply agreements with the two biggest makers of wind turbines, which are both European companies. It has no such agreement with the biggest producer, GE, because GE is way behind in the technology and doesn't compete with the Europeans at the leading edge of the business. However, GE, as its CEO pointed out in announcing its latest quarterly report, plans to go after the "stimulus" money applied to wind energy.

According to a friend in the business, one may expect GE to fiddle around and waste whatever money it gets for advanced wind turbine development. By refusing to spend its own money, it has already demonstrated a lack of real interest in the business. But it does know how to go after government handouts.

—Andrew B. Wilson
Freelance Writer

AIR POLLUTION FROM BIOMASS

In my role as an Air Quality Specialist for Missoula, Mont., we are following the development of Fuels for Schools type projects as mentioned in "Fueling the Future" and increased interest in the use of woody biomass. One of the impacts of burning woody biomass is air pollution in the form of fine particulate matter (PM2.5). PM2.5 has been linked to increased heart attacks, asthma, and strokes at levels lower than previously thought. One of the major hurdles to meeting this health based standard is the use of solid fuel burning devices in the wintertime. During inversion conditions, which occur throughout western Mont., PM2.5 is trapped and can violate the federal health standard.

There are ways to burn biomass that are cleaner than others. Since PERC is concerned with market-based evaluations, you may want to consider the costs involved with the pollution control devices and efficient design necessary on woody biomass boilers to reduce their PM2.5 output.

—Mamie Colburn
Air Quality Specialist, Missoula City County Health Department

REAL WORLD SOLUTIONS

As I read, "Fueling the Future" in *PERC Reports* I wondered why the use of the terms CHP (Combined Heat and Power) and Optimization did not enter your discussion. Both seem to have a great deal of relevance in the discussion of subsidy-free broad-scale energy independence as well as free market environmental sustainability.

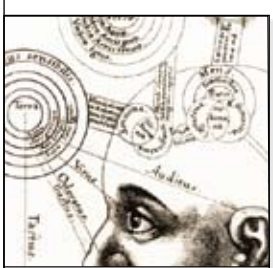
CHP is the use of Swedish advanced automated technology in forestry and Optimization is used by John Deere Forestry's Biomass Harvesting system. These superior systems were developed in Scandinavia and have allowed Scandinavians market growth and profitability for decades.

In a nutshell, different tree species and sizes have different values. To burn higher value raw material for fuel is throwing away an important free market (as in non government subsidized) advantage. Engineered lumber products are going to become the tool of the future here because of the glut of high quality small round wood. There are technologies and products that are under produced and high in value, which can be made from small diameter varied wood fiber. There are also technologies such as Envio Energi's which use clean wood waste very efficiently for heating, cooling, and electricity.

My heart and soul are in a crusade to share and bring real world proven solutions to a place where politics (aka buying votes or influence) has taken the place of free markets and reality for a long time. Yes, right here in America!

A senator from Montana shared this article with me and encouraged me to "weigh in." Best to you; it is good to have more thought and good material that is intended to help and not further a single agenda.

—Gary Callihan
Forest Interface Solutions LLC



Tell me what *you* think!

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"And then WHAT?"

In the early days of the ivory trade ban in the 1980s, *TIME* magazine showed a picture of Kenyan government officials burning tons of ivory to demonstrate their commitment to the ban as a way of stopping elephant poaching. My 12-year-old daughter saw the picture and declared, "That's stupid!"

At that moment I agreed with her, but, as a student of political economy and a cynic, the first of which leads to the second, I should have known that it wasn't stupid for the bureaucrats. While touring Kenya several years later, I learned why.

The rest of the story begins with a wildlife researcher—I'll call him Joe to protect the innocent—who was visiting the room where the Kenya Wildlife Service stored rhino horns confiscated from poachers. Upon examining the specimens, Joe discovered that most, if not all, were carved wooden replicas complete with identification tags. When the officials realized that Joe was examining the replicas, he was quickly escorted out. Obviously, some officials were confiscating the horns, replacing them with replicas, and selling the originals on the black market.

What about burning the ivory? Joe, having managed a million-acre ranch on which elephants were sustainably hunted, was very knowledgeable about ivory and calculated how large the pile would have to be to achieve the ostensible quantity of ivory burned and how difficult it would be to get such a fire going. He concluded that there must have been a wooden structure under the superficial amount of ivory that was exposed. Again, the confiscated tusks were being sold by officials on the black market.

The environmental education lesson of this story is to always ask "and then what?" Here are a few examples from PERC's research:

- Fix the price of water below a market price—and then what? We will have water shortages with little incentive for consumers to conserve and suppliers to supply.
- Prevent overfishing by regulating season length—and then what? Fishers will fish longer each day, use more expensive boats and electronics, and keep all the fish they catch regardless of size and species.
- Allow national parks to charge higher prices and retain some of the revenue—and then what? Park officials will collect more revenues, reinvest them in their park assets, and treat visitors better.
- Help the poor by improving environmental quality in their neighborhoods—and then what? Real estate owners will benefit as housing prices and rents rise while the poor will be forced to move to places with fewer amenities.

My daughter had learned this lesson. When I asked why burning ivory was stupid, she explained, "That will only increase the price of ivory and cause more poaching." If all of us from childhood to grandparenthood kept the "and then what?" question in mind, we would be much more skeptical of political solutions and much more supportive of free market tools as a way of getting the incentives right for environmental improvements.

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

Scary green Monsters

Contemporary children are so drenched with eco-propaganda that it's almost a waste of resources. Like acid rain, but more persistent and corrosive, it dribbles down on them all day long. They get it at school, where recycling now competes with tolerance as man's highest virtue. They get it in peppy "go green" messages online, on television and in magazines.

And increasingly, the eco-message is seeping into the pages of novels that don't, on their face, necessarily seem to be about environmentalism at all. Thus children who might like to escape into a good book are now likely to find themselves pursued into that imaginative realm by didactic adults fixated on passing along endless tellurian warnings.

Susceptible children are left in no doubt that we're all headed for a despoiled, immiserated future unless they start planting pansies in their old shoes, using dryer lint as mulch, and practicing periodic vegetarianism. Not surprisingly, many young people are anxious. The more impressionable among them are coming to believe that their smallest decisions could have catastrophic effects on the globe. This, of course, is nonsense, unless their smallest decision involves tipping vats of mercury into forest streams. But they're children, for goodness' sake: They tend to believe what adults tell them—minus the nuance.

Thus we have the spectacle of a 12-year-old becoming distraught when her father orders seared tuna at a restaurant (this happened to a friend of mine), on account of overfishing, or a 6-year-old (son of an acquaintance) panicking at the prospect of even a yogurt container going into the trash: "But I can use it as a toy!"

The patriarch of the vogue for green-themed children's books is surely Carl Hiaasen, the novelist and Miami Herald columnist who shot to eco-stardom in 2002 with "Hoot," a novel for middle-schoolers about three children who foil a corporation's attempt to build a pancake restaurant over a burrow of endangered miniature owls. "Hoot" won a Newbery Honor Award, and was followed in 2005 by "Flush," a tale recounting the adventures of a different group of youthful oddball allies that is seeking to expose a casino-boat operator who's been flushing raw sewage into harbor water.

Mr. Hiaasen's latest, "Scat," which came out in January, ever so slightly betrays the strains of extending the franchise. Here the story features a new group of three children who band together with an eccentric biology teacher and an armed eco-terrorist to stop a buffoonish Texas oilman from illegally extracting petroleum from the habitat of the endangered Florida panther.

In all Mr. Hiaasen's books for children, young readers are asked to sympathize with environmentalists who thwart businessmen, even when the good guys take destructive measures such as sinking boats or torching billboards. And the eco-tropes that have worked so well for Mr. Hiaasen—Good nature! Bad capitalist!—are steadily creeping into books across the age range.

Joan Bauer's "Peeled" (Putnam, 2008) won a Newbery Honor and hordes of young adult readers with its lively tale of a courageous teenage journalist who manages to outfox corporate interests that are trying to bamboozle a small apple-growing town. A newer novel for teenagers, Timothee de Fombelle's "Toby

Alone" (Candlewick, March), is also getting buzz. In this story, we meet a boy on the run from a thuggish industrialist who, you will not be surprised to learn, is both fat and rich. The tycoon's rapacious practices endanger the entire world of the book's characters, who—and this is skillfully drawn—are tiny people no taller than two millimeters who dwell on the branches of a giant, weakening tree. Shades of the global warming debate, anyone?

Children a step younger who open the latest in the popular "Grk" books by Joshua Doder, "Operation Tortoise" (Delacorte, January), will learn how a boy named Tim and his dog discover a secret laboratory on a tropical island in which a billionaire mistreats tortoises in the hopes of extracting from them whatever it is that causes them to live so long. When Tim reproaches the wicked magnate, the man smiles: "You're very young. You don't know much about life. Let me tell you how the world works. The rich make the laws and the poor obey them."

Even younger readers who are drawn to the appealing pastel illustrations of Katherine Hannigan's "Emmaline and the Bunny" (HarperCollins, March) will find within a risibly didactic tale about a little girl who lives in a town dominated by a fleshy, bowtie-wearing mayor. The pudgy politician has ordered all trees to be cut down, and all grass paved over, to keep the place tidy. Poor Emmaline yearns for a rabbit, but the mayor has banished wild creatures. Eventually the child finds a pet, but only after encountering a brusque old crone with a long white braid: "Humans," the woman snorts. "Cutting this, clearing that, concreting everything. They don't care a bunny's hair about anyone else."

When Emmaline protests, "I care," the young reader probably will too—which, we have to assume, is the point of the exercise.

As any parent can tell you, children like routine. They're not put off by predictability in stories. They're accustomed to princesses being pretty, dragons being fearsome, and, it seems, alas, their fictional businessmen being corpulent and amoral. So it's probably pointless to object to the eco-endlessness on the grounds of artistic feebleness.

Yet there is something culturally impoverishing about insisting that children join in the adult preoccupation with reducing, reusing and recycling. Can they not have a precious decade or so to soar in imaginative literature before we drag them back down to earth?

MEGAN COX GURDON reviews children's book for the *Wall Street Journal*.
This article originally appeared in the *Journal* on April 17, 2009. Reprinted with permission.

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Environmental Education: The Science of Fear

BY HOLLY FRETWELL

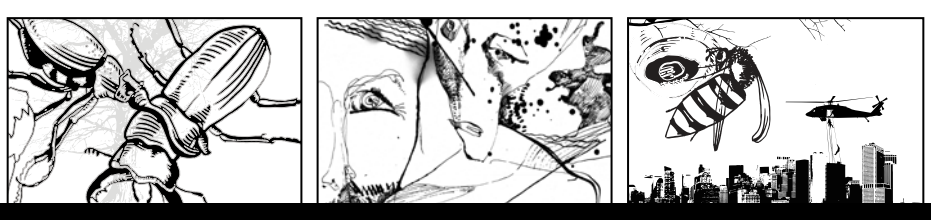
"Our climate crisis may at times appear to be happening slowly, but in fact it is happening very quickly—and has become a true planetary emergency."

—Al Gore

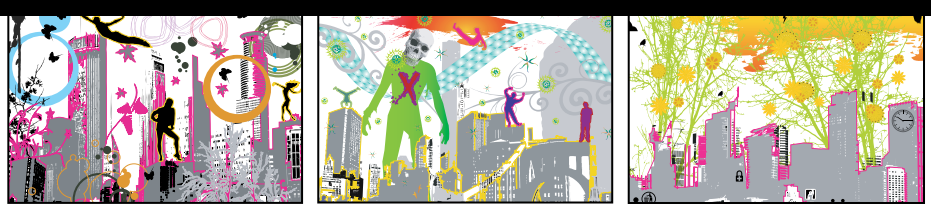
Al Gore and others who believe in human-caused global warming think that the earth is approaching a tipping point—one where the level of carbon dioxide emissions caused by humans will result in catastrophic and irreversible consequences to life on earth. This idea has triggered a global panic. Fear mongering is effective because it feeds our emotions, but do such tactics actually help improve life on earth?

Across the spectrum, emotions motivate behavior and can be a powerful mechanism for learning. This tool is used to persuade, such as in advertising, and to teach because it motivates an excited response that enhances learning, as described in Ted Brader's book, *Campaigning for Hearts and Minds.*

Emotion is also used to motivate action. Studies show that fear tends to trigger a stronger response than other emotions. Furthermore, evidence shows that the more repetitive the story, the greater the fear becomes



Fear mongering is effective because it feeds our emotions, but do such tactics actually help improve life on earth?



Kids are taught that all recycling is good, big business is bad, and that rich countries cause the most environmental degradation.

and the more likely people are to respond. This is the science of fear.

Of course, fear is the exact response desired by those trying to persuade people to act in a certain way. The mission of the Alliance for Climate Protection, chaired by Gore, is to "persuade" people there is a climate crisis. The focus of the Alliance is to "present [its] solutions to the general public" (www.climateprotect.org). The Alliance provides information, it does not motivate knowledge.

This is a significant issue for the environmental education community. Using the science of fear teaches people *what* to think, not *how* to think. It is a means to advocate a desired outcome rather than to motivate creative problem solving.

There is no doubt that teaching environmental issues can be a daunting task. It requires extensive time and research to understand how humans impact the environment. But it does not require an expert in the field to help students learn how to think about environmental issues.

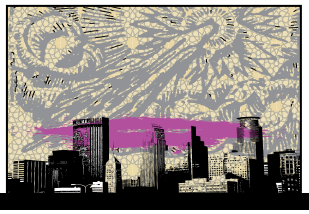
The key is to teach students to analyze information provided by others and to evaluate its legitimacy. This process allows one to take information, prioritize for themselves the issues of greatest concern, and help create solutions. It is often perceived, for example, that environmental quality in the United States is waning. According to 2009 Gallup polls, the majority of Americans believe the environment has been degrading over the past decade. And more than half of the population is still worried about pollution in our drinking water, rivers, lakes, soils, and air. Yet statistical evidence, such as that displayed in *The Improving State of the World* by Indur Goklany, shows that we live in a cleaner and healthier world than ever before.

START'EM YOUNG

Fear about environmental degradation starts at a young age. Preschoolers are preached to about being green. Kids are taught that all recycling is good, big business is bad, and that rich countries cause the most environmental degradation. Unfortunately, the facts are often missing. Recycling is a manufacturing process (it may or may not be more environmentally friendly than using raw materials), big businesses get big by providing goods and service that citizens desire, and, over the long-term, increasing incomes often result in less pollution.Very poor societies invest little in environmental quality because the resources they have are used for survival.

The fear of environmental degradation is fostered by children's books. *Hoot*, for example, by Carl Hiaasen, is an entertaining story about a group of renegade kids that save burrowing owl habitat from a big business trying to build a new restaurant.

Student newspapers also promulgate environmental myths. In a *Scholastic News Report* story, a character says, "We are running out of landfill space." The intention is to motivate kids to recycle. Regardless of whether recycling is good or bad, we are not running out of landfill space. All of America's trash for the next century could be dumped on Ted Turner's Flying D ranch in Montana with more than half of the ranch's 114,000 acres to spare, according to economist Daniel K. Benjamin.



Even classroom textbooks are influenced "by an ideological view that presents human beings as evil," according to Dr. Michael Sanera, director of the Center for Environmental Education Research. Sanera compared science textbooks used in sixth through tenth grades in Wisconsin schools. Though he felt the textbooks all did a good job explaining the carbon cycle and greenhouse effect, nearly all books used in the study focused only on the human causes of climate change and all of them predicted catastrophic impact.

With a contrasting view, a text that questioned the human role in global warming has undergone great scrutiny. "The earth has become warmer, but is this mostly the result of natural climate changes, or is it heavily influenced by humans putting greenhouse gases into the air," James Q. Wilson and John Dilulio, Jr., ask in their 2005 *American Government* text. Though a legitimate scientific question, the authors and publisher have been attacked by multiple media outlets, for what many have described as disputing a well-known fact. Friends of the Earth, for example, said that referring to global warming as being "enmeshed in scientific uncertainty is to dismiss the work of our nation's and the world's top climate scientists." So heavy was the pressure that the newer edition, published late in 2008, was changed to say "science doesn't know how bad the greenhouse effect is."

TEACHING TRUTH

The Friends of the Earth website says that we should "teach the truth about the environment." But the truth about science and the environment is that much of it is enmeshed in uncertainty—making it difficult to teach because it is not always conclusive and remains a learning process.

Our understanding of global warming is not definitive. The task of measuring an average global temperature is a case in point. Temperature measurements are collected from around the globe and averaged. The average must be adjusted for distortions created by location and land use. Temperature stations are located inconsistently throughout the globe at different longitudes and elevations, the majority in the northern hemisphere. Measurements are often taken where land use has changed, from a farm to a parking lot, for instance. Mathematical adjustments are made to correct for these variations. For example, NASA scientist James Hanson admitted that the global mean temperature estimates may be in error as much as .7 degrees Fahrenheit. The IPCC estimates total warming over the last century to be about 1 to 1.5 degrees Fahrenheit.

To really "teach the truth," we must teach students of all ages to become critical thinkers and to gain knowledge, not just information, from science. The knowledge from science can be learned through the scientific method—the process of analyzing obser-

To really "teach the truth," we must teach students of all ages to become critical thinkers and to gain knowledge, not just information, from science.

The key to analysis is understanding that correlation is not causation. Each summer ice cream sales and the number of shark attacks increase. Does this mean eating more ice cream makes sharks more aggressive?

vations by creating hypotheses and trying to discredit them. If a hypothesis can't be debunked, it may or may not be true. As the National Environmental Education Advisory Council notes, there is a difference between information, which is used to provide facts about a specific topic, and education.

With the ubiquitous nature of information, it is fundamental to decipher the good from the bad. It is crucial to understand the information a graph or table provides, and just as important to understand the information that it does not provide. Teaching students to interpret charts and the underlying data will help them perform objective analysis. Students can then evaluate the existing evidence and data in an attempt to reject the hypothesis.

HOW TO ANALYZE

The key to analysis is understanding that correlation is not causation. Each summer ice cream sales and the number of shark attacks increase. Does this mean eating more ice cream makes sharks more aggressive? This is an example of correlation where observable incidences occur together, even though one may have nothing to do with the other. Nonetheless, when two things occur together, it is often assumed that one must cause the other. But it is likely some outside variable such as warmer weather is the real culprit.

There is a correlation between historic global temperatures and carbon dioxide levels. Data show the two have moved together for more than 650,000 years. It is not, however, the correlation that scientists debate, but its causal relationship. The question remains: Does one cause the other? Surprising to many, data in *Science* magazine shows that changes in atmospheric carbon lag variations in temperature by an average of 800 years. This does not mean that temperature changes are causing atmospheric carbon to change (correlation is not causation) but it makes it less clear that increasing carbon levels are the culprit causing climate change.

Education should focus on knowledge and teaching people how to think. Demonstrating to students the complexities of science and providing them with tools to find and evaluate evidence creates self-reliance and critical thinking—skills that will help provide a wealthier and healthier tomorrow.

HOLLY FRETWELL is an adjunct instructor of economics at Montana State University and a research fellow at PERC. She is author of a teen primer on climate change, *The Sky's Not Falling: Why It's OK to Chill About Global Warming*. She has recently co-authored curriculum to complement the book, *Understanding Climate Science: Lessons for the Classroom* She can be reached at holly@perc.org.

The foreword of Richard Louv's *Last Child in the Woods* quotes a fourth-grader in San Diego: "I like to play indoors better 'cause that's where all the electrical outlets are."

FINDING OUR WAY OUT

Restoring our Vital Link to Nature

BY WHITNEY TILT

The United States is blessed with a richness of wild landscapes and attendant fish and wildlife. The diversity of landscapes is the product of geology and climate. Our access to them, however, is the legacy of untold numbers of adventurers and outdoorsmen who came first to explore, then to exploit, and finally to conserve these landscapes for themselves and their children. Today there are signs that we have grown increasingly complacent about our natural lands to the point where we risk not knowing how to find our way out…outdoors that is.

BREAKING THE BOND

The bond between education, understanding, and conservation is eloquently captured by Baba Dioum, founding member of the executive committee for the United Nations Program for the Environment:

> *"In the end, we will protect only what we love,*
> *we will love only what we understand,*
> *we will understand only what we are taught."*

"In the end, we will protect only what we love, we will love only what we understand, we will understand only what we are taught."

Many researchers, notably Stephen Kellert and E.O. Wilson in *The Biophilia Hypothesis*, describe how our learning and experiences deeply influence what we value in nature. Our ethics and commitment to the environment are strongly shaped by the duration and character of our outdoor experiences. Because Americans are spending less time outdoors, this may have significant ramifications for people and nature alike as we become increasingly disconnected and disinterested in the outdoors.

The foreword of Richard Louv's *Last Child in the Woods* quotes a fourth-grader in San Diego: "I like to play indoors better 'cause that's where all the electrical outlets are."

Louv's research led him to the conclusion that the baby boomer generation is probably the last to have built tree houses, explored creek bottoms, and run loose in the woods. Under pressure from parents and state governments to increase test scores, schools have eliminated field trips, hands-on nature study, and in some cases, cancelled outdoor recess.

At home, children too seldom hear the words "go play outside." Parents these days feel it is there duty to keep kids safe from outside threats, but this act of safety may be causing more harm than good. Harm comes in the form of what Louv calls "nature deficit disorder." Symptoms include an increase in Attention Deficit Hyperactivity Disorder (ADHD), childhood obesity, lack of creativity, ignorance of local flora and fauna, loss of respect for nature, and a diminishing sense of community.

While researchers debate the root causes for people spending less time outdoors and its associated impacts on our mental health, there is little debate that the trend spells trouble for our natural areas and our long-term commitment to the conservation of biological diversity.

NO CHILD LEFT INSIDE

The No Child Left Behind Act shed light on how our educational systems too often fail to equip children to successfully compete in today's world. But if a child's reading aptitude and math skills are below par, what is their "Environmental IQ" score? With our population increasingly urbanized and divorced from the natural environment, can we expect our children to grasp the importance of clean water and biological diversity when they don't understand where an egg comes from or how the water cycle works.

The environment is an extremely complex system that is constantly evolving, yet our educational efforts are often rife with a brand of simple absolutes—like recycling is good while wearing fur is bad. We must work to avoid naive renderings of the environment that impoverish rather than enrich. When the building blocks of knowledge are foregone and we lunge straight to the opinions, we are no longer educating, we are lobbying for the mind of the student.

LACK OF INVESTMENT

In the nearly four decades since the first Earth Day (1970), the United States has made marked progress in natural resource conservation and environmental protection. But, by and large, the country's efforts have stopped short of making a commitment that spans political parties, embraces all segments of our economic strata, and endures longer than a fashionable fad. In short, we have talked the talk, but shied from making the needed moral and economic investment. Witness the current push to plant corn in every corner of the country in a rush to cash in on ethanol despite the billions of tax dollars that have been paid to farmers in return for taking this very same ground out of production to conserve soil, water, and wildlife habitat.

The federal government places a relatively low value on environmental investments. In 2006, as an illustration of how one federal dollar was spent, 45 cents went to social security and other entitlements, 20 cents to defense, and 15 cents to debt service. Of the remaining 20 cents in discretionary funding, 2 cents went to broadly defined environmental programs. These figures also provide a poignant reminder where conservation interests sit in the real

In the end, finding our way out will take renewed effort from those who care about the future of our environment and therefore about our children's connection to the outdoors.

world vis-a-vis the size of the constituency for conservation relative to the size of their competition.

So, how will those of us who care about the outdoors respond? While by no means inclusive, three efforts are of particular importance—increased private investment, neighboring, and getting outdoors.

RENEWED EFFORT

Reconnecting society with the outdoors is not the job of government. To be successful, it must be led by the private sector with government following in support. Funding for expansion of open lands and proper natural resource management is not likely without increased leadership and a broadening constituency. While numerous foundations and government programs provide funding, it is often difficult to obtain, ephemeral in nature, and inadequate to move projects from mere demonstrations to sustainable.

The environmental landscape is littered with "model" projects that ceased to exist when funding

"For better or worse, we're it… . If we succeed there will be accolades from historians. If we fail, historians will, doubtless, take little notice—but history will be much different."

ran out. Access to larger pots of private funding are often blocked because potential returns are too small to be of interest to private equity. We see some examples of private investment funds foregoing large returns in exchange for social capital, but such efforts remain scattered and few. As Director of Conservation for the National Fish and Wildlife Foundation, I observed that innovation and sustained support come from the private sector, not from government. Let's not look for charity, but rather seek business models that connect people with the outdoors in a manner that pays for itself.

NEIGHBORING

Immigrants settling America met hardships with individual hard work and personal courage. Those who successfully settled the land, however, discovered long-term tenure on the land required a little assistance from one's neighbors as aptly described by Peter Decker in a chapter of *Across the Great Divide*. In recent years, with a growing population of people "from away," the cohesiveness represented by "neighboring" has fractured. A growing population believes it doesn't need, nor is it indebted to, the larger community. The results are plain to see as disputes are settled at the courthouse instead of the kitchen table and stewardship of the land has become someone else's responsibility.

To restore community is a relatively straightforward process that starts with getting to know one's neighbors and engaging in the larger community. But it goes further to include more concrete efforts such as constructively engaging developers to ensure new construction provides links to the community and the outdoors while not criminalizing outdoor play (fort building, tree climbing, etc.). And it includes making sure that our schools don't sacrifice the outdoors on the altar of improved testing scores when the evidence suggests the opposite.

GETTING OUT

As stated before, we will protect only what we love. There is the obvious antidote for nature deficit disorder—getting ourselves and our children into the outdoors. This experience can be exploring the vacant lot next door, going on an overnight camping adventure, or, better yet, backpacking for a week in a wilderness area. In school, it means recognizing the intellectual benefits of the outdoor classroom for teaching math, science, and the arts.

In the end, finding our way out will take renewed effort from those who care about the future of our environment and therefore about our children's connection to the outdoors. As Jack Ward Thomas, former chief of the U.S. Forest Service, reminds us:

These are indeed interesting times, a time of testing. It is useless to look back for the good old days—they are gone. It is pointless to look around for others to lead—they aren't there. For better or worse, we're it…. If we succeed there will be accolades from historians. If we fail historians will, doubtless, take little notice—but history will be much different.

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We hate TV, but we have a favorite show…we hate electronic eavesdropping, but we love it when it is used to capture a fiendish criminal. We love to hate it. We hate to love it.

Exploring Nature IN CYBERSPACE

BY CAROL FERRIE

Are you a videophile? Is your son or daughter? Chances are the answer is "yes." If you have a preference for indoor media activities—computer, iPod, Wii, DVD player—over outdoor activities, then you are stricken.

TECHNOLOGY IN ECOLOGY

Clancy J. Wolf, technology coordinator at IslandWood, an outdoor learning center in Washington, calls the general attitude toward technology a love-hate relationship. "We hate TV, but we have a favorite show…we hate electronic eavesdropping, but we love it when it is used to capture a fiendish criminal. We love to hate it. We hate to love it."

While the programs at IslandWood are designed to provide learning experiences that inspire lifelong environmental and community stewardship, Wolf said that the center is embracing technology as a means to appeal to different learning styles. Technology is an "amplifier," he said, that helps extend our senses. "Since we interact with the environment through our senses, using technology seems a logical element of instruction about the environment."

In the classrooms at IslandWood, kids use digital cameras to learn constellations. They take pictures of each other posing in the shape of a constellation, transfer the picture to the computer, remove the background and add stars in the correct places. "We've had kids print their constellations on transfer paper and iron them onto t-shirts," Wolf said. "It's hard to forget what Cassiopeia looks like once you've sat in her chair."

Digital cameras are just one form of technology being used to reconnect videophiles with nature. John Berry, an ecology teacher

at Green High School in Green, Ohio, believes that "most kids have an innate awe of nature" that can be tapped using technology combined with hands-on experiences. Ohio state education mandates require teachers to integrate technology into their classroom instruction. So when Berry wrote the ecology curriculum for the school, he naturally incorporated various forms of technology to teach different components of the nature-based lessons.

Berry prefers to do his lessons outdoors and not only takes his students there but totes the tech tools as well. With a portable bird call and amplifier in hand, Berry and his students transform into what he calls the "pied pipers of nature." As a "jay" call rings from his laptop, a flock of blue jays soars in looking for the new kid in the neighborhood.

"If you have a good imagination, you can think of things to do that are more than a five-second 'wow,'" Berry said, adding that he "always hooks at least one" student into wanting to pursue some form of environmental study after high school.

A CD with bird and frog calls combined with a PowerPoint presentation of 40 bird and frog pictures kicks off Berry's class every semester. By the end of the course, his students can identify them by sight and sound. He does a similar exercise with wildflowers. Armed with digital cameras, teams of students take pictures and collect data on wildflowers, pass the information on to another team that determines the species and then puts together a PowerPoint presentation about the flowers. About 80 types of wildflowers are learned in the process.

Recently Berry was awarded a grant to purchase radio telemetry equipment for his students to use for tracking and collecting data on frogs. The students then send the data to the state, which uses it to evaluate location, population, and behavior of frogs.

GOING UNDER ONLINE

montereybayaquarium.org

How about scuba diving into the kelp forests of Monterey Bay in California? Chances are that most people won't get the opportunity to physically expe-

rience it. A virtual dive into the deep sea of Monterey Bay, however, could be enough to give a sense of the beauty and mystery of this elusive part of nature. The Monterey Bay Aquarium offers this and other computer-based activities that are designed to create a connection between landlubbers and the sea.

"Through the connection people make with the animals in our collection, we can engage their interests to care about the threats facing ocean wildlife—and point them to actions they can take to safeguard ocean ecosystems," said Ken Peterson, communications director for the aquarium.

Noting that the living exhibits are the best means for inspiring a love of marine life and the oceans, Peterson said the "E-Quarium" on the aquarium's website (montereybayaquarium.org) was created to offer information and an introduction to the animals for those who may never visit the aquarium.

"The videos and games on our site are tools of engagement," Peterson explained. "If the experience ends there, kids and adults are shortchanging themselves of the opportunity to get real in nature."

VIRTUAL YELLOWSTONE

webrangers.us

Yellowstone National Park has its own virtual activities for school-aged children as well as teachers. Since 2001, Yellowstone has offered electronic field trips—eTrips—to share the resources and treasures of the park with kids who may not actually get to visit America's first national park. The eTrips, offered through the park's "Windows into Wonderland" program (windowsintowonderland.org), take visitors into the lives of wolves, bears, swans, and bison, along with a history and orientation of the park and its geological features.

"[Young people] are our future stewards," said Craig Johnson, Yellowstone's web programmer. "We want them to enjoy what nature offers and, when they are old enough to vote, protect it."

Each "field trip" is designed to accommodate an hour-long classroom period. When each of the eTrips premiered, the park provided the opportunity for kids to participate in a real-time, online discussion with a park ranger about the trip. Although funding for creating new eTrips has been exhausted, the questions

and answers from the discussions are archived and accessible on the website, Johnson said.

In the last year, the site has documented 60,000 users from 150 countries who viewed a total of 600,000 pages on the site. Those numbers could actually be much larger, Johnson said, because those users could either be an individual or a teacher who is using it with a classroom of students. "We suspect many more people are viewing these than we can capture with web stats packages," he noted.

The National Park Service (NPS) website (nps.gov) also has interactive programs ranging from an antler/horn match game to a 3D video game designed to teach wolf ecology and behavior.

WebRangers (www.webrangers.us), the NPS's online Junior Ranger program for kids of all ages, boasts more than 84,000 registered WebRangers in more than 100 countries, 3,700 of whom have earned WebRanger patches for completing all of the online activities. Nature-specific activities include "Dendrochronology" (learning how to tell time from tree rings), identifying rocks, reading a map, wildlife in Yellowstone's winter, and understanding how fires occur and behave in national parks.

About 500,000 children each year participate in Junior Ranger activities that are offered in the national parks, but they have to physically be there to complete the program. This writer's nieces and nephews were fortunate to have the opportunity to earn their Junior Ranger badges while actually visiting Yellowstone Park and attending ranger talks, participating in nature scavenger hunts, and answering trivia questions as they made their way through the park.

Just as colleges and universities began developing online courses and degrees to accommodate adults who cannot, for one reason or another, physically attend classes, the NPS realized that lots of kids might never get the chance to actually visit a national park to earn Junior Ranger status, but nearly all have access to the Internet. WebRanger, the cyber version of Junior Ranger, was created to give them a glimpse into what national parks are all about.

National Geographic's website also has interactive features that take you into the depths of Yellowstone's surface to explore the hydrothermal features that made the park unique (nearly half of the world's hydrothermal features are found in Yellowstone).

Computer technology—iPods, PDAs, video games, etc.—is here to stay. To think of what lies ahead in the future of technology can be mind blowing. The key is to use it to the advantage of nature and the environment, sparking what Berry called the innate awe of nature in kids.

Do you suffer from Videophilia?

- **Do you find your eyes dry and red at the end of the day, from having stared at a computer for eight hours or more?**
- **Do you get more light from flat-screen TVs than from the sun?**
- **Are your lower back and fingers more likely to ache than your leg muscles?**
- **Do you check the weather by visiting weather.com rather than walking out the door?**
- **Do you have the channel that airs Comedy Central memorized?**
- **Would you have to consult a map to reach the parks in your area?**
- **When you have a free afternoon, is your first impulse to check MrMovie.com for the local listings?**

thedailygreen.com

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THE NATIONAL PARKS

America's Best Idea

BY BRIAN YABLONSKI

America is about to rediscover her national parks. To great fanfare, Ken Burns' epic documentary, "The National Parks: America's Best Idea," premieres on PBS this fall. And if past is prologue, Mike Finley expects to see a significant surge of interest in our nation's greatest treasures. Finley, a former superintendent for Yellowstone, Yosemite, and Everglades national parks, recalls how "visitors came to the Civil War parks in droves," after "The Civil War" aired. Couple this with the centennial anniversary of the National Park Service in 2016, and you have all the makings of a revival.

The Burns series represents a golden opportunity for the national parks. That's because these have not necessarily been the best of times for "America's best idea." While U.S. population has grown, national park visitation has not. Visitation peaked in 1987. In 2008, fewer people visited the national parks than they did 20 years ago. As park service spokeswoman Kathy Kupper recently told the *USA Today*, "In the '50s and '60s, this was the American vacation. But we've gotten away from that." And the *Economist* recently cautioned, "As Americans lose

interest in the national parks, they will become less willing to pay for them through taxes."

Park management has also been challenging. Unfunded maintenance projects have left sewer systems, hiking trails, roads, and buildings in poor condition. Finley recalls the day when raw sewage spilled into the Yellowstone River. And despite $920 million in stimulus spending, the National Parks Conservation Association notes that chronic underfunding has left an $8 billion maintenance and preservation backlog.

As the national parks work to overcome these issues, there has been a quiet turn to market mechanisms to boost financial support and enhance the visitor experience. Changes to the fee system, revenue sharing agreements, and efforts to measure the economic value of the parks all represent moves to instill more economic principles. In a sense, the parks have gone back to their origins.

Reforming the Park Fee System

The original vision of the National Park system was a form of financial self-sufficiency. As PERC's Holly Fretwell notes, the National Park Service's first director, Stephen Mather, believed that the ability to set appropriate fees and retain park receipts was important for responsible management of the resources. User fees charged to park visitors were kept in a special account by the Park Service for appropriation for road maintenance, park development, and administration. Yellowstone charged a $10 annual auto fee in 1916, the equivalent of $165 in 2006 terms. Under Mather's leadership, at least five parks, including Yellowstone and Yosemite, became operationally self-sufficient.

But after two years, Congress passed legislation requiring all park receipts be turned over to the National Treasury. Between 1918 and 1993, nearly all fee revenue earned in the national parks reverted to Washington, D.C., providing no direct benefit to the park unit or managers who collected the fees. A return to Mather's vision emerged with the creation of the Recreational Fee Demonstration program in 1996 and authorized until 2014, ensuring that revenue generated by fees at certain parks be kept in those parks. Over a five-year period ending in 2010,

In 1997, Yellowstone became the first national park to enter into a benefits-sharing agreement with a commercial research firm studying the park's microbes.

the National Park Service projected it would collect and spend almost $1.1 billion in fee revenue on deferred maintenance, habitat restoration, visitor services, and preventative maintenance.

The Fee Demo program (now called the Recreational Enhancement Act) has also begun to restore the connection between park managers, visitors, and gateway communities. With greater accountability to those most impacted by the parks, the program is funding projects that otherwise might sit on a shelf.

Benefits-sharing Act agreements

Another recent market mechanism has sought to capture the value of research in the national parks. The discovery of a microbe called "Thermus aquaticus" in a Yellowstone hot springs led to the process that made DNA fingerprinting and other DNA analysis possible. Annual sales associated with this process have generated approximately $100 million with neither Yellowstone nor the National Park Service receiving any direct benefit. All of the proceeds went to the private entities involved.

For years the Park Service has granted research permits. In Yellowstone alone, approximately 40 research studies are being conducted at any time on the ecology of thermophiles. Thus, in 1997, Yellowstone became the first national park to enter into a benefits-sharing agreement with a commercial research firm studying the park's microbes. The Diversa Corporation promised to pay Yellowstone $100,000 over five years plus a royalty based on the potentially billions in revenues related to its park research.

Sadly, as then-park superintendent Finley notes, "I was the first park manager to initiate benefits-sharing and the first to get sued." Opponents challenged the agreement as a commercial use of park resources even though the microbes and DNA collected in the park remain in federal ownership and are never sold. As Finley recalls his chief scientist saying, "You take more of Yellowstone with you on the dirt of your boots than a scientist with a pipette of thermal water." Today, benefits-sharing agreements that might serve to secure our national parks future are on hold as an environmental impact statement is developed to examine their potential impacts.

Measuring the wealth of our parks

In 2003, Ken Olson, then-president of the Friends of Acadia National Park, wrote that "when it comes to some of the boldest manifestations of our collective wealth, the national parks, Americans see them almost exclusively as natural, recreational, and spiritual assets. Surely they are that, but we park conservationists hurt our cause by not emphasizing their economic virtues at the same time."

Mike Finley knows from experience that the benefits of our national parks are especially important to the parks' gateway communities. "Our national parks can best be described as the goose that keeps laying ever bigger golden eggs." He recalls watching commercial fishermen lining up just outside the border of Everglades National Park, reaping the bounty of a protected ecosystem, along with fishing guides, tour operators, rental car companies, airlines, and hotels. "Yet no one has created a compelling analysis of the parks' economic value and benefits," said Finley.

That may be changing with a new Money Generation Model, a program designed to bring greater awareness of the benefits that the parks bring to

National parks all owe their existence, in part, to the private economic interests of large railroads who were among the first to appreciate the amenity value of these natural wonders.

gateway communities—those within 50 miles of a national park. In the latest report, it was estimated that park visitors spent nearly $12 billion in gateway communities, supporting 232,000 jobs, with local residents accounting for only 9.5 percent of this spending Like any good business, dissemination of economic information can be useful for creating external support for specific parks; fostering partnerships with governments, not-for-profits, and businesses in gateway communities; and justifying fiscal decisions of the park such as market-based adjustments to fees.

As Olson writes, "the idea is that special places that are set aside from the market system can themselves create and sustain markets, especially in the immediate surroundings. Capitalism, entrepreneurship, and conservation are not a strange ménage."

When it comes to our national parks, many Americans find themselves uncomfortable with these economic concepts and emerging market-based programs. Yet that sentiment comes with a tinge of irony. Yellowstone, Glacier, Grand Canyon, Mount Rainier, and Crater Lake national parks all

owe their existence, in part, to the private economic interests of large railroads who were among the first to appreciate the amenity value of these natural wonders. Railroad titans funded explorers, painters, photographers, and lobbyists to secure protection of these areas from individual homesteaders, miners, or loggers, who themselves might capture the value of the land.

Individual capitalists, too, used their wealth to protect America's special places. John D. Rockefeller, Jr. purchased 35,000 acres in Wyoming and donated it for the creation of Grand Teton National Park, along with contributions that led to the creation of Acadia and the Great Smokey Mountain national parks.

Park founders, however, got it right. The National Parks are and should be public. Even the Manhattan Institute's Peter Huber acknowledges this point in his book *Hard Green*, "In every way an accountant, economist, or even an ecologist might measure, Disney would operate Yellowstone much better than the National Park Service. But Yellowstone would be diminished nonetheless . . . Some values depend on doing things on a scope and scale that is inescapably public." Part of the parks' patriotic grandeur is that they belong to us and not to any one particular private interest. But as history shows, it does not mean public control cannot be combined with market principles or private interests to secure a thriving future for our national parks.

Park managers need to protect our natural icons while exploring opportunities to attract new customers and visitors. To this end, Ken Burns is giving the national parks a gift, a chance to reconnect with their number one customer—us.

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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*

The Value of Environmental Amenities

Do people *really* care about improvements in the environment? As silly as this question might sound, it has proven remarkably difficult for economists to pin down a precise answer. Recent research by Spencer Banzhaf and Randall Walsh (2008) employs a novel method of thinking about this question, one that delivers a resounding "yes" in response.

Banzhaf and Walsh reason that people are willing to "vote with their feet" in response to the circumstances in which they find themselves. The observation that individuals move to pleasant climates upon retirement is a familiar example. If such behavior is general, then when the environmental quality of a community improves, people would be expected to move there in response. Conversely, if the environment in an area degrades, one would expect individuals to depart for greener pastures (or cleaner air). The key point is that if people really care about environmental amenities, we should see them moving closer to such services. And this is exactly what Banzhaf and Walsh find.

The authors focus their study on data from the Environmental Protection Agency's (EPA) Toxics Release Inventory (TRI) program. Since 1987, many thousands of firms in the United States have been required to publicly report data on their inventories of toxic chemicals and on any environmental releases of those chemicals. Because all of these chemicals are known or believed to be harmful to humans, the TRI data provide a simple yet powerful method of identifying locally important changes in environmental quality. For example, if a firm covered by the TRI program moves into a community, the chances increase that local residents will be exposed to the firm's chemicals; that is, there has been a decline in the expected environmental quality of the community. Conversely, if such a firm departs from the area—taking its toxic chemicals with it—one might reasonably presume that local environmental amenities have improved.

Similar comments apply, perhaps with even more force, to TRI-tracked releases of chemicals into the environment. It takes no leap of the imagination to infer that people would like to avoid being exposed to, say, methyl isocyanate, accidental release of which killed thousands of people in Bhopal, India. So, we can presume that if toxic releases go up in a community, this is bad news, to which some people will respond by departing. But a reduction in releases should attract immigrants seeking a cleaner environment in which to work and play. In both cases, people are voting with their feet by changing locations in search of a better environment.

Banzhaf and Walsh focus their formal study on locational choices across urban areas of California: The state is big enough to provide a large number of communities with diverse environmental amenities, yet small enough (relative to the entire nation) to make the study tractable. The authors examine the consequences of changes in the level of TRI releases, as well as entry or exit of firms that are covered by the TRI program. The impacts on population are striking. Consider, for example, a community that starts off with no TRI-covered facilities and then experiences the entry of at least one such firm. Such a community can expect to lose as much as 9 percent of its population over the next decade, relative to what it would have experienced. Similarly, when TRI-covered facilities exit from an area, the affected community can expect a population *gain* of as much as 5 to 7 percent.

The tendency of people to vote with their feet for environmental amenities shows up in another notable manner. Wealthier people seem to value environmental goods more highly. Hence, when the environment in an area degrades, it tends to be the wealthiest people in the community who exit. Conversely, when environmental amenities improve locally, it tends to be wealthier people who move in. The authors find clear evidence of such behavior in their data: When TRI facilities enter a community or there is a rise in TRI releases, for example, the average income of community residents is observed to decline by as much as 5 percent, as the wealthier residents exit.

A shortcoming of this study is that it does not allow us to directly estimate the precise value that people place on environmental amenities. But it is powerful evidence that people do, in fact, value them. Moreover, they value them enough that they are willing to uproot their families to enjoy the best of them and avoid the worst. But the study also suggests a profound defect of the EPA's approach to toxic releases. If there were a *market* in air quality, one that covered toxic releases, much of this movement of people could be avoided. For example, residents of some communities today opt to pay for improvements in local schools rather than migrating to areas with better schools. With tradable rights in air quality, people could choose the level of toxic releases they were willing to tolerate, by individually or collectively acquiring and retiring the local rights to pollute. The EPA's current regulatory scheme implicitly prevents this, and thus makes all Americans worse off.

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Nature's Lost Children

BY KIMBERLEY K. YABLONSKI

With an ever increasing mound of scientific research indicating that kids who spend time outside tend to be smarter, happier, and healthier, the idea that children need nature is not novel. Yet it seems to get lost in our technology-crazed world—where one's only connection to nature might be the bird symbol he or she sees when sending a tweet on Twitter. This disconnect did not happen overnight.

Richard Louv coined it "nature deficit disorder" in his book, *Last Child in the Woods*. He highlights the benefits of connecting kids with nature and the harm that comes from the lack of it. "Nature—the sublime, the harsh, and the beautiful—offers something that the street or gated community, or computer game cannot. Nature presents the young with something so much greater than they are; it offers an environment where they can easily contemplate infinity and eternity," Louv writes.

Many individuals agree with Louv and are attacking this problem by providing what used to be the norm … a safe outside place to explore, play, and learn.

TURNER NATURE CENTER

The Beau Turner Youth Conservation Center (BTYCC) in northwest Florida is one such place. Against advice from other private landowners, Beau Turner, an avid outdoorsman, dedicated 160 acres of his property to create a center where kids can experience the outdoors. The BTYCC, the first

"We must engage kids to keep them outdoors," said Beau Turner (below), a strong environmental advocate and youngest son of media mogul Ted Turner.

of its kind in Florida, offers children of all ages opportunities to fish, earn hunter-safety certification, practice archery on the Olympic-style and 3-D archery courses, hike nature trails, and view wildlife.

"We must engage kids to keep them outdoors," said Beau Turner, a strong environmental advocate and youngest son of media mogul Ted Turner. "I'm starting to see the outdoorsman—the hunter and fisherman—on the verge of becoming extinct."

In an effort to stem the tide, Turner teamed up with the Florida Fish and Wildlife Conservation Commission (FWC) in early 2008. The FWC provides a variety of free classes, summer camps, and events at the youth center. Involved in every aspect of developing the BTYCC, Turner built a pavilion structure and playground on the property at his own expense. He has also opened up an additional 900-acre block of land to hunts that the FWC conducts for youth.

Turner, who is Director of Natural Resources for Turner Enterprises, Inc., describes himself as "kind of nuts about the environment." He wanted to share what kept him outside as a child. "I live and recreate on our lands. In the United States, we've got all these parks and public lands but they are in areas only the wealthy can get to," he said. "How many inner-city Tallahassee kids can get to a national park?" To date, more than 3,000 children have taken part in some type of outdoor activity that the center has offered.

In his early 40s, Turner is passing on his love of the outdoors to his young son and to as many young people as the BTYCC can recruit. "It is more about bringing the local community together around the youth center to get them engaged and have ownership in the entire project," he said. He hopes the BTYCC will become a national model

In 1994, three women launched MOSS, a non-profit group that provides children with quality, outdoor, science-based experiences. The year-round "school" offers courses in everything from the study of birds to avalanche awareness.

and aims to eventually open similar centers in Montana, New Mexico, and South America.

The center provides a piece of what experts say is essential in human connections to land—direct contact. Louv writes: "Immersion in the natural environment cuts to the chase, exposes the young directly and immediately to the very elements from which humans evolved: earth, wind, air and other living kin, large and small."

MOSS

The Montana Outdoor Science School (MOSS) in Bozeman, Mont., has been taking kids outside to educate them about the natural world for 15 years. In 1994, three women launched MOSS, a non-profit group that provides children with quality, outdoor, science-based experiences. The year-round "school" offers courses in everything from the study of birds to avalanche awareness.

"We all recognize the value in getting children outdoors," says Liz Harrison, MOSS executive director. "We just know it is good for kids to get outside and get in a creek, get their feet wet and touch tadpoles. There is a literacy and joy that comes with that and you cannot get it from computers."

Founders Louise Forrest, Martha Kauffman, and Martha Collins started MOSS as a summer day camp with the goal

of providing fun, hands-on nature experiences. With backgrounds as educators, scientists, authors, and moms, the three women built curriculum that coincides with state and local standards to foster partnerships with schools. About 7,500 participants take part each year in courses that range from tracking wolves in Yellowstone (for high school kids) to exploring overturned rocks in a nearby creek. The classes range in cost and are not didactic, Harrison says. "The approach is multidisciplinary. We take it into the field and make it fun." For example, one instructor baked cupcakes with different colored layers of batter to teach the kids about core samples of rocks. Then, the kids got to eat the lesson.

MOSS also hosts events such as the Watershed Festival and Bridger Raptor Festival to help educate the broader public.

It's not just about play. One of MOSS's missions is to promote appreciation of the natural world and encourage open-ended questions. Harrison believes MOSS is raising future environmentalists, although it is not the school's focus. "You won't stand up for a river unless you've been in it or fight for wolves in Yellowstone if you've never experienced it," she said.

HANDS ON NATURE

Heather Simpson is a woman on a mission. Founder of Hands on Nature, Simpson wanted to offer a program "where the kids are outside getting their hands dirty."

About three years ago, she launched her program for 4- to 12- year olds. Operated out of Simpson's home in Berlin, Mass., just West of Boston, Hands on Nature offers after-school programs, lessons for homeschooled children, summer day camps, and birthday parties. Simpson uses an adjacent woods, nearly a hundred acres where hiking trails are maintained, for exploration. "We go out into the woods

Heather Simpson is a woman on a mission. Founder of Hands on Nature, Simpson wanted to offer a program "where the kids are outside getting their hands dirty."

and collect salamanders, go frog catching, and get giant bullfrog tadpoles," Simpson says.

Her sessions usually run five weeks and the themes change with the seasons. Whatever will get, and keep, kids outside she is willing to try. For example, she recently took a troop of Girl Scouts on night hikes to see owls.

A mother of three young boys, Simpson says the program is important to her because "we need to create future stewards of the land. If we don't get the kids to fall in love with nature like we did they won't want to protect it."

Contact with nature is the key component. "Right now, the kids can tell you about an exotic rainforest but can't tell you how the grass smells outside their front door. One child was fearful that a panther would attack him. I told him, we are in New England, there are no panthers," Simpson said. Louv has spawned a movement aptly named, No Child Left Inside. "It takes time—loose, unstructured dreamtime—to experience nature in a meaningful way," he writes. A sentiment Simpson wholeheartedly shares.

"I just saw the kids were not getting out as much. I created Hands on Nature, put it out there and it just filled up. It evolved as the need grew. Some parents, fearful about

safety, don't allow their kids outside. We know there are reasons for some of these fears but the need is still there; just that fact alone, made me want to do it."

Feedback has been positive and the kids keep coming back. Parents have thanked Simpson for doing what they aren't doing … getting their kids out in nature. Although she initially tried to have a more structured program indoors before heading outside, she realized that the best classroom was on the rocks and trails. Once while walking in the woods with students in the after-school program, a young girl said to her, "You know when you have a really bad day but then you walk out in the woods and everything is okay again?" Simpson replied, "Yeah, I do."

At the root of the reasons prompting private landowners and non-profit groups to step up to provide a child/nature connection might be the words of famous naturalist John Muir, who was instrumental in establishing Yosemite National Park—"When one tugs at a single thing in nature, he finds it attached to the rest of the world."

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The beauty of parking

Solar panels and parking lots have teamed up for what some in the solar industry are calling extraordinary dual use. Typically, we associate solar panels with roofs, while turning a blind eye to the surrounding acres of paved parking surfaces. Shade structures over these sprawling heat traps could provide the foundation for large solar arrays.

San Diego-based Envision Solar, which was founded by architects and designers, has come up with a unique structure for parking lots that is both attractive and functional. The basic unit is called a Solar Tree that expands into a Solar Grove as needed. The single central support column, or trunk, allows for easy maneuverability in the parking area, and the tree canopy, composed of eight solar panels, absorbs sunlight and provides shade for up to 10 vehicles. Wiring beneath the ground, essentially the root system, allows the electricity to be used by the business or sold to the power grid.

The Solar Tree can also serve as a charging station for the increasing number of plug-in electric and hybrid vehicles. Each tree can re-charge two vehicles simultaneously and produce about 5300 KWH annually. The trees can be configured into groves for larger parking areas and customized to meet the needs of each facility.

This innovative concept provides a host of benefits. For the car owner, it offers the pleasure of a cool car on a torrid summer day. For the business or parking lot owner, it offers a reduced power bill. For utility companies and ultimately their paying customers, it offers cheaper electricity by eliminating the need to build acres of solar arrays in remote rural areas as well as expensive new transmission lines to get the power back to the cities and suburbs.

In 2008, Envision Solar completed eight parking projects for universities, healthcare facilities, and commercial developments, totaling more than 1.3 megawatts of solar power. In the words of one emotive engineer: "Parking can be beautiful."

For more information visit envisionsolar.com

Islands by design

If you have always wanted your own island, it is now possible to order one to your specifications. A modest island, say 25 square feet, carries a reasonable price tag usually less than $600. If you have grander plans, such as the 22,000-square-foot island requested by the U.S. Army Corps of Engineers, a rich uncle might come in handy.

Floating Islands International got its start in Bruce Kania's backyard in Shepherd, Montana. His dog took a dip in the pond and emerged covered in slime and emitting offensive odors. Kania, who is an idea guy, got to thinking about all the nutrient runoff from cultivated fields that was flowing into his pond as well as the nearby Yellowstone River. Based on his experience fishing in pristine Wisconsin lakes with floating islands, it occurred to him that islands might help solve his pond problem and others too.

Today, Kania constructs bio islands from a mesh fabric made from recycled plastic bottles. The material is arranged in layers and then injected with expanding foam that bonds the materials as it dries. Holes are cut into the mesh to insert plants and seeds, and the island is finished with topsoil and sod. Above the waterline, grasses, flowers, and green plants soak up sun while below, their roots grow down through the mesh to absorb water and nutrients.

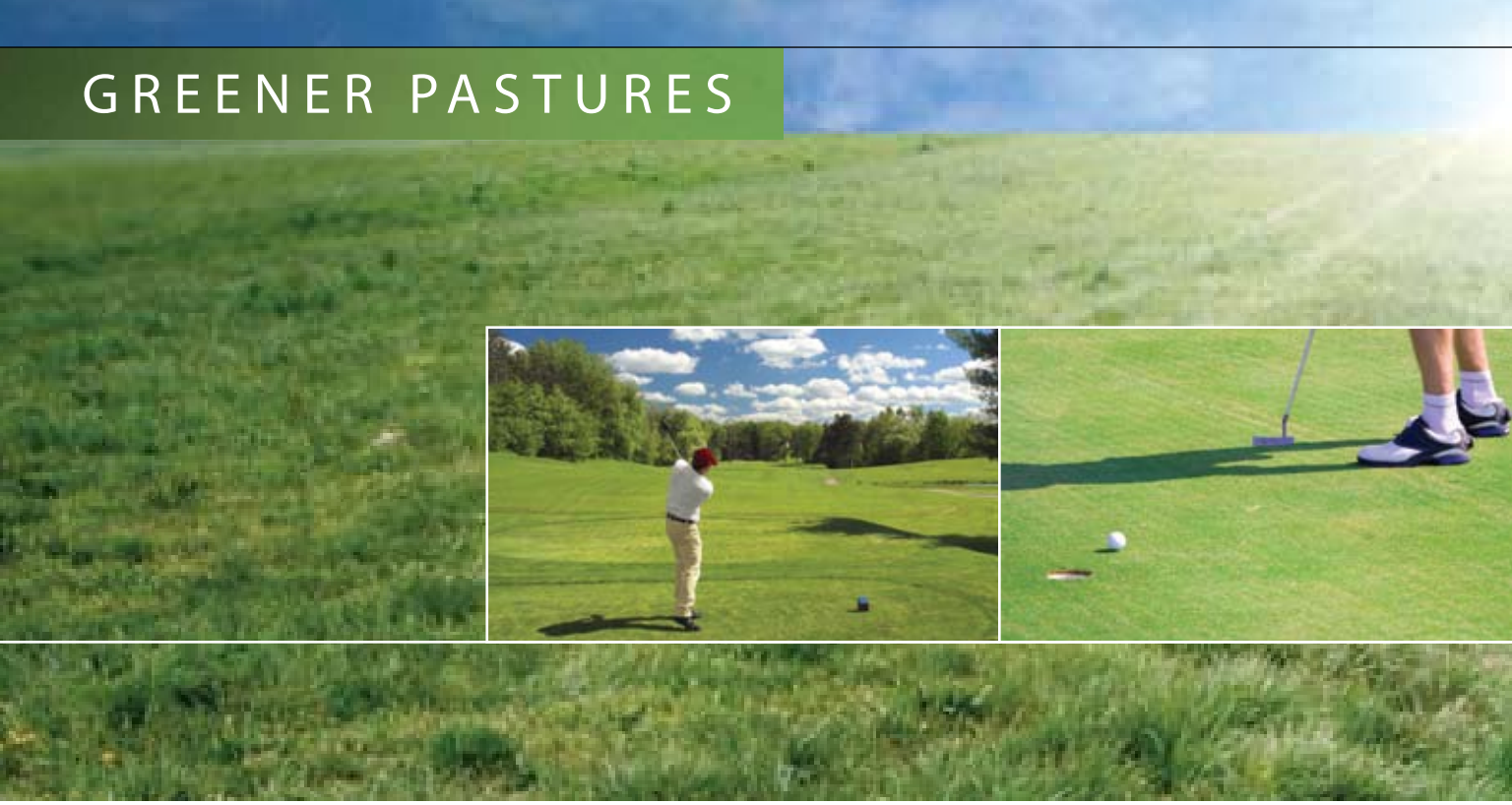
Ths islands provide a host of water treatment services at a fraction of the cost and with greater efficiency than more traditional methods. They outperform constructed wetlands by more than 200 percent, according to the company, removing nitrates, ammonia, and phosphates while also helping to sequester heavy metals such as zinc and copper. They have the added advantage of taking up no land and adapting to water level fluctuations.

The fact that the islands are a near perfect host for microbes is one of their greatest assets. These nutrient-hungry organisms perform a wide array of water-cleaning services that are hard to replicate through engineering. The matrix of fibers provides a vast surface where microbes can colonize. As they spread, they form a biofilm that works on the nutrients and even collects metal particles too tiny for mechanical filters.

The end results speak for themselves. Phosphates that create dead zones have been sucked out of waterways, algae has been eliminated from ponds, fish habitat has been cooled and cleaned, and the otter exhibit at a Montana zoo has been transformed into an island playground with sparkling clean water. On a larger scale, the Army Corps of Engineers has provided new habitat on an Oregon lake for the Caspian tern in an effort to relocate it away from Columbia River estuary where it gobbles up millions of young salmon every year.

Floating islands are also habitat for many types of birds, ducks, turtles and insects, and they provide food for fish, snails, and other aquatic life. They are deer-safe havens for vegetable gardens and offer the shore-bound viewer stunning displays of flowers as well as restful spots of greenery.

For more information visit biofloatingislands.com



Golf course makeover

Just a few years ago golf courses were considered an environmental abomination, wasting precious water, spewing runoff contaminated with fertilizers and insecticides, and replacing wild meadows and woodlands with monotonous manicured landscapes to serve the country club set.

These days, golf courses are often seen as an environmental asset. They provide communities with open space, greenscapes, and view sheds. Their rolling acres, waterways, and shade trees serve as wildlife habitat for animals escaping from the relentless march of housing developments, shopping centers, office parks, and malls.

Perhaps most surprising, golf course managers are now widely considered experts on water conservation and are frequently consulted by municipalities, state governments, industries, and non-profits. As water costs continued to rise in recent years and some 20 states reported long dry spells and crippling droughts, managers realized they had to rein in their water use.

New strategies to reduce water use range from the super high tech to tips from grandma's garden. Golf course managers have planted native grasses that require less water and replaced the flowering annuals with less thirsty perennials. Lawn mower blades are kept super sharp to avoid frayed grass, which requires more water to stay healthy, and, when possible, recycled effluent and surface water is used for irrigation rather than tapping into municipal fresh-water systems.

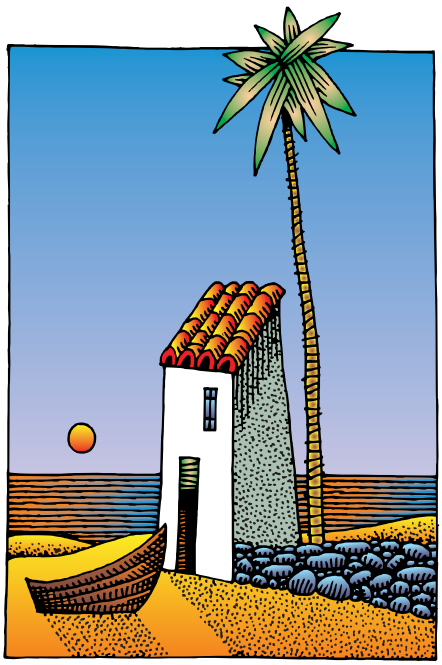
A huge advance in protecting water resources has come with the advent of wireless underground sensors. This reasonably priced technology monitors moisture, temperature, and salinity. The information can be fed to a desktop, laptop or handheld device. At golf courses from Pennsylvania to Florida and Arizona, managers report water savings of up to 10 percent, which translates into millions of gallons of water.

Golf courses still have their detractors and environmentalists continue to bristle at some management practices, but it is unlikely that this $76 billion industry that, according to a recent study, provides "economic, environmental, and recreational assets to local communities" is going away any time soon.

Meanwhile, golf course professionals have become valued community resources. During the recent drought in Georgia, Habitat for Humanity landscaped front yards with drought-tolerant plants recommended by golf course superintendents, and Marriott International adopted the lessons learned on their golf courses to all of their resort properties in other states. Government officials are also getting advice on how to reduce water use on public ball fields and parks.

Through it all, one water-saving technology has proven failsafe for the Atlanta Country Club. When the club's superintendent Mark Esoda finds dry spots on the greens, he sends the staff out with their trusty watering cans.

A Chance to Close the Judicial Takings Loophole



This fall, the U.S. Supreme Court will hear *Stop the Beach Renourishment v. Florida Department of Environmental Protection*, a case that raises the question of when, if ever, a judicial decision constitutes a taking of private property. By ruling that state courts must answer to the Takings Clause, the Supreme Court can protect private property rights from what has become an end run around the United States Constitution.

At issue in *Stop the Beach Renourishment* is a government plan to create a state-owned public beach, 60 to 120 feet wide, between private waterfront properties and the Gulf of Mexico. The plan replaces the mean high water line (MHWL), a mark that moves over time as the shore line recedes and advances, with a fixed erosion control line (ECL) as the boundary between private and public property. In so doing, the renourishment plan deprives beachfront property owners of the right to land surrendered by the ocean—a right clearly established under settled principles of Florida property law.

But in order to uphold the renourishment plan and creation of the public beach, the Florida Supreme Court abandoned the decades-old property laws establishing private property rights to land deposited by the ocean. This abrupt reversal of the law, the landowners argue, constitutes an uncompensated taking of private property in violation of the Fifth and Fourteenth Amendments. As such, the importance of this case extends beyond the littoral rights of Florida landowners and hits at what some legal scholars consider a loophole in the constitutional protection of private property rights: judicial takings.

The judicial takings issue comes up when a state legislature passes a law that appears to take private property rights and, when ruling on a takings challenge to that statute, a state court rules that the claimed property right never existed, thus rejecting the takings challenge on the basis that there is nothing to take. Because individual states define what does and does not qualify as property in that state, the U.S. Supreme Court has been unwilling to intervene and insert itself as the final arbiter of a state law issue.

Several Supreme Court justices have hinted, however, that a state court opinion clearly inconsistent with state law precedent would violate a property owner's federal constitutional rights. In a concurring opinion, Justice Stewart noted in *Hughes v. Washington* (1967) that "a State cannot be permitted to defeat the constitutional prohibition against taking property without due process of law by the simple device of asserting retroactively that the property it has taken never existed at all." Similarly, dissenting in *Stevens v. City of Canon Beach* (1994), Justice Scalia argued that "No more by judicial decree than by legislative fiat may a State transform private property into public property without compensation."

According to D. Kent Safriet, attorney for the beachfront property owners, *Stop the Beach Renourishment* presents the Supreme Court with an opportunity to restrain activist state courts from invoking "nonexistent rules of state substantive law to avoid takings claims by declaring no property rights ever existed." By doing so, the Court can take an important step toward bolstering the constitutional protection of private property rights.

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