

## A Fishery on the Rebound

On the West Coast, fishermen show they can be good stewards of the sea.

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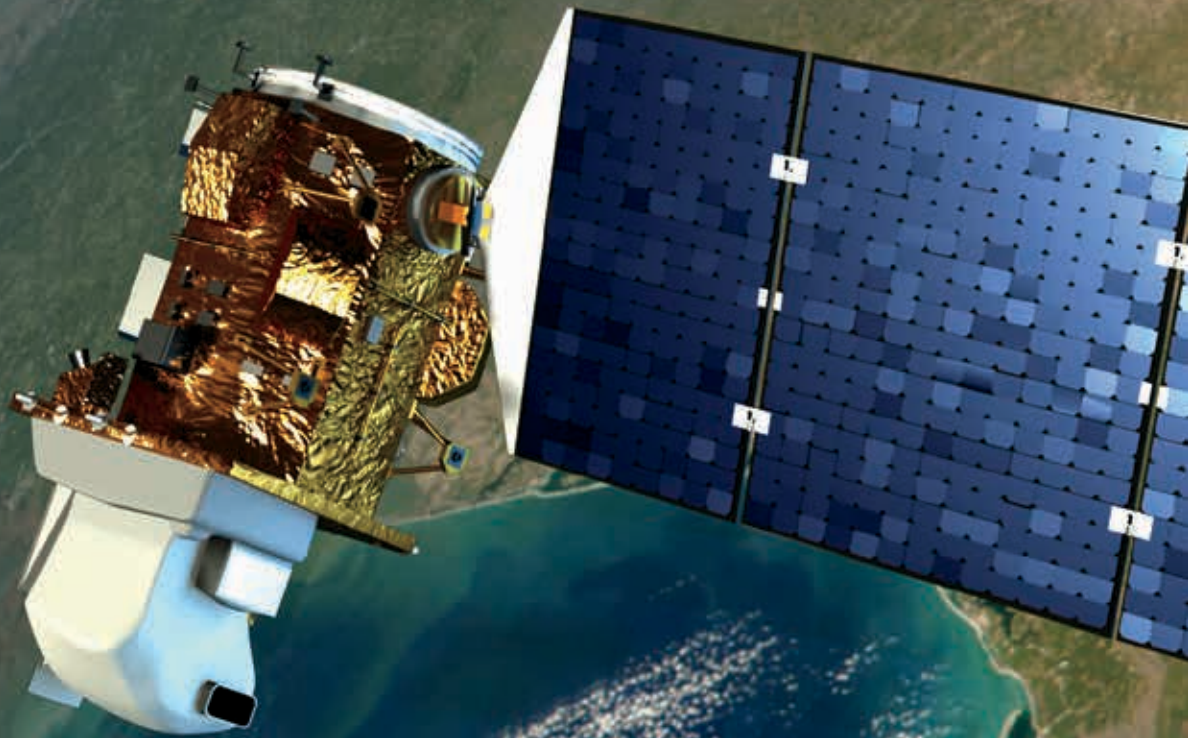
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# Help from above

For too long, the case for environmental protection has been stymied by inadequate data. Today, technology is rapidly filling in the gaps, making pollution visible like never before and strengthening the hand of environmental advocates.



# The power of people— and technology



On September 21, I marched through the streets of New York with hundreds of thousands of people in the largest call for climate action in U.S. history. EDF was a co-sponsor, and I am grateful to the many EDF members who participated.

It was an inspiring day. Everyone who took part agreed: The data are in. The facts are clear. Politicians who ignore the danger of climate change increasingly seem out of touch.

The avalanche of facts hasn't yet led to the climate action we so urgently need, but it will. Today as never before, we have the ability to acquire, analyze and publish environmental data. The convergence of low-cost sensors, Big Data analytics and digital media is turbocharging our ability to win change by making pollution visible. For government officials, this creates rewards for action.

In July, EDF and Google Earth Outreach launched a partnership that mapped thousands of natural gas leaks beneath the streets of three urban areas—Boston, Indianapolis and the New York City borough of Staten Island. Using Google Street View cars equipped with special sensors, we gathered millions of individual readings over thousands of miles of neighborhood streets and displayed the resulting maps on the web. More cities and more pollutants will be mapped.

The same power that lets us display pollution is being applied to wildlife conservation. California rice farmers this year created 10,000 acres of temporary wetland habitat to aid migratory birds suffering from drought. To pinpoint where birds need wetlands the most, researchers used data collected through eBird, a crowd-sourced project that allows citizen scientists to log their observations of birds online.

On the West Coast, fishermen allied with EDF are experimenting with onboard video cameras to verify compliance with fishing regulations—an alternative to costly human observers. The cameras record fishing activity, while sensors on winches record when nets are lowered or raised. The data is stored on a tamper-proof hard drive for analysts on shore to sort through.

On the other side of the country, in New York City, EDF measured air quality at the neighborhood level using handheld monitors. The resulting data helped prompt the city to require cleaner heating fuel. The result: the city's cleanest air in 50 years.

Digital environmentalism won't replace the hard work of local citizens or national groups. But it will empower us. It's still early, but these new technologies, if harnessed deliberately, will make the world a healthier and cleaner place.

*Fred Krupp*  
EDF President



Finding the ways that work

Environmental Defense Fund's mission is to preserve the natural systems on which all life depends. Guided by science and economics, we find practical and lasting solutions to the most serious environmental problems.

Our work is made possible by the support of our members.



**On the cover:** How to fix America's troubled fisheries is a question of passionate debate around the country. When West Coast fishermen were given greater control

over their business, a remarkable thing happened: The fishery started to recover.

*Solutions* senior writer Rod Griffin reports from California, where fishermen have joined EDF to help chart a more sustainable future. The photo on the cover was taken on board *Pioneer*, a 65-foot trawler out of Monterey. Page 8

Cover photograph: Corey Arnold

## Solutions

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©2014 Environmental Defense Fund.  
Published quarterly in New York, NY  
ASSN 0163-2566

New York / Austin / Bentonville, AR /  
Boston / Boulder / Raleigh / Sacramento /  
San Francisco / Washington /  
Beijing, China / La Paz, Mexico / London



# FIELD NOTES



ISTOCKPHOTOS

California's low-carbon fuel policy will mean cleaner vehicles.

## Supreme Court backs cleaner fuel

The U.S. Supreme Court handed California and EDF a huge victory this summer when it declined to review a lower court decision that upheld the state's low-carbon fuel standard. The standard is a key part of California's successful effort to lower greenhouse gas emissions. Oil companies had petitioned the Court to reverse the lower court decision. EDF was a party to the case.

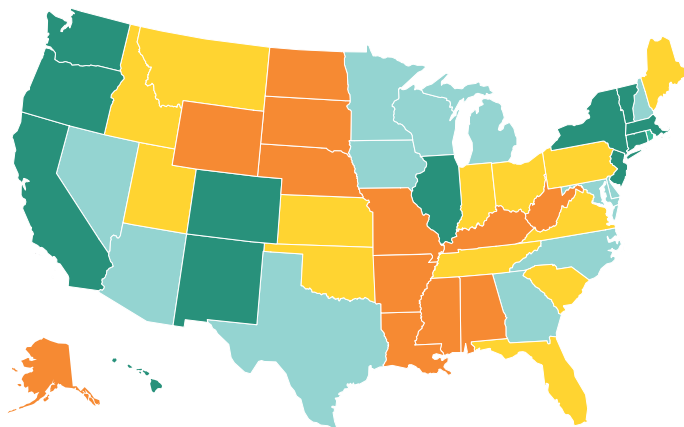
California further cemented its position as the nation's leader on climate in September, when the state

legislature passed a bill requiring pipeline companies to repair leaks in natural gas (methane) pipelines. As a greenhouse gas, unburned methane is far more potent than carbon dioxide.

Gov. Jerry Brown (D) is expected to sign the bill into law soon.

"Through scientific studies, EDF is demonstrating the critical importance of plugging methane leaks," said EDF California attorney Tim O'Connor. "Stopping those leaks is good for the environment. And it creates jobs."

## CLEAN ENERGY LEADERS—AND LAGGARDS



**Leaders** in clean energy and efficiency policies and investment  
**Average:** Less than robust policies and investment  
**Notables:** Making serious efforts  
**Laggards:** Poor track record

SOURCES: CLEAN TECH LEADERSHIP INDEX, ACEEE STATE ENERGY EFFICIENCY SCORECARD



ASPEN INSTITUTE

Krupp (with Gov. Hickenlooper): "We found a practical solution."

## Breakthrough in Colorado

After tough negotiations between industry and environmentalists including EDF President Fred Krupp, Colorado now has the nation's strongest air pollution standards for oil and gas development, including the first direct regulation of methane.

How did this breakthrough come about? At the Aspen Ideas Festival in June, Gov. John Hickenlooper (D)

told a compelling story of how EDF's dogged persistence and occasional "cat-fights behind closed doors" pushed both sides to hammer out an agreement. He said, "Fred Krupp is never shy about advising governors, and I'm receptive because he represents an organization that is fact-based and willing to build alliances and be collaborative."

### Most Americans want climate action

62%



33%



Even if it means paying more for energy

SOURCE: BLOOMBERG NATIONAL POLL, JUNE 11

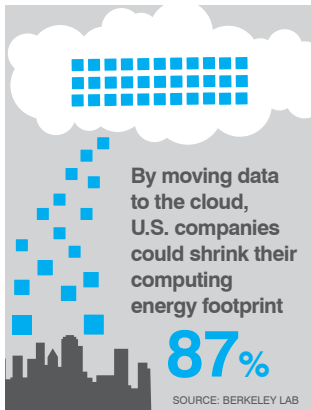
### The U.S. lags in energy efficiency

- 1 Germany
- 2 Italy
- 3 China and France (tied)
- 5 Japan and UK (tied)
- 7 Spain
- 8 Canada
- 9 Australia
- 10 India
- 11 South Korea
- 12 **U.S.**

SOURCE: ACEEE

## Congratulations!

Showtime's "Years of Living Dangerously" won the Emmy for "Outstanding Documentary or Nonfiction Series." EDF Climate Corps, which trains graduate students to find energy savings at large institutions, was featured in the series.



## Wildflowers and bees take a hit



California is normally the nation's top honey producer. But with the state's historic drought, hillsides normally covered with sage and other wildflowers are now bare, and honeybees are struggling to stay alive for their biggest job, pollinating California's millions of acres of crops. Some beekeepers are trucking in syrup to feed their colonies.

“For too many years, we failed to rein in the excesses building up in the nation’s financial markets. We’re making the same mistake today with climate change.”

—Henry Paulson, former U.S. Secretary of the Treasury



A Play-in makes waves on Capitol Hill.

## Moms march for climate action

Our Moms Clean Air Force (MCAF) held its first-ever Play-in for Climate Action this summer. Members showed up on Capitol Hill to support EPA's Clean Power Plan, and the moms (and dads) and their children were addressed by Senate climate champions Barbara Boxer (D-CA) and Sheldon Whitehouse (D-RI). MCAF is holding "mama summits" from California to North Carolina to build support for the climate rule.

»»LEARN MORE»» To join MCAF and participate, go to: [momscleanairforce.org](http://momscleanairforce.org).



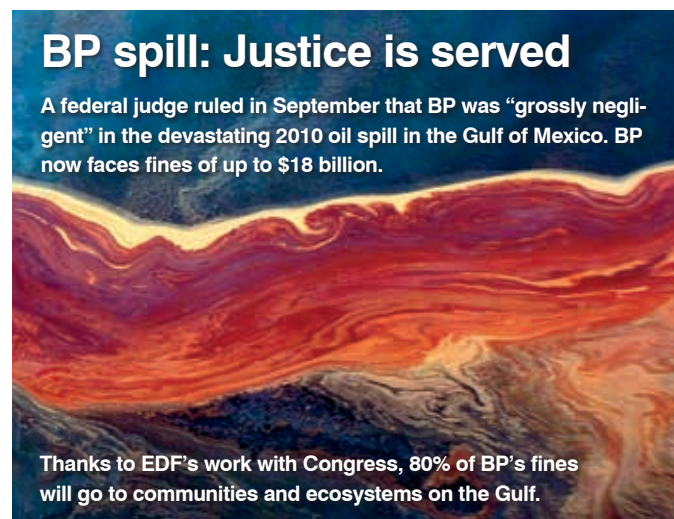
## Farmers to help hawks

In California's Central Valley, EDF has launched a pilot project to pay farmers to maintain vegetation, including drought-tolerant crops, native grasses and trees, that provide good nesting and foraging for Swainson's hawks and other species.

Endangered in California due to habitat loss, the hawks range across western North America from Canada's Yukon to northern Mexico and migrate thousands of miles every year to Argentina. (A major problem for them has been pesticide use in Argentina; the U.S. is working with Argentine farmers to address the problem.)

Under the EDF pilot program, developers will pay into a fund that compensates farmers for preserving hawk habitat or raising crops that benefit the hawks, such as alfalfa.

If the pilot is successful, EDF will expand the California program to include sandhill cranes, migratory shorebirds and other wildlife.





# CALIFORNIA: Blueprint for climate action

## A massive experiment succeeds

When California's Global Warming Solutions Act (AB 32) was signed into law in 2006, naysayers claimed it would hurt the economy. The law, which EDF co-sponsored, sets an economy-wide cap on greenhouse gas emissions, requiring a reduction to 1990 levels by 2020. Today, AB 32 has helped California achieve a 5% reduction in carbon emissions while the economy has grown. Proceeds from its cap-and-trade program, which targets 350 of the state's largest polluters, total \$2.27 billion to date. Of that, \$833 million will be reinvested in greenhouse gas reduction projects.

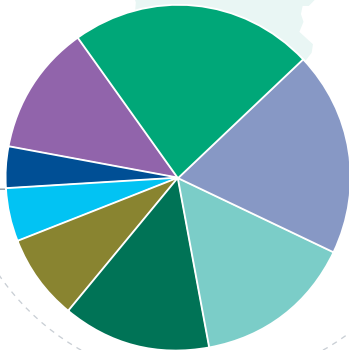
### A flourishing clean-tech economy

- 10x faster growth in clean-tech jobs than in other sectors over the past decade
- Californians use 45% less electricity per capita than the U.S. average

**392,000 jobs created in 2013, all sectors**



### Where will the emission reductions come from?



- cap and trade 22%
- low carbon fuel standard 19%
- energy efficiency 15%
- renewable energy 14%
- climate accelerants 7%
- advanced clean cars 5%
- sustainable communities 4%
- all other measures 14%

SOURCE: CALIFORNIA AIR RESOURCES BOARD

### A boom in innovation

- \$27 billion in clean-tech venture capital investment since 2006, more than the other 49 states combined
- 15% of California's electricity comes from renewables, compared to 5% nationwide

**In 2013, as much rooftop solar was installed as in the previous 30 years combined**



Among the innovative projects:

- Companies are turning landfill gas into a usable commodity as low-carbon transportation fuel
- California Bioenergy converts methane from dairy cows into offsets that can be sold in California's carbon market

### Health benefits for all

- \$8.3 billion in reduced health costs by 2025



### Pollution reductions

(by 2025)

CO <sub>2</sub>	181 million tons
NO <sub>x</sub>	167,000 tons
Particulates	9,000 tons
SO <sub>2</sub>	3,850 tons

### Growing the experiment

California's success is encouraging other states to experiment with their own carbon reduction programs. The Golden State's pioneering carbon market has also helped set the stage for cap-and-trade programs globally, including in China and Quebec. The latter linked with California's market in 2014.

# Loud and clear: We want climate action

JANE KRATOCHVIL



More than 300,000 activists—including EDF members and staff—converged on New York on Sept. 21 to demand action on climate change.

**T**HE PROFESSIONAL CLIMATE change deniers—paid to sow doubt and confusion in the face of accepted science—like to peddle an array of familiar fictions. One is that Americans don't support global warming action.

On September 21, in New York, the People's Climate March showed that many Americans know that climate change is happening and that we need to do something about it—now!

## A major first step

EDF was a co-sponsor of the march. One goal of the marchers is to control the unchecked global warming emissions from coal-burning power plants.

Sometime next June, the Environmental Protection Agency (EPA) will decide how much climate pollution U.S. power plants can spew into the air. The

historic rule, known as the Clean Power Plan, will—for the first time—place limits on carbon emissions from coal-burning power plants. It's the most significant single step we as a nation can take against climate change.

In July, EDF President Fred Krupp testified at EPA's public hearing in Washington, DC. Krupp called the new plan "moderate, flexible and necessary." He added, "I am particularly enthusiastic that the rule leaves states the freedom to design the approach that best fits their circumstances.... It gives industry flexibility to find the most efficient path to a clean future."

EDF is working with state legislators and regulators to ease the transition to clean energy. We're also working with utilities such as Xcel Energy to help them shift from coal to cleaner energy.

## Fierce opposition

Not surprisingly, EPA's plan has stirred up fierce opposition from opponents in the fossil fuel industry and their allies in Congress. Leading the charge are billionaires David and Charles Koch, whose corporation, Koch Industries, is the country's largest private oil company and one of its biggest polluters. Groups backed by the Koch brothers have committed \$290 million to stop climate action. They're also underwriting

the Congressional campaigns of climate deniers who aim to defund EPA.

Most insidiously, the coal lobby is bankrolling campaigns in 18 states to roll back renewable energy standards. Posing behind a nonpartisan title, the American Legislative Exchange Council (ALEC), the polluters write "model" legislation that they hand off to sympathetic state legislators across the country. So far, four states have passed such bills into law.

As the June 2015 deadline for finalizing the power plant regulations nears, the already intense campaign by oil and coal companies is heating up.

EDF will continue working with EPA to ensure that the final regulations end up strong and free of Congressional manipulation. But we and our allies will not succeed without the united voices of EDF members showing Congress that the American people want clean power.



Not marching: The Koch brothers spend millions to spread lies about climate change.

### >>> TAKE ACTION >>>

Help keep the pressure on! We need the help of EDF members to keep up the momentum of the People's Climate March. So far, more than 200,000 EDF activists have pledged their support for EPA's Clean Power Plan. Look for your EDF petition in the mail and tell Congress: "I'm a clean energy voter." To learn more, go to [edf.org/cleanpower](http://edf.org/cleanpower).



# Restoring oceans to abundance

By Rod Griffin



Captain Joe Pennisi  
aboard the *Pioneer*.



Fourteen years after it was declared a federal disaster, a major West Coast fishery is experiencing a remarkable recovery, with more species certified as sustainable and fishing communities on the rebound. How smart management can fix the tragedy of the commons.

**C**APT. GIUSEPPE “JOE” Pennisi steers his 65-foot trawler, *Pioneer*, through thick fog to one of his favorite fishing spots, 15 miles south of the Farallon Islands off San Francisco. It is here, in a place appropriately called Pioneer Canyon, where he plans to test gear changes he’s made to minimize the environmental impacts of trawling, an often vilified method of fishing.

Pennisi is one of a new breed of fishermen trying to make a living from the sea while fishing sustainably. Once his vessel reaches its destination, a motorized winch groans as it plays out a 400-foot-wide swath of net. Two hours later, Pennisi hauls up 5,000 pounds of beautiful chilipepper rockfish, petrale sole and lingcod onto the deck. Unlike old trawling nets, his light-trawl gear doesn’t drag the bottom, so it preserves precious habitat.

As deckhands sort and ice the fish, a biologist records the unwanted species and notes the weight—a scant 40 pounds, less than 1% of the catch.

“This is a new day,” says Pennisi. “We’re totally accountable.” Observers are required on all West Coast trawl vessels, part of a radical overhaul of the fishery that went into effect in 2011.

Not long ago, trawl fishermen on the West Coast were heckled publicly and blamed for the collapse of the fishery; many restaurants in Monterey refused to sell their product. Fishermen, of course, didn’t cause the problem by themselves, but they hold the power to solve it.

Starting with men like Joe Pennisi.

### A long family tradition

A burly 50-year-old with seven kids, Pennisi is a fourth-generation fisherman. His family has worked out of Monterey—the town made famous by John



Giovanni Pennisi, Joe’s grandfather, fishing for salmon in 1925.

Steinbeck’s *Cannery Row*—since 1906, when his great-grandfather emigrated from Sicily. During his childhood, his dad would mend nets in their yard from dawn to midnight and then go fishing at 4 am.

By age 15, Joe was working on one of his father’s boats. The work was dangerous—he lost an uncle and a brother to the sea—but back in the 1970s, a smart fisherman could still make a good living. It seemed like the good times would last forever.

But too many boats were chasing too few fish, and by the late 1980s commercial catches had fallen by two-thirds. In 2000, the fishery was declared a federal disaster. The government instituted a boat buyout program, closed prime grounds and tried to control fishing by restricting days at sea. But this compelled fishermen to race to catch as many fish as possible in the brief time allowed.

This situation, in which even the best fishermen are pushed to the wall as a fishery fails, had become the norm in the United States. It was a classic tragedy of the commons.

“I’ll never forget the day when I climbed to the highest point on my fishing boat and saw a carpet of dead fish floating in the ocean covering an area as big as a football field,” says Pennisi. “You’d think only an oil spill could make that happen, but the culprit was completely senseless fishing regulations.”

Back then, if a fisherman accidentally caught too many of an overfished species, he was forced to dump the excess in the ocean. As any fisherman will tell you, there’s nothing more irksome than wasting fish. “We’d bring in 25,000 pounds of fish in one tow, and have to discard 80% of it,” Pennisi says. “It made me sick.”

In time, he realized he couldn’t be proud of his job. He sold his boat and left



the business.

But then something good happened. In 2011, the Pacific Fishery Management Council switched the fishery to a catch share model. This management strategy, which EDF played a key role in developing, gives each boat a percentage of a scientifically determined annual catch limit; stay under it and the fishery will grow. And if a fisherman catches more than his allotted amount—or a species other than the one targeted—he can buy shares from someone else, still keeping the total catch within the limit.

“Unlike other fishery management tools, catch shares reward fishermen for conservation,” says Shems Jud, EDF’s West Coast fisheries director. “As the fishery recovers, the value of each share grows.”

Fishermen who once fiercely competed now share information about areas to stay away from to avoid catching overfished species (see box p. 11).

## The sustainable catch

Clockwise from top: Pennisi brother-in-law Jiri Nozicka checking the net; a diagram of new low-impact gear; “a clean tow,” preparing to offload fish in Monterey; a chillipepper rockfish.



## Wave of innovation

Convinced that the future might be brighter, Pennisi bought a smaller boat and got back on the water. He partnered with EDF to design his light-trawl net, which floats just above the sea floor, allowing him to fish a wider area, reduce fuel costs and help preserve the ocean floor.

Other fishermen have opted to use more selective gear such as pot traps and hook-and-line to pursue fish like black cod that bring higher prices at the dock.

The result: fish stocks are rebuilding, revenue is up, and the amount of discarded fish fleetwide has dropped an astounding 80%.

In June, the Marine Stewardship Council certified many Pacific groundfish species as “sustainable,” prompting the Monterey Bay



PHOTOS BY CORREY HANCOCK



Aquarium to upgrade the sustainability rating of several species of rockfish, flounder and sole in its seafood guide. This will open up new markets for boats working out of ports in California, Oregon and Washington.

"Fifteen years ago they wrote the obituary for this fishery," says Brad Pettinger, president of the Oregon Trawl Commission. "We demonstrated we can be good stewards of a public resource."

Over the last decade, catch shares have compiled a remarkable record of success around the nation, including a program EDF helped implement for red snapper in the Gulf of Mexico. All told, 65% of fish landed by commercial fishermen in U.S. federal waters are now under catch share management.

"EDF won my trust and cooperation," says Geoff Bettencourt, a fisherman in Half Moon Bay. "They understand that sustainability is not just about conserving fish. It's also about families who have been fishing for generations."

### A sea change

William Shakespeare coined the term "sea change" 400 years ago in *The Tempest*, a story of human transformation wrought by the ocean. Today, fishermen are undergoing their own sea change. Gone are the days when hard-charging lone fishermen ruled the sea. The best fishermen today collaborate, target their catch more accurately and fish more safely. The Deadliest Catch has become The Sustainable Catch.

"Change had to happen," admits Pennisi. "This is a much better system. We're fishing smarter, not harder."

Back in Monterey, no one is happier

than David DiGirolamo, owner of Monterey's Fish House, who ordered 150 pounds of chilipepper rockfish and petrale sole, straight from Pennisi's boat. "My family has owned this restaurant for 49 years," he says. "Our reputation is based on fresh, high-quality, locally caught seafood. I don't want Joe to get a big head and raise his prices, but the quality of his fish is outstanding."

In an industry still going through a wrenching process of adjustment, significant challenges remain. Fishermen struggle under low annual quotas put in place to reverse years of damage to stocks: the limits will increase over time, but progress can feel slow. Observers are expensive (\$465 a day), and hard to find.

"For catch shares to endure," says Jud, "fishermen must succeed economically."

EDF is working to resolve these challenges and make the reforms a model for other troubled fisheries. One goal is to introduce electronic monitoring (using video cameras), which would dramatically cut costs. We've also helped establish the Monterey Bay Fisheries Trust, a new initiative that would anchor quota to local fishing boats, rather than have it migrate elsewhere. This is an issue because the trawl fleet on California's central coast has shrunk from 55 vessels to four today.

"This community was built around fishing," says Stephen Scheiblauber, Monterey's harbormaster. "In 2005, when the fishery was at a low point, Joe's father (who died last year) sat in this office and said, 'We're not selling out. We'll survive.' And they have. The future is keeping the next generation of fishermen here."

"I can't tell you how nice it is to see the industry coming back."

## Protecting critical undersea habitat



■ Marine protected areas

The undersea canyons off the West Coast support stunning marine life, including 50 species of rockfish, which can live past the century mark. These slow-growing fish need a breather. That's where marine protected areas (MPAs) come in. MPAs are ocean areas where fishing is restricted so fish can breed undisturbed.

When groundfish stocks crashed in 2000, EDF worked with fishermen and others to design protected areas to allow stocks to recover. MPAs provide a baseline for gauging fisheries' health. We're now using science to refine those MPA boundaries, closing some areas of high-value habitat while opening others that are important to fishermen.

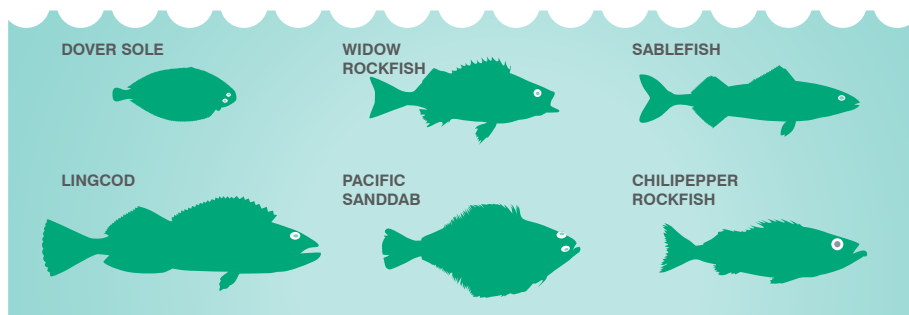
Although few fishermen support closures of fishing grounds, catch shares have changed the mentality on the water. Some fishermen have taken stewardship into their own hands.

One example is the Mothership Coop in the Pacific whiting fishery. Borrowing an idea from the insurance industry, 32 permit-holders joined together to put low-quota species such as canary rockfish into a shared risk pool. The coop has voluntarily closed "hot spots" where fisherman are more likely to encounter rare species and imposed civil penalties on violators.

"We've been extremely successful," says Bob Dooley, former president of United Catcher Boats. "It shows that fishermen can regulate themselves if they have the right incentives."

## GOOD NEWS FOR SEAFOOD LOVERS

Recently, 21 species of popular West Coast fish were declared sustainable by the Monterey Bay Aquarium's seafood guide. Their recovery is due in large part to the catch share program championed by EDF. [Among the sustainable options:](#)



# China puts the brakes on polluters



HARBIN CHINA

Choking air pollution from vehicles in the city of Harbin caused a public health crisis in 2013.

For years, a slap on the wrist was the price for violating China's pollution laws. With EDF's help, that's changing.

**I**N 2012, THE JINHE MINING COMPANY surreptitiously dumped tons of toxic cadmium into China's Longjiang River. Millions of fish died, and nearly four million people in the city of Liuzhou temporarily lost their water. For this environmental crime, Jinhe paid a fine of just one million yuan, or \$163,000.

For years, fines for violating environmental laws in China were so low that companies found it cheaper to break the law than reduce pollution. EDF has been working in China for two decades to help the country reform its primary environmental law. After a deadly benzene spill into the Songhua River in 2005, Dr. Daniel Dudek, head of our China program, chaired an environmental governance task force that devised stiffer penalties on water pollution.

In part through EDF's efforts, this year China announced a major reform of the environmental law that could mark a turning point in its fight against pollution. Starting in 2015, the ceiling on penalties for environmental violations will be scrapped, and penalties will be assessed from the first day of the violation until the day of compliance. In a nation hungry for government action on pollution, the new penalty provisions made headlines.

The strengthened law reflects many

contributions from EDF's China staff. Among our recommendations were daily penalties for violators, improved public access to emissions data, greater power for citizens to sue, and penalties for public officials who falsify environmental impact assessments reports.

"Unlimited penalties will significantly alter the business calculus for Chinese firms deciding whether to risk polluting," says Dudek.

## Tapping the power of markets

EDF is not just pushing for stiffer penalties and stronger enforcement. We're also

harnessing the tremendous power of Chinese markets to cut pollution.

One target city is Shenzhen, population 10.4 million. Shenzhen is the world's fourth busiest port, with more volume shipped than the top four U.S. ports combined. Like many Chinese cities, Shenzhen struggles with toxic air. On a bad day, the city's haze evokes American industrial cities at their postwar worst, before passage of the Clean Air Act.

In 2011, EDF and Shenzhen launched a green commuting program to help the city reduce vehicle use and slash air pollution.

With help from EDF, Shenzhen is also taking steps to cut climate pollution. In July, in Beijing's Great Hall of the People, with Secretary of State John Kerry looking on, EDF signed an agreement to launch a program to reduce carbon pollution from vehicles.

In 2003, there were 200,000 vehicles in the city. Today, that number has leaped to 2.7 million, accounting for half of Shenzhen's carbon emissions.

"Our partnership tackles one of the world's most vexing climate challenges—controlling emissions from transportation," says Dudek.

The project will complement Shenzhen's carbon emissions trading program created last year with help from EDF. The program covers 635 enterprises, including power plants and factories.

As Dudek puts it: "Nothing matters more in solving the climate problem than the U.S. and China working together."

The Shenzhen project is a perfect example of such collaboration.



XIANHUA NEWS AGENCY

China applied the insights of EDF's Dan Dudek to help strengthen pollution enforcement.





ISTOCKPHOTO

## ‘BPA-free’ won’t protect you

A walk through the baby aisle of any pharmacy reveals a vast array of products proclaiming themselves “BPA-free.” Bisphenol-A, or BPA, is an industrial chemical that’s used in household plastics and food packages. It can interfere with hormones, particularly estrogen, and scientists have linked it to cancer and diabetes. The logical solution would be to shop BPA-free, right? Unfortunately, no. Here’s why:

■ **BPA is pervasive and often undisclosed on product labels.**  
 In 2012 the FDA banned BPA from baby bottles and sippy cups but it remains used in many other ways, like canned food, water bottles and receipt paper.

■ **Once BPA is removed, it’s often replaced with equally dangerous chemicals.**  
 There’s no one to ensure replacements are any safer. So even if you limit your exposure to BPA, you still may be exposed to other carcinogens and neurotoxins.

■ **Federal laws regulating everyday chemicals are inexcusably weak.**  
 The main law supposedly protecting us, the Toxic Substances Control Act, is nearly 40 years old and ineffective. Companies can sell chemicals without demonstrating they’re safe.

So what can you do? “EDF is pressing the government to require that all common chemicals are shown to be safe,” says Sarah Vogel, EDF’s Health director. Join more than 105,000 EDF members calling on lawmakers to improve chemical safety. By signing up, you can be part of the solution.

»» TAKE ACTION »» Sign up at [edf.org/BPAsolution](http://edf.org/BPAsolution)

## Drinking water alert: It’s not just Toledo



**Karen Chapman** is EDF’s manager for agriculture sustainability.

This summer, half a million residents of Toledo, OH, found out their tap water had suddenly become toxic. Piped from Lake Erie, the water contained so much poisonous cyanobacteria that city officials advised residents to avoid even brushing their teeth with it.

Cyanobacteria comes from algae created by large amounts of farm fertilizer running off the land into waterways. The problem is not unique to Toledo. Inland lakes across the United States have seen a rise in phosphorus-driven algae blooms in recent decades.

In my job at EDF, I’ve partnered with farmers in Ohio for many years to increase agricultural productivity while cutting fertilizer loss. We’ve developed ways to help farmers improve timing and placement of fertilizer. We also encourage farmers to create landscape buffers and wetlands that keep nutrients from seeping into lakes and streams. Our participating farmers have cut fertilizer loss by an average of 25% on half a million acres—all while maintaining crop yields.

Still, more needs to be done. So EDF is also engaging major ag buyers such as Walmart and General Mills to require more sustainable large-scale farming. These companies will send a strong market signal that producing the food we eat cannot come at the expense of our rivers and lakes—or of the people who depend on them for drinking water.

»»» READ FULL STORY »»»  
[edf.org/toxicwater](http://edf.org/toxicwater)

### Defending a gentle giant

The largest fish in the ocean, whale sharks migrate through the Gulf of Mexico. EDF scientists are working with colleagues in Cuba and Mexico to create a migration corridor.  
[edf.org/whaleshark](http://edf.org/whaleshark)



### Environmentalists’ ally

Satellites now record environmental destruction. EDF’s Jeremy Proville uses a time-lapse tool to compress 28 years of changes on Earth into seconds-long videos.  
[edf.org/timelapse](http://edf.org/timelapse)



### EDF Voices blog

Find out what our experts are talking about. Visit EDF Voices at [edf.org/blog](http://edf.org/blog).

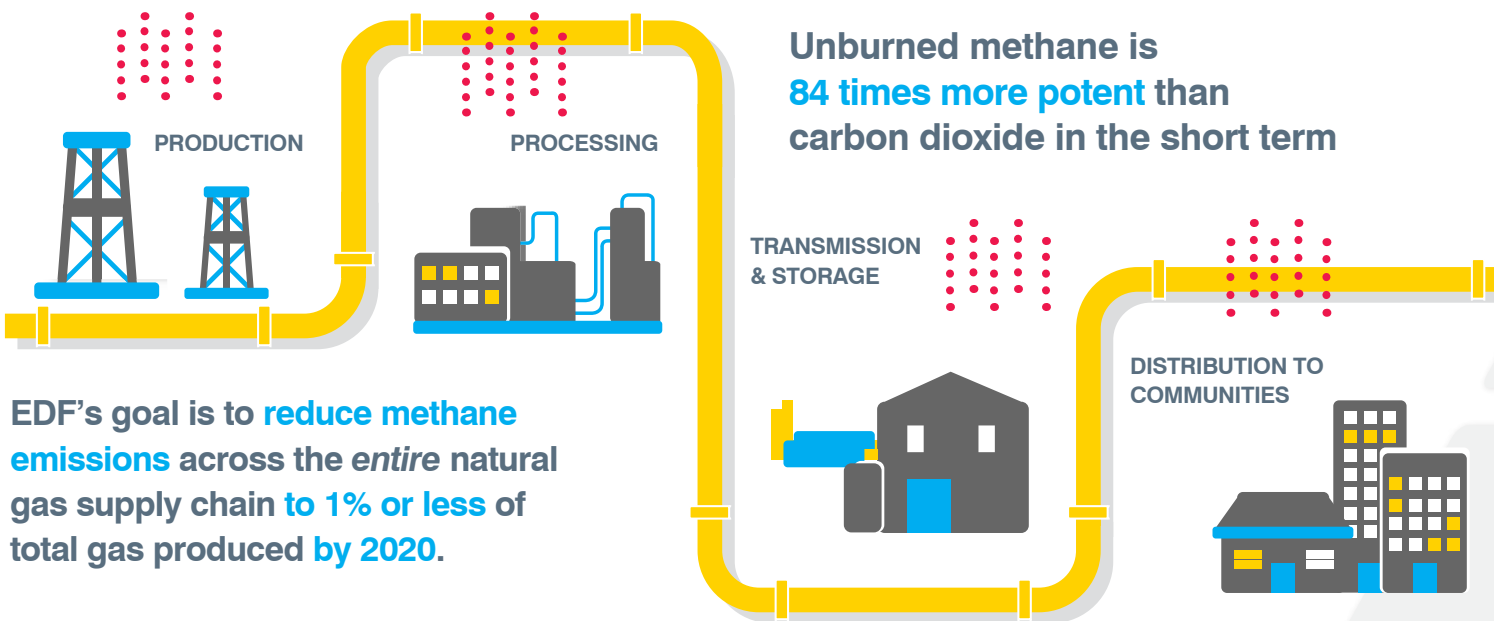
# Why methane matters for the climate

We can't solve the global warming crisis without addressing methane. A quarter of the climate impacts we're experiencing today are caused by methane, a short-lived climate pollutant and the main ingredient of natural gas.

Burning natural gas instead of coal to generate electricity has many benefits, such as producing far less carbon dioxide. But unburned methane, which leaks from pipelines and elsewhere in the natural gas supply chain, is a far more potent greenhouse gas than carbon dioxide over the short term. Our studies confirm that leaks are a widespread problem. Even a small amount of leakage could erase the near-term climate advantages of natural gas over coal.

Luckily there are solutions. Finding, measuring and fixing methane leaks is a priority for EDF. The oil and gas industry must do its part. A recent study found it could cost effectively cut methane emissions by 40% within five years, using available technologies. But voluntary action is not enough. We're working to create cost-effective rules at the state and federal level to substantially reduce methane pollution.

## LEAKS OCCUR ALL ALONG THE SUPPLY CHAIN



EDF's goal is to **reduce methane emissions** across the *entire* natural gas supply chain to **1% or less** of total gas produced by **2020**.

### HOW WILL WE DO IT?

#### Get the facts

In 2012, EDF launched 16 peer-reviewed scientific field studies, involving nearly 100 academic and industry partners, to determine where and how much methane is escaping from the natural gas supply chain.

#### Develop next-generation technology

EDF has challenged tech innovators to develop rugged, reliable new technologies that can detect—and monitor in real time—methane emissions on industrial sites, from well pads to storage tanks.

#### Win state rules to control methane

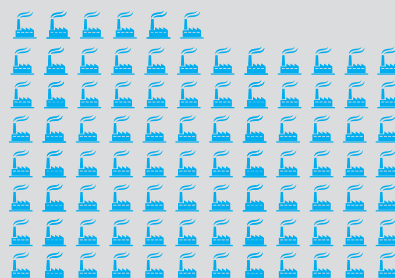
In February, we played a key role in securing Colorado's first-in-the-nation direct controls on methane, and in September we helped get similar rules passed in California. We're now working to do the same in Pennsylvania and other states.

#### Push for strong federal regulations

EPA is developing a strategy for plugging leaks nationally, and we're advocating for tough, sensible rules.

LOWERING METHANE EMISSIONS BY **50%**

WOULD ACHIEVE AS MUCH CLIMATE BENEFIT IN THE NEXT 20 YEARS AS



CLOSING **90** U.S. COAL PLANTS\*

\*Estimate based on EPA 2013 Greenhouse Gas Inventory



“This project puts information in the hands of people who can make a difference and change the world for the better.”

—KARIN TUXEN-BETTMAN,  
Program Manager for  
Google Earth Outreach



**15 million** readings were analyzed, pinpointing thousands of natural gas leaks in three cities

## The evidence is local

A pioneering project with Google Earth Outreach takes aim at methane leaks under city streets

Imagine using Google Street View cars to map not just neighborhoods, but also environmental pollutants. That's the big vision EDF and Google Earth Outreach had in mind when we teamed up two years ago, and it's now becoming a reality.



### GREEN LIGHT

In 2012, we began work on a pilot project to find and measure methane leaks under city streets. Utilities monitor their systems for safety and typically fix major leaks quickly, but millions of smaller ones can wait months or even years for repair.



### GEARING UP

Working with researchers at Colorado State University, we experimented with a methane sensor system and developed analytical tools.



### HITTING THE ROAD

The next step was to outfit Street View cars with the sensor system and deploy them in three cities to pinpoint leaks. To validate our findings, we worked closely with utilities such as National Grid.



### FINISH LINE

The first interactive maps were published in July on our website, EDF.org. Thanks to new technology, we're making pollution visible, empowering people and helping utilities identify where to invest in pipes to cut this climate pollutant.



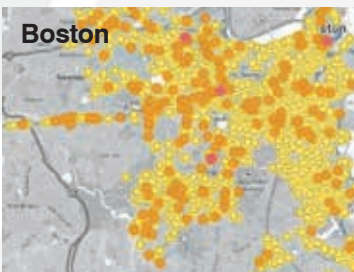
### WHAT'S NEXT?

Google Street View imagery is available across 59 countries, so the possibilities are huge. We'll next map methane leaks in a variety of cities. EDF and Google are also exploring the possibility of measuring other pollutants.



## Older pipes = more leaks

This project makes the climate effects of local leaks visible and accessible for the first time. We found 200 times more leaks in Boston, with old infrastructure, than in Indianapolis with newer pipes.



## Nominate your city for mapping

Your nomination will help us plan where to map next and shows your support for reducing leaks. Go to [edf.org/yourcity](http://edf.org/yourcity).

# A clear-eyed advocate for injured wildlife



TM FITZPATRICK/SHUTTERSTOCK

Ten green turtles nested this year on the beaches Amos helps protect.

More than 30 years ago, EDF member Tony Amos took responsibility for wildlife near his home. Since then, he has saved thousands of wild creatures.

**O**N MUSTANG ISLAND, A BARRIER beach off Corpus Christi, TX, oceanographer Tony Amos spots a black-bellied plover acting strangely. The bird is coated with oil, and it is obsessively preening. Stopping his animal ambulance, Amos says, “That’s not good. When it preens, it ingests oil.”

The injured plover is the first evidence of an oil spill the previous week in the nearby Houston Ship Channel.

“I was afraid the oil would come here,” says Amos, who knows the Texas islands as well as anyone. A research associate at the University of Texas Marine Science Institute, he runs the Animal Rehabilitation Keep (ARK), a rescue mission at the Institute. He has spent more than 30 years monitoring wildlife and weather on the fragile dunes here. Over time, Amos and his students have compiled an immense database of how humans are changing this ecosystem.

Amos often finds and treats injured birds, turtles and other creatures. Most have been injured as a consequence of

human activity. Birds are caught in fishing lines or hit by vehicles. Turtles fall victim to shrimp trawls and boat propellers. Over the years, some 700 injured sea turtles have been treated at ARK. More than half have been released.

An EDF member, Amos has served on numerous task forces from the local level to the National Academy of Sciences. Seventy-seven years old, he was born in London and worked at the Lamont-Doherty Earth Observatory before moving with his wife Lynn to Texas in 1976. “When I first came here these islands were in good condition. But I saw the ‘For Sale’ signs and realized this place could become like Miami Beach, so I started monitoring people as well as wildlife.”

Amos sees a downward trend for wildlife. Red knots and oystercatchers aren’t doing well locally. But other birds are rebounding: “Early on, I didn’t see a single brown pelican. Now they’re abundant.”

So why does he record changes? “We want to leave a scientific record of how things were around here for the people who come after.”

As he drives the beach, Amos counts birds and notes locations on a beat-up old data logger. “I know many of these birds quite intimately,” he says. “This black-backed gull is always at marker 52.”

In one study, a student researcher found that more than half of the sea turtles that wash up had ingested plastic garbage. Now Amos and his students

count garbage. “I’m concerned if we don’t do something about marine pollution, we’ll accept it as normal,” he says.

His care for the islands has earned him respect here. On the day the oil washed ashore on Mustang Island, local beachgoers recognize his ambulance and flag him down. “How can we help?” they ask.

As he drives south, the waves leave black crescents on the beach. U.S. Coast Guard officials stop to talk to Amos about rescuing birds. “I’m sorry, Tony,” says one.

Despite the grim evidence of the spill, Amos finds delight even now. Gazing at the calm Gulf, he says with a lapse of scientific language, “It’s beautiful out there today.”

Then he starts getting ARK ready to receive oil-soaked wildlife.



TEXAS PARKS AND WILDLIFE

Tony Amos, environmental lifeguard



# A small toad fights tall odds

PETER ARNOLD



EPA

Miraculously, the highly endangered Houston toad survived the most destructive wildfire in Texas history (above).

**A**FTER A HUGE WILDFIRE CHARRED pine forests in southeast Texas three years ago, Mike Forstner feared the worst for the rare toads he studies. “I believed the Houston toad effectively ceased to exist in the wild on Sept. 5, 2011,” said Forstner, a biology professor at Texas State University.

The firestorm—the kind that’s becoming increasingly common out West—blackened 34,068 acres and devastated the Lost Pines forest of Bastrop County, the last stronghold of the highly endangered Houston toad.

The palm-sized, grayish-brown toad lives among loblolly pines with deep sandy soils and relies on ephemeral ponds for reproducing. It burrows into the sand for protection against winter cold and summer heat. During breeding season, males

gather at ponds on humid evenings and trill in unison to attract females.

The outlook for wild populations was grim even before the wildfires. A decade ago, researchers found hundreds of toads in Bastrop County. In 2010, only 100 were counted. Increasingly, their access to ponds is cut off by roads, and loss of forest for housing and agriculture has eliminated foraging sites.

The fire, everyone assumed, meant extinction for the toad. But in February 2012, Forstner began to hear the unmistakable trill of a few individuals.

“Some toads might have been spared by burrowing into the sand,” says EDF scientist David Wolfe, who has worked for 12 years to save this rare species with groups such as the Boy Scouts of America. Today, Wolfe is helping

landowner Kevin Rust improve toad habitat through an incentives program on his 1,000-acre hunting and cattle ranch, which was overgrown when he bought it 12 years ago. Rust’s goal is to restore the land’s natural beauty while benefitting the toad.

Wolfe is identifying the best ways to help the toads thrive on Rust’s property, such as clearing brush and creating small ponds. “EDF has been a great partner in helping us work toward these goals,” says Rust.

Amphibians—frontline indicators of aquatic ecosystem health—are in decline worldwide. Like other amphibians, the Houston toad is especially sensitive to environmental change because of its permeable skin.

“If we can give the Houston toad a future,” says Wolfe, “there’s hope for other species.”

**EDF**  
**Legacy**  
**Match**

**Act now.**

The Legacy Match ends  
January 31, 2015.



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# Outsmarting the energy vampires in your home

I'M THE ENERGY COP IN OUR HOUSE, forever switching off lights and making sure the refrigerator door is really closed. But now I'm finding my well-intentioned zeal needs an update. Thanks to compact fluorescent and LED bulbs, certification of Energy Star appliances and other changes, the biggest energy suckers in the home have changed in the last few years. So should your plan to tackle them.

It may seem preposterous, but chances are your sleek, little iPhone actually gobbles up as much energy as a modern refrigerator (if you take into consideration the data centers that keep you connected at all times). Your cable box is equally power-thirsty and will cost you around \$8 a month, whether or not you ever watch your TV. And then there's your game console. You pay for almost half its energy use just for the privilege of having it plugged in, ready to play.

These seemingly innocuous devices are some of your home's "energy vampires"—drawing costly electricity even when they're not being used. Such devices consume nationally as much energy every year as the entire state of Maryland.

Other big power users that you pay just to have on standby are DVRs, laptops, satellite TVs, microwaves and inkjet printers. In a study of suburban homes in California, the Lawrence Berkeley National Laboratory found that these devices account for 5-10% of your home's energy consumption.

Here are some easy-to-perform actions to help you deal with the new energy reality:

## ■ Hit the switch

An easy first step is to flip the switches on the power strips that supply energy to idle, electricity-sucking devices. A good place to start would be the strip behind your TV. The time display on your cable box may end up blinking 12:00 forever, but your wallet will thank you.



Fighting evil socket-suckers saves money and helps the environment.

## ■ Star power

When you buy new appliances, always look for the Energy Star logo, because approved products score well on reducing phantom loads. These appliances can reduce standby use by 30%.

## ■ Make nature work

Sun dry your clothes on a line and put your dishes on a drying rack instead of running your dishwasher's drying cycle. Open your curtains and light your house naturally during the day. Arrange desks and chairs to take advantage of the added light and avoid turning on electric lights.

## ■ Remote control

Forgot to flip the switch before leaving home, or want everything ready to use the moment you walk through the door?

There's an app for that. With your smart phone and apps like the Belkin WeMo Insight Switch, you can turn on or off any device at home that is plugged into an outlet. You can schedule when different appliances and electronics should turn off automatically and even monitor their energy use.

## ■ Use the best technology

Only dry clothes or wash dishes with full loads. Switch to a tankless or on-demand water heater (or insulate and turn the temperature down on the old one). Invest in a programmable thermostat like Google's Nest, which will automatically keep your house comfortable when you're there, but not waste energy when you're not.

By Jim Motavalli

## Get smarter

- U.S. Energy Information Administration. Learn how residential energy loads have shifted: [tinyurl.com/lohkj6v](http://tinyurl.com/lohkj6v).
- Average energy use of common household appliances: [tinyurl.com/nrcfkct](http://tinyurl.com/nrcfkct).
- Finding—and dealing with—energy hogs: [tinyurl.com/mjt32vx](http://tinyurl.com/mjt32vx); [tinyurl.com/jwtoavp](http://tinyurl.com/jwtoavp); and [tinyurl.com/kmm9pnh](http://tinyurl.com/kmm9pnh).
- Lawrence Berkeley National Laboratory. Find information on standby power and technologies to reduce it: [standby.lbl.gov/standby.html](http://standby.lbl.gov/standby.html).
- American Council for an Energy Efficient Economy (ACEEE) report on low-power-mode energy use in homes: [tinyurl.com/mw495ao](http://tinyurl.com/mw495ao).

Jim Motavalli writes regularly about green products for leading publications. Opinions are the author's and not those of Environmental Defense Fund.



Letters

## Which natural wonders will climate change take from you?

The impacts of global warming have hit home, as our members attest. We asked EDF members what they stand to lose, and hundreds of you recounted how the world around you is changing. Here are a few of the poignant stories we received.



As a mountain climber in Rocky Mountain National Park, I enjoyed watching a golden eagle swoop to try to catch a pika among the boulder fields. Now I understand pikas are having a hard time with the heat; they are not long to survive there. Then what will the eagles eat? —**Becky E., Ashland, MO**

One of the great things in East Africa is the wildebeest migration, when wildebeests move to the southern Serengeti plains for the grass in the rainy season. It used to be said you could set your watch to when the rains started. These days the rains are not reliable and the animals are having a hard time. —**Gerald R., IL**

I've vacationed on Hatteras Island off North Carolina for years. It's such a beautiful, fragile place—a tiny sandbar in the ocean. If sea level rises a few feet, the entire place will be underwater, only a memory. —**James M., State College, PA**

In college we used to drive up through the winding roads of the beautiful San Bernardino Mountains to Lake Arrowhead to get away from campus, or hike to a stream and splash in the pools that formed from the snowcap runoff. Sadly, those snowcaps are disappearing. Whatever happened to my beautiful mountains?

—**Adrian T., San Bernardino, CA**

My favorite fishes are darters, the diminutive brilliantly colored species of the perch family. They are found in some of the most beautiful habitats. Over 250 species exist only in North America. Climate change threatens their survival; some may go extinct before I get to see them. —**Eric C., Ames, IA**

*Letters may be edited for length and clarity.*

## Thank you, members!

Our members have been busy writing letters to their local publications. We needed you to take action in support of EPA's Clean Power Plan, and you did! Many of you also took advantage of a new EDF Action tool that makes it easy to create and submit Letters to the Editor to your local newspapers.

So far, the campaign has generated nearly a thousand submissions, which have gone to 667 newspapers. Letters have been published in 14 states, including Oklahoma and Tennessee.

Our members' support is crucial!

**>>> TAKE ACTION >>>** Write a letter to your newspaper at [edf.org/LTE](http://edf.org/LTE).

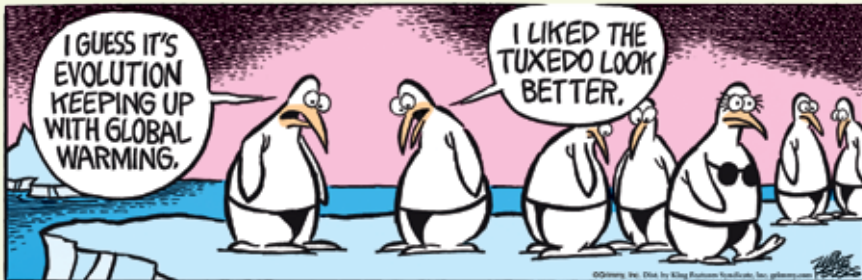
READERS RECOMMEND

Humor

### Club Med goes polar

The planet's two largest ice sheets—in Greenland and in Antarctica—are disappearing at astonishing rates. Polar bears and penguins—both of which depend on sea ice for survival—face a dire future. Here's a humorous take on this very real crisis.

Mother Goose and Grimm



Book

### Waterworks

#### The Big Thirst



We often take water for granted, splashing it out of pools, running it through sprinklers and freezing it for drinks. But water as a resource is far more fragile than we think, and author Charles Fishman examines in

fascinating detail how we should manage our supply.

What do you recommend? Share what inspires you as an environmentalist with other members at [editor@edf.org](mailto:editor@edf.org).



**“You cannot get through a single day without having an impact on the world around you. What you do makes a difference, and you have to decide what kind of difference you want to make.”**

—Jane Goodall

