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ENVIRONMENTAL DEFENSE FUND
Finding the ways that work

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FOREST DEFENDER

Meet Chief Almir Surui and other EDF environmental champions. PAGE 6

EDF
ENVIRONMENTAL DEFENSE FUND®
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: From deep in the Amazon to a union hall in Ohio to a California vineyard, you'll find them—environmentalists who don't fit the mold, or even think of themselves as "green."

EDF writer Miriam Horn interviewed a group of these uncommon environmentalists who have teamed up with us to help solve some of the world's toughest environmental problems. Read their stories on p. 6.

Cover photo: Ivan Kashinsky

SOLUTIONS

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TALK BACK

Keep the climate conversation going

Last year was the hottest on record in the United States, and a series of extreme weather events gave an inkling of the havoc that scientists have long warned global warming would bring.

In response, EDF members mobilized. You deluged Congress and President Obama with email, urging them to support climate action and suggesting ways to make fighting climate change a top priority for the nation.

You also engaged in lively discussions online, wrote letters and posted hundreds of comments (including those excerpted below).

We thank you.

Sign the petition!

"There are more signatures on a petition (whitehouse.gov) about regulating cigars than one on climate change—sign it!"

—Daphne B. (via Facebook)

Speak truth to power

"I was impressed by your focus on global warming [in the Winter issue]. These truths are all around us, and yet many with the means and power to slow its progress are refusing to do so. I believe EDF has the gravitas to make a difference."

—Dawn F., Ohio

Use psychology

"Being a retired psychologist, I suggest that EDF start working with organized psychologists on the problem of how to motivate people to make big changes without scaring them into denial or apathetic submission. The American Psychological Association can no doubt help."

—Robert R. Holt, Ph.D., New York

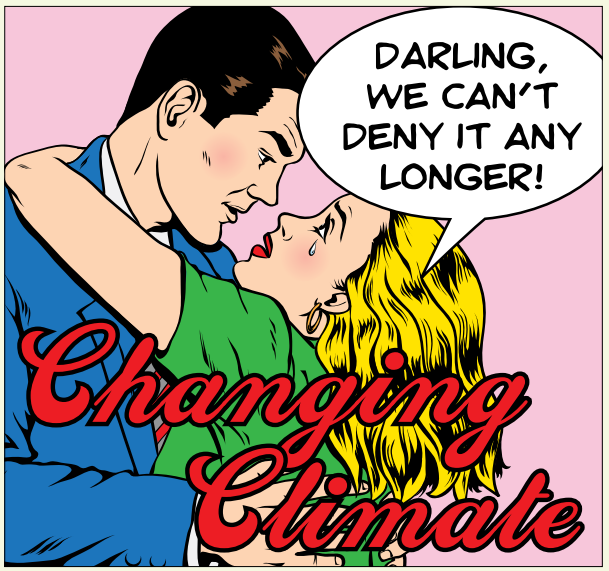
[Editor's note: EDF recently hired a social scientist, Dr. Rainer Romero, to help us deal with these issues and the emerging field of decision science.]

TAKE ACTION: Tell Congress to stand with President Obama on climate action at edf.org/climatepriority.

As the world warms...

Last year was the 36th year in a row when the global temperature was higher than the 20th-century average. That means if you are 35 years old or younger, you've never lived through a colder-than-average year.

To enlist younger activists, we created a comic illustration of this astonishing fact and posted it on Facebook. EDF's Facebook page has more than 100,000 fans taking action. To send the illustration to your friends, visit on.fb.me/ZDvwlj.



JT Morrow

To join the conversation, go to facebook.com/EnvDefenseFund.

EDF wants to hear from you. *Email us at editor@edf.org or visit us online at edf.org. Letters are edited for clarity and length.*

Don't forget the Gulf!

On day one of the civil trial against BP over the Gulf of Mexico oil disaster, we and our coalition partners were on the scene, rallying supporters outside the New Orleans federal courthouse. Over the course of the trial, which began in February, our Delta Dispatches blog (mississippiriverdelta.org/blog) broadcast new developments.

Supporters like you helped us bring attention to BP's attempts to avoid full responsibility for its role in the 2010 spill, one of the worst environmental disasters in U.S. history *(see pages 15–16)*. BP chose to fight the Department of Justice in court, rather than pay substantial fines under the Clean Water Act—money that would help make the Gulf people and ecosystems whole again.

Our youngest ally: nine-year-old Sean Turner.

Thanks to your outpouring of support, we and our partners hand-delivered 133,501 petitions to Attorney General Eric Holder, urging him to hold BP fully accountable.That made news, on NPR's "Morning Edition."

We also kept the pressure on at community meetings. At one gathering, nine-year-old Sean Turner electrified a packed hall with a simple truth: "I love to fish in Louisiana, and I want Louisiana's coast to stay here," said Sean. "I don't want to lose it because of some dumb oil spill."

Restore Coalition

As the trial against BP started, EDF supporters were out in full force in New Orleans, demanding the company pay for its gross negligence.

Don't let BP off the hook! Take action at edf.org/BPpayup.

REWIRING OUR ENERGY FUTURE

By EDF President Fred Krupp

T. Charles Erickson

When I was growing up, telephones came in three rotary styles: wall, desk and princess. This must amaze Americans who came of age after 1984, when the federal breakup of the AT&T monopoly unleashed a wave of innovation that led to advances like voice mail and smartphones.

Today our nation's antiquated energy system looks like the rotary phone of the 21st century. The grid's limitations became painfully apparent when Superstorm Sandy slammed into the East Coast. Thousands of homes in New York and New Jersey went dark. In Maplewood, NJ, my parents, both in their 90s, were without power or heat for ten days. A mile away, in South Orange, Ginny Brown had solar panels on her roof. Everyone said, "You're the lucky one," until she told them that, thanks to obsolete government regulations, the panels shut down whenever the electric grid failed. The 21st century grid must be more flexible and interactive.

Some states already get it. Recently, I was asked by New York Gov. Andrew Cuomo to serve on a commission to recommend ways to make the state's energy system more resilient. Our report included many EDF ideas, among them ways to make the electric grid more open to localized power sources like rooftop solar and plug-in hybrid cars.

Nationwide, we need to clear out the regulatory cobwebs that stifle innovation and build a smarter grid that can pinpoint outages, reroute power and help wean America off the dirtiest energy sources. It was encouraging to hear President Obama, in his State of the Union address, challenge states to create plans for producing clean energy and promise to reward the best with federal research funds.

President Obama's best tool is the Clean Air Act.

The president also needs to make good on his pledge to use executive authority to reduce carbon pollution. His best tool is the Clean Air Act. Under its authority, EPA is set to finalize a greenhouse gas rule for new power plants this spring, and should follow up with a proposal for existing plants, which are responsible for more than 30% of U.S. greenhouse gas emissions.

Over the next few years, we often will hear the words "climate" and "unprecedented" together in the same sentence, thanks to rising temperatures, more ferocious droughts and costly storm surges. We need to hear the words "climate" and "solutions" together just as often.

With the help of our members, EDF will keep the pressure on to enact energy policies for a sustainable future. There's no need to be stuck in a rotary phone world.

Fred Krupp

WASHINGTON WAKE-UP CALL: GETTING REAL ON CLIMATE CHANGE

David Sailors/Corbis

Following a year of climate-related disasters, President Obama began his second term pledging to take action on global warming. Then, in his February State of the Union address, the president doubled down, outlining a forceful approach to this urgent issue.

Before the State of the Union speech had even begun, one congressman, Rep. Ted Poe (R-TX), introduced a bill to block the Environmental Protection Agency (EPA) from cutting climate pollution from power plants and industrial sources.

The following day, Sen. Mike Johanns (R-NE) called EPA "out of control" and introduced a package of four bills designed to hamstring the agency.

Despite this by-now-predictable opposition, the administration—with EDF's strong support—is moving to reduce greenhouse gas emissions. EPA is expected to publish rules this summer that limit carbon pollution from new power plants. EDF helped bring the legal action that prompted the new rules, which are mandated under the Clean Air Act.

EDF is also calling on EPA to impose similar standards on existing power plants, America's largest source of climate pollution. "We're running out of time," says EDF attorney Megan Ceronsky. "The year 2012 was one of the warmest on record and brought crippling drought to much of the U.S. We'll use every tool we have, from legal action and lobbying to mobilizing our members, to support the president's plan to reduce emissions."

Next up for EPA and EDF are rules to improve the fuel economy of medium- and heavy-duty trucks, which range from delivery vans to 18-wheelers. The new policy will save truckers money at the pump and cut climate pollution.

These rules will complement 2012's fuel efficiency standards for cars and light trucks, which EDF helped bring about. Because of these rules, cars will go nearly twice as far on a gallon of gas.

Finally, EDF is working on an unprecedented project to control methane leakage from the natural gas system. Natural gas production is booming: 40,000 shale gas wells are now operating in the United States, three times as many as in 2005. Getting a grip on leakage is critical.

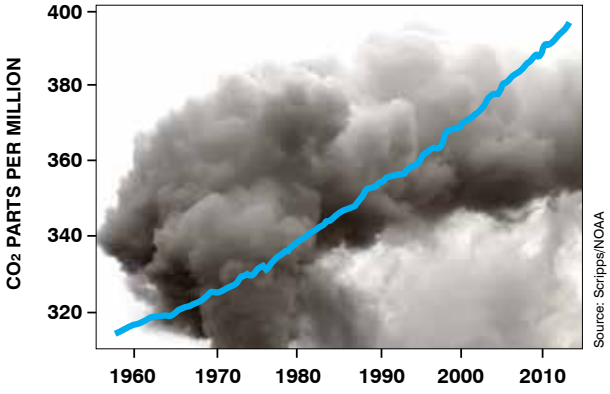
Natural gas, when burned, releases only about half as much carbon into the atmosphere as coal. Unburned, however, the methane in natural gas is many times more potent than carbon dioxide as a greenhouse gas. So if too much is leaking, that could erase the climate advantage gas has over coal.

Right now, no one knows how much leakage is occurring. To find out, EDF, working with universities and energy companies, is using advanced technology to determine just how much gas is leaking from the system. The first of five studies is expected to be published this summer. Meanwhile, EDF continues to lead the charge for stronger federal and state regulation of fugitive methane emissions and other dangerous air pollution.

As EDF president Fred Krupp says: "Natural gas development must be safe for neighbors and safe for the planet. And we shouldn't lock in more capacity from new natural gas power plants that aren't needed. Instead, we should deploy wind, solar and a modernized grid."

AN ALARMING TRAJECTORY

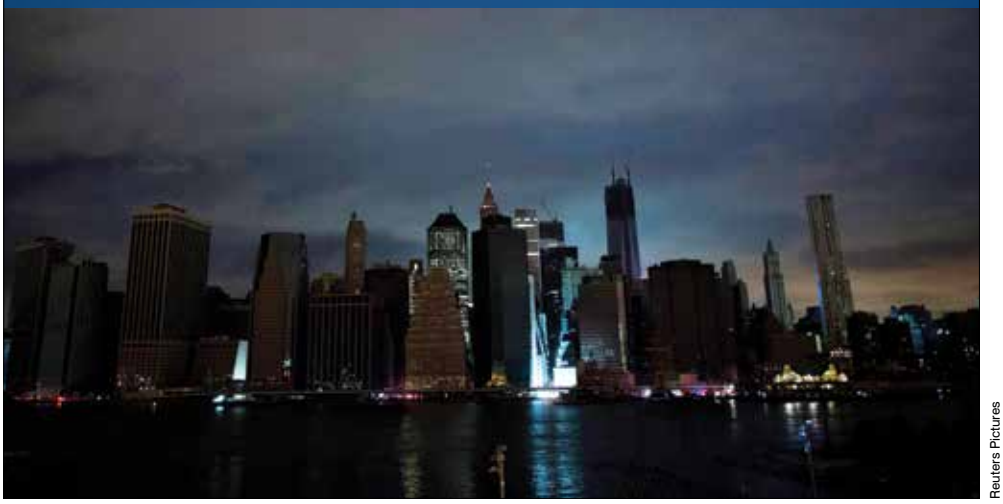
The rise in atmospheric CO_2



Source: Scripps/NOAA

EXTREME WEATHER

Girding for the new abnormal



Reuters Pictures

Last October, as Hurricane Sandy slammed into New York City, Andy Darrell, EDF's New York regional director, was with his family in their downtown home. "I was looking north, out my window," says the man who helps lead EDF's work on electrical grids. "Then there was a giant flash as water from the East River flooded the ConEd power plant on 14th Street.

"The next thing I knew," Darrell adds, "my family and millions of other people lost power, heat and water."

Sandy was just one of 11 weather disasters in the United States last year that caused damage in excess of $1 billion.

- Hurricane Isaac caused massive flooding along the Gulf Coast.
- A severe storm cut across the Midwest and mid-Atlantic, killing 13 people.
- Record high rivers around Duluth, MN, caused widespread flooding.
- Drought hit some 60% of the United States, causing extensive crop failures.
- Wildfires burned more than nine million acres in the West.

It's the new abnormal—weather that's predictably unpredictable and devastating. Even if the world were to agree tomorrow to reduce greenhouse gas pollution, some warming would continue because of past pollution. So we must begin adapting to a warmer world.

EDF is working at every level to convert the lessons of 2012 into action. For example, two weeks after Sandy struck, New York Gov. Andrew Cuomo asked Fred Krupp, EDF's president, to serve on the NYS 2100 Commission to recommend ways to make the state's energy system more robust, resilient and adaptable.

The commission's report included many of EDF's recommendations, among them ways to make the electric grid more flexible and open to renewable energy sources and power generation from many different sources. "We have to clear out the cobwebs," Krupp says. "The old rules that stifle innovation and interfere with entrepreneurs won't work anymore."

Even in hard-hit New York and New Jersey, Darrell points out, "important solutions were right under our noses." For example, lights stayed on for 60,000 people in the Co-op City apartment complex in the Bronx, thanks to a combined heat and power plant that can operate independently of the main electricity grid. This was also true for parts of the Princeton and New York University campuses. And in lower Manhattan, the community group Solar One used solar panels to give residents of Stuyvesant Town, another apartment complex, a place to charge phones and computers.

Building a more resilient grid

But many solar-equipped buildings throughout the Northeast went dark after Sandy hit because they weren't set up to function when the grid failed. That's because today's grid still operates on the same model it has used for 100 years. In New York, a smarter grid would been able to pinpoint outages, cordon off damage and recover faster.

This grid, if properly designed, won't just be smart. It will also easily accommodate renewable energy, like wind and solar, wherever and whenever it's produced. This means the electricity grid will become cleaner and contribute less to global warming, even as it grows more flexible and resilient.

Unfortunately, climate change means a future of higher sea levels, more extreme storms and more weather-related damage. But there's a lot we can do now to make us stronger before the next storm hits.

Daniel Karmann/Corbis

During Sandy, power failed at two New York City hospitals. Twenty babies had to be evacuated from intensive care.

A NEW SHADE OF GREEN

By Miriam Horn

Today's environmental challenges are different from those of the 20th century. So are the people solving them. In fact some of EDF's most effective allies might not even consider themselves environmentalists. But they have the knowledge, skills and commitment to develop breakthrough solutions to the toughest challenges. Here are a few of their stories.

Turning wine into water in California

Thomas Hoffman and his son Matthew raise Zinfandel and Cabernet Sauvignon grapes on 130 acres along the lower Mokelumne River, in northern California. The rich land here was homesteaded by Tom's great-great-grandfather in 1868. Family diaries record the mink and otter Tom's father trapped and the recipes Tom's mother still makes from native plants: horehound candy and elderberry jam.

Though his grandfather regularly plowed acres he never intended to plant, because (as Tom says) "that's what you did back then," Tom has let those bottomlands

Photos, clockwise from top left:
Matthew Grimm; Justin Bolle; Ivan Kashinsky; Doug Kasputin; M Thiens

UNLIKELY ALLIES Clockwise from top left: California vintners Thomas Hoffman (on right) and his son, Matthew Hoffman; Walmart buyer Tanya Manwiller; Chief Almir Surui; IUE-CWA's Lauren Asplen; Gulf fisherman Buddy Guindon

revert to native willow and oak. He farms by Lodi Rules, a sustainability certification for winegrowers, and makes and sells owl boxes for chemical-free rodent control.

Now, he's working with EDF to repair the riverside habitat on which many species depend. He'll rebuild crumbling banks to keep sediment out of the water and replace invasive Himalayan blackberry with California rose, live oaks and shade trees, to cool the water for salmon and steelhead trout. Restoring such biodiversity will aid the recovery of threatened and endangered species including Swainson's hawks and California tiger salamanders.

EDF helped the Hoffmans win funding for the restoration from the East Bay Municipal Utility District (EBMUD), which supplies water to 1.3 million people on the eastern side of San Francisco Bay. The utility's aim is to undo the damage done by the dams it built in the 1930s, which wreaked havoc with the Chinook salmon migration. The federal and state fish and wildlife agencies are also funding partners.

"EDF connected us with lots of people to achieve our goals," says Matthew. "It's rare that a landowner can advance multiple agencies' missions." The project will help EDF develop an accounting system for environmental gains, part of our plan to ensure that private landowners, who manage three-fourths of the nation's land, get paid for the ecosystem services they provide.

Rick Leong, an EBMUD watershed planner, says fiscal constraints are motivating such collaborations, which cost less and achieve more than engineering fixes. "It's so fruitful," he says. "This is the first time we've had a nonprofit partner on the ground with a landowner: talking face-to-face revealed how many goals we share. And these partnerships go on blooming for years: you wind up working with people you never thought you would."

The clout of 200 million customers

It's almost a fable: a girl from a tiny Kansas farm town grows up to change the way computers are made half a world away.

Tanya Manwiller was a young toy buyer at Walmart in 2005 when then-CEO Lee Scott made his startling public commitment to cut energy waste throughout their worldwide operations.

Tanya rose to the challenge. Now a senior computer buyer, she's a key figure in The Sustainability Consortium (TSC), a group of more than 100 of the world's largest companies, plus non-governmental organizations, including EDF. Their focus is the vast supply chains where as much as 90% of the companies' environmental impact lies; Walmart alone has more than 100,000 suppliers worldwide.

The consortium has developed a list of sustainability questions and metrics for many product categories, enabling buyers like Tanya to compare suppliers' performance. *Scientific American* ranked it a World Changing Idea for 2012, noting that its members' clout give the consortium access to "closely held data on emissions, waste, labor practices and water usage."

> "These merchants are high-level managers responsible for multibillion-dollar buying decisions."
>
> —Bloomberg News

Collaborating in TSC with competitors like Best Buy inspired Tanya: "It showed me how many people were willing to work together for change." And when the first results from her own suppliers arrived, she spotted a huge opportunity.

The biggest chunk of a PC's carbon footprint is its energy use, which depends on how fast it dims or sleeps. Tanya learned that just 30% of the laptops she bought had advanced power management capabilities and set herself a goal of 100%. She'll get there this summer. By Christmas, she will have driven change in a million PCs, saving customers money and moving Walmart toward its goal of cutting 20 million metric tons of greenhouse gas from its supply chain by 2015.

The sustainability index is now in use for nearly 200 Walmart product categories representing a third of its purchases; EDF is working directly with Walmart to develop buyer training and incentives: last fall, Walmart announced that 5% of a buyer's performance review would hinge on meeting sustainability goals.

We're now in talks to expand the process developed with Tanya to categories like small appliances and toys sold by Walmart. For merchants who buy those

goods, factory energy efficiency will continue to be a key opportunity, and EDF project manager Jenny Ahlen sees huge potential: "Walmart brings enormous leverage and will get information they've never had."

It won't be easy: global supply chains are notoriously hard to penetrate. "This will take the whole industry working together," says Tanya. "But with a united front we can say to the factories, 'This is important.' And we feel fortunate that we're always able to lean on EDF's knowledge."

Preserving a family fishing business

Buddy Guindon found his calling as a kid, fishing for Minnesota muskie with his dad. He's spent 35 years in Galveston on the water and running a fish market alongside his brother, wife Katie and sons. Fishing and family, for Buddy, are nearly one and the same.

John Rae

"You've got to pay back for the good life." —Buddy Guindon, fisherman

So in 2007, when EDF and a group of fishermen proposed a new approach to managing Gulf of Mexico reef fish, Buddy opposed the idea, fearing its effects on his business. Not that life was easy: with red snapper stocks plummeting, regulators had cut the season to just a few days in certain months, often in winter when the Gulf was at its roughest. With all the fish coming in at once, prices collapsed, and he and his family had to work night and day. "My life was a disaster," Buddy recalls. "I didn't go to my kids' baseball games, I didn't go to church. I didn't do all the things normal people do."

Still, he was getting by and didn't know what the new individual fishing quotas championed by EDF might bring. He stayed skeptical—until he realized that the new system had let him cut expenses by half and doubled his income. Now, with red snapper rebounding thanks to the more careful way he and other fishermen work, their quotas this year are up more than 60%.

Buddy is now working with other forward-thinking fishermen on new ways to restore Gulf ecosystems and aid families like his own. Responding to threats posed by overfishing, he became a founding member of the Gulf of Mexico Reef Fish Shareholders' Alliance, which advocates marine protections across the region.

When the BP oil disaster sunk consumer confidence in Gulf seafood, Buddy and his peers worked with EDF to create Gulf Wild, a system for tagging each fish with a unique number, so that customers can go online to learn what captain and boat caught it, and in what ten-square mile patch of ocean.

More than 350,000 Gulf Wild fish have been sold in markets and restaurants around the country. In his latest move, Buddy helped persuade H-E-B, a large Texas supermarket chain, to make Gulf Wild a featured part of their seafood case, ensuring Gulf seafood lovers will have sustainably managed, trackable seafood for years to come.

Now, Buddy says, "my sons have a future as commercial fishermen. EDF was there: linking us to one another and helping us understand Capitol Hill. When you're given a gift like the good life we've had, you have to pay it back."

Tapping workers' know-how to save American jobs

It was over a beer that union leader Lauren Asplen and EDF's Brendan FitzSimons hatched a partnership that is now cutting greenhouse gases while saving American jobs.

Lauren, concerned about job security for the 45,000 workers she represents as assistant to the president of the IUE-CWA, was seeking a way to green the jobs of all her members, not just those building windmill parts or solar panels.

Brendan pulled a crumpled paper from his pocket. "He'd clearly been making the rounds and having it shoved back at him," Lauren says. But when she heard his proposal—to engage factory workers in intensive three-day "treasure hunts" for energy savings—she said yes.

"Our smaller employers' plants were going to shut down if they didn't become more efficient," she explains. "And it's the people on the production lines who have the deep knowledge to really know what will save energy."

Together, we embarked on six treasure hunts, with EDF providing tools to quantify project costs and savings. "Operations people typically know where the energy issues are," says Lauren, "but until someone figures your return on investment, you don't make the time to improve energy efficiency."

Management quickly recognized that turning frontline workers loose to find ways to cut waste could boost their bottom line and build morale. And even in new or recently retrofitted plants, they found big savings. One team found obsolete equipment running 365 days a year. As Lauren explained, "It was nobody's job to think, 'Shouldn't we turn that off?' A flick of the switch saved $25,000 a year. Another $173,000 was saved in a Siemens engine factory in Ohio. At CCL Container in

123RF.com

"People on the production line have the deep knowledge to really know what will save energy." —Lauren Asplen, union leader

Pennsylvania, workers got so excited they came in over Thanksgiving weekend to do the work. As Local member Ed Derr put it, "I want to do everything I can to help make this plant competitive so I still have a job." And energy savings help the environment, which is "important for my kids."

Using the structure that EDF created, Lauren and the union plan to expand the treasure hunts to more of the 300 plants where they work, and eventually to inspire other unions to reach many more.

Lauren is also educating union members about climate change and why industry, responsible for a third of U.S. greenhouse gas emissions, must change. "Members don't realize how much knowledge they have. When they see that they can make a real difference, then they're not just doing a job but also helping make a better world."

Smartphones defend the rainforest

Born in the Amazon state of Rondonia in 1970—just a year after his people, the Surui Paiter, first encountered Brazilians—Almir Surui saw little but devastation as a child. First, new diseases like measles killed nearly all the Paiter; by Almir's tenth birthday, only 300 remained. Then came waves of migrant farmers and illegal loggers, wielding guns and laying waste to the forest.

Seeing his people's very existence threatened by forces beyond their control, Almir resolved to help them by learning more about the white people's world. He has brought the tribe back from the brink: nearly 1,300 Paiter now live in 24 villages.

But as leader of the first generation to speak Portuguese and navigate beyond the forest, Chief Almir has paid a high price for his resistance: In 2009, when the villages announced a logging embargo, he and his wife received death threats. They remain under 24-hour police protection.

For Almir, the forest is much more than a commodity. "Without it, our religion, our culture, our way of life wouldn't exist." But he knows from experience that the trees are doomed as long as people can make money only by cutting or burning them.

In 2007, he began working with EDF and a nonprofit group called Forest Trends to create an alternative path to sustainable prosperity. If the people that defend the forest could get paid for all the value it provides—from producing rain that falls as far away as Texas to storing billions of tons of carbon—then the Amazon rainforest stands a chance of surviving.

Thanks to local and international pressure, deforestation in the Brazilian Amazon is at its lowest level in 24 years of record keeping, but those rates are starting to climb again. Seeking to make Almir's vision a reality, EDF is pushing to develop global markets for ecosystem services. Germany recently completed the largest purchase of tropical forest credits to date.

Fast Company singled out Chief Almir as one of the 100 most creative people in business.

Almir has brought another 21st-century tool to his campaign to preserve his community and traditions. He partnered with Google to put a cultural map of the 600,000-acre Paiter territory, including sacred sites and stories from tribal elders, on Google Earth and YouTube. With smartphones, the tribe documents illegal logging on their land and uploads geo-tagged photos and videos. Asked why he's ventured so far from the rainforest, Almir says: "We can't change the future of the world by talking to ourselves."

Elena Kalistratova/Getty Pictures

"The trees are doomed as long as people can make money only by cutting or burning them." —Almir Surui, Chief of the Surui Paiter tribe

GRAND CANYON POLLUTER FACES CLEAN UP

Mornatiuk/Eascott/Corbis

Each year, more than four million people visit the Grand Canyon. Many of them are unable to fully appreciate the canyon's beauty, thanks to the brown haze hanging in the air.

A major source of this pollution is the 2,250-megawatt Navajo Generating Station near Page, AZ *(shown above)*. The plant's three 774-foot-tall smokestacks—the tallest structures in the region—emit a cloud of pollutants.

Less than 20 miles from the Grand Canyon, the 40-year-old plant contributes to haze at a dozen premier parks and wilderness areas in the Southwest. This pollution sometimes reduces visibility in the Grand Canyon by as much as a third.

In January, EPA proposed new pollution limits for the facility that would cut nitrogen oxide emissions by more than 80% and dramatically improve visibility. The limits will also help protect public health: Nitrogen oxides react with other chemicals in the air to form ozone and fine particles, both associated with asthma, bronchitis and other respiratory illnesses.

EPA's action was a long time coming. Congress originally decided to clean up dirty air in major parks and wilderness areas in 1977. But this proved difficult. EDF successfully fought for a clean air program to cut haze in national parks across the West and is now advocating effective implementation.

"Our goal is to help secure final, durable emission standards that protect human health and the environment," says Vickie Patton, EDF's general counsel.

Linda Bowman

When the wind blows from the direction of the Navajo plant, the Grand Canyon is shrouded with haze.

Cleaning up the Navajo plant is especially meaningful to Patton, who grew up in Arizona. In 1990, she was hired right out of law school by EPA.

"One of my very first projects was to clean up another pollutant from Navajo: sulfur dioxide," Patton says. "The plant was emitting 70,000 tons a year, more than the entire Los Angeles Basin."

The following fall, she attended a ceremony at the Grand Canyon, where President George H.W. Bush signed the Navajo Visibility Agreement, which cut the plant's sulfur dioxide emissions to less than 5,000 tons.

"It marked the first time any source was required to reduce its air pollution impact on a national park," Patton says. "But the work is still unfinished."

Under one proposed plan, EPA would give the Navajo plant until 2018 to install state-of-the-art pollution-reduction equipment. The issue is complicated because the upgrades are expensive and the plant supplies power for water delivery in Arizona and is a major employer of Navajo and Hopi tribal members.

"Like many Navajos, coal and other extractive industries were a normal part of life for me as a child," says Jihan Gearon, executive director of Black Mesa Water Coalition, a community advocacy group. "My grandfather was a medicine man who worked in the timber industry. My uncle worked at a coal mine."

Gearon, who mentors Navajo youth, says tomorrow's tribal leaders have a different vision for the future. "There are ways out of the 'health vs. jobs' box now that weren't available before," she says.

For Native Americans like Gearon, cleaning up the massive coal plant is only the beginning: "We should be using Navajo land to generate clean power from the sun," she says.

THE SILENCE OF THE FROGS

Can farmers help rescue imperiled wildife?

Robert Lubeck/Animals Animals

These days, researchers talk of a strange silence where only a few years ago the croaking of frogs prevailed. In fact, frogs are disappearing. Around the world today, as many as a third of 5,918 amphibian species are at risk of extinction.

As amphibians, frogs like the gray tree frog shown above have permeable skin that makes them particularly sensitive to changes in air and water temperatures. Already threatened by habitat loss and pollution, many are succumbing to disease linked to climate change.

EDF's Dr. Stacy Small-Lorenz

"Amphibians and reptiles are frontline indicators of aquatic ecosystem health," says Dr. Stacy Small-Lorenz, a conservation scientist at EDF who is evaluating the effects of climate change on wildlife in the Upper Mississippi River watershed. "Their plight raises a red flag for other species."

The specter of runaway climate change has led scientists to warn that as many as one in ten species worldwide could disappear by 2100. In the Midwest, where two-thirds of the land is farmed, climate models predict heavier precipitation with major flooding, and hotter, drier summers. Recent events fit these patterns.

And that does not bode well for wildlife—or farmers.

Small-Lorenz's team evaluated hundreds of fish and wildlife species and concluded that freshwater species—especially amphibians, reptiles and fish—will suffer the most from a warmer climate in the Midwest.

In Iowa last summer, temperatures in the Des Moines River hit 97° F, and 37,000 sturgeon suffocated in the hot, oxygen-poor water, devastating the local fishing industry. Similar fish kills were reported across the Midwest.

At the same time, one of the worst droughts since the Dust Bowl dried up crops through much of the Corn Belt. "With climate change, farmers and wildlife will vie for scarce water," says Small-Lorenz. "Water is likely to become the defining issue for agriculture and species."

Reducing stressors like habitat loss and pollution is key to helping many species withstand global warming, and farmers need to be part of the remedy. EDF promotes farm practices that conserve and purify water while also improving habitat. Working with farmers, we've devised ways to reward them for being stewards of the land without decreasing their yields.

Already our partnerships are improving fertilizer management and water quality on nearly one million acres. By helping farmers use the precise amount of fertilzer on their crops, we help them save money and decrease polluted runoff.

We're also partnering with farmers to plant trees along streams and restore wetlands to filter water and create wildlife habitat.

"We need to manage aquatic ecosystems on a much larger scale," says Small-Lorenz. "That means coming up with solutions that address water quality, stream flows, wetland and floodplain restoration at the watershed scale."

"That's why EDF is developing market strategies that promote conservation and biodiversity," says Dr. Rebecca Shaw, a director of EDF's wildlife program.

Scientists are convinced that if humans take care of wildlife habitat, it will take care of us through cleaner water, healthier soil and pollination.

And, says Small-Lorenz, "there are also strong arguments for acknowledging the intrinsic value of other species with whom we share the planet."

Jesse Wilkens

Wetlands are vital to amphibians, reptiles and migrating birds. Drought caused by climate change threatens to dry them up.

In words once attributed to Chief Seattle of the Duwamish tribe: "And what is there to life if a man cannot hear the lonely cry of a whippoorwill or the arguments of the frogs around a pond at night?"

Martine Fougeron

URBAN FARMS: COMING SOON TO A CITY NEAR YOU

The U.S. Department of Agriculture estimates that 23 million Americans live in "food deserts" that lack access to healthy vegetables, fruit and whole grains. In many urban neighborhoods, chock-a-block with fast-food restaurants and convenience stores, farm-fresh food can seem a world away. Yet, often in the same cities, farmers' markets and community supported agriculture associations (CSAs) are thriving. But most of their produce is trucked in. Now, urbanites are deciding to grow their own.

An estimated 800 million people worldwide do some form of urban farming. "There's a huge potential for this in the United States," says Danielle Nierenberg of Worldwatch Institute. "Farming can make cities more livable."

Urban farms range from tomatoes raised on apartment house roofs to community gardens in vacant lots to elaborate skyscraper farms straight out of a science-fiction novel. At their innovative best, urban farms become integral to the economic and ecological life of the city. They attract birds and bees as well as businesses, such as restaurants. They employ local labor. And, not least, they bring the simple wonder of the natural world into the urban mix.

Here are a few great examples of urban farms making a go of it:

Bridgeport Gardens

A small Connecticut city that long ago lost its manufacturing base, Bridgeport developed 50 farm plots in its gritty vacant lots. Twenty-five are still flourishing. Roselyn McDonald, a nurse's aide, captains a plot that produces organic watermelons, okra, collard greens, eggplant and zucchini. "I learned to garden as a little girl in Jamaica," she says. "And I've been able to pass that along. For the first time, kids here are helping to raise their own food. They're not just getting it in the supermarket." facebook.com/groups/OccupyBridgeportCommunityGardens

Farm School NYC

New Yorkers can get their hands dirty at Just Food's Farm School in Manhattan. Started in 1995 by a network of farmers, community gardeners and food justice advocates, Just Food trains people to raise food, market it locally and become urban-farm educators. City dwellers can also learn to be "community chefs" and create healthy meals for their neighbors. justfood.org

Growing Power

Launched by former pro-basketball player Will Allen, this nonprofit operates urban farms in Midwestern cities. In 2010, its farm in Chicago's South Side employed 150 adults and 40 at-risk youth. Growing Power recently was awarded a $1 million grant from Walmart to expand its operations into 15 states. growingpower.org

Little City Gardens

In 2007, Brooke Budner found a vacant lot growing nothing but weeds near her San Francisco home. With the owner's permission, she and a partner developed a business selling city-grown salad greens. Today they are starting a CSA, a Kickstarter fund-raising campaign and educational programs. Says Budner: "We are young farmers in a nation with a food system gravely out of balance." littlecitygardens.com

GOOD FOOD PLUS COMMUNITY

- **USDA's food desert locator's** mapping tool allows users to locate and find out about U.S. communities that lack access to food stores: 1.usa.gov/13JkrVB
- **Five Borough Farm.** Urban agriculture in New York City: bit.ly/bj2sGU
- **Plantagon Skyscraper Farm:** 17-story experiment to open in Linkoping, Sweden by 2014: plantagon.com
- **Food Tank:** Founded by Danielle Nierenberg and Ellen Gustafson. Addresses this dichotomy: A billion people in the world don't have enough to eat, yet 1.4 billion are overweight: foodtank.org
- **Urban Gardens Web.** Do-it-yourself container and herb gardens, hydroponics, rain gardens, sky planters, window boxes and rooftop crops: urbangardensweb.com

PUTTING DATA CENTERS ON AN ENERGY DIET

Google

When you perform a Google search or download a song from iTunes, the data doesn't come from nowhere. It's stored in tens of thousands of data centers around the world. Inside these centers, long aisles of computer servers crunch and store data 24 hours a day.

Keeping them humming requires prodigious amounts of energy. A large data center needs as much electricity as a medium-sized town, with much of the energy going toward cooling the servers. Overall, data centers are responsible for about 2% of global carbon emissions, roughly comparable to the emissions of the airline industry.

Managers of data centers are under growing pressure to use energy more efficiently. EDF is helping through our Climate Corps program, which places business school students with leading companies, cities and universities to improve energy efficiency. Since the program began in 2008, EDF Climate Corps fellows have found energy savings at more than two dozen data centers around the United States. These programs are now becoming models for the entire data center industry as the companies we work with promote the impressive results they've seen.

Last summer, we sent Nathan Jayappa of Carnegie Mellon University to DirecTV, where in just a few weeks he devised strategies to slash energy use in the company's Denver data center. One simple fix he found was to raise the room temperature, since newer servers can tolerate higher temperatures than those manufactured just a few years ago.

Altogether, Nathan's prescriptions could avoid 18,000 tons of carbon dioxide—the equivalent of not burning two million gallons of gasoline.

"Data centers are a huge energy drain," says Nathan. "But there are simple things you can do to improve their efficiency."

EDF Climate Corps fellow Sukrit Sehgal spent the summer of 2011 in Atlanta at the world's second largest data center, which is operated by Quality Technology Services (QTS). Along with QTS engineers, Sukrit helped identify projects at three QTS facilities that could save 20% on annual energy consumption, by using better temperature monitoring and more efficient cooling. QTS plans to invest $10 million to implement Sukrit's recommendations.

After Sukrit completed his fellowship, QTS created a sustainability department—and hired him as its first director.

FIELD NOTES

Smartphones aid Maryland watermen

James Buck/Washington Post

Blue crabs? There's an app for that.

Maryland's blue crab fishery has been in trouble for decades, threatened by pollution in the Chesapeake Bay. But now, with EDF's help, 21st-century technology is coming to the rescue.

Seventy-five watermen participated last year in a pilot project that used smartphones and tablets to report catch data electronically from the water daily.

Maryland's crab fishermen have been plying the Bay since the 1800s, and their methods have changed little in decades. Counting how many crabs have been caught has relied on a paper-based system that's too slow to protect the ailing fishery.

EDF helped design the successful new program, and now we're recruiting more watermen to participate.

We're also helping the Bay's ecosystems in other ways. The main environmental problem is nitrogen pollution, much of it coming from fertilizer running off farms in the Bay's enormous watershed.

In partnership with farmers, we're reducing runoff, which will help eliminate biological "dead zones" in the Bay. Participating farmers have cut fertilizer use by 25% without reducing yields.

The goal? To build a sustainable fishery that for the foreseeable future will continue to supply tasty crustaceans to restaurants along the Atlantic seaboard.

Garbage in, energy out

If you're talking trash, you're talking landfills, since that's where most trash goes, despite aggressive recycling programs. In fact, the United States dumps more than 135 million tons of garbage into landfills every year, where it is covered by soil.

Once buried, however, food scraps, grass clippings and other organic waste decompose and are converted to methane gas, which leaks out. That's a big problem, because methane is a potent greenhouse gas.

Under the Clean Air Act, EPA is required to update landfill emission standards every eight years, but the agency last updated the standards in 1996. Because of legal action taken by EDF and our allies at Earthjustice, last summer EPA pledged to draft long-overdue rules. They'll be released later this year.

"There's no need for methane gas from landfills to contribute to global warming," says EDF attorney Peter Zalzal. "It can be captured and used as an energy source. EPA's new standards are a big step in the right direction."

THE GULF OIL DISASTER: THREE YEARS OF WAITING

APRIL 20, 2010

RIG EXPLODES

A BP-operated oil rig blows up in the Gulf of Mexico, killing 11 workers. Oil spews out of control.

MAY 31, 2010

FISHERIES TAKE HUGE HIT

Government closes more than a third of federal waters in the Gulf to fishing. Gulf fishing industry is devastated.

JULY 15, 2010

BP CAPS WELL

After 85 days and 200 million gallons of oil, the leak is finally plugged.

JULY 21, 2010

SEA LIFE THREATENED

Oil persists in the water, and thousands of oil-coated birds, turtles and dolphins, many dead, have been found to date.

OCTOBER 5, 2010

PRESIDENT OBAMA ACTS

The president creates a task force on ecosystem restoration. EDF pushes to make wetland restoration a top priority.

Cracking down on soot

In one of her last actions before leaving office as EPA administrator, Lisa Jackson finalized a new rule that will reduce the nation's soot pollution by 20% by 2020.

The new standards are in response to a lawsuit filed by EDF, Earthjustice and the American Lung Association, claiming that current standards inadequately protect human health. Studies show that exposure to fine particles, measuring one-thirtieth the width of a human hair, cause a marked increase in heart and lung disease and acute asthma attacks. Children and the elderly are most at risk.

EPA estimates the rule will prevent 15,000 premature deaths annually. Nonetheless, some in Congress vow to stop the rule, falsely claiming it costs too much. In fact, health benefits will outweigh the costs by more than 30 to 1.

Soot pollution is produced by everything from power plants to diesel buses to wood stoves. Today, more than 60 counties in eight states do not meet the new standards, including the metropolitan areas of Los Angeles and Houston.

Gretchen Alfonso, of Moms Clean Air Force, the advocacy group EDF helped launch, testified at a hearing in Philadelphia in support of the new rule. "I applaud EPA for finally stepping up for the health of our children," said Alfonso.

John Rae

A lawsuit by EDF and allies will clean up the air for our children.

Honoring EDF's Tom Graff

Tom Graff founded EDF's California office in a Berkeley attic in 1971 and pioneered the idea of harnessing market forces for environmental good. "If a resource is scarce, we ought to put a price on it that reflects its value," Graff said. He was the guiding force behind California's AB 32, the nation's first comprehensive climate law.

But above all he was known for his humanity: Even his opponents liked and admired him.

Graff died in 2009, but his legacy is carried on through the Thomas J. Graff Chair in the College of Natural Resources at UC Berkeley. The chair was endowed during Graff's lifetime through a generous gift from George A. Miller, who matched a Hewlett Foundation grant.

"Honoring Tom before he died was one of the greatest episodes of my life," says Miller. "He was my mentor and teacher."

Professor David Sunding, a former Clinton administration advisor, now holds the chair, which supports a faculty member whose scholarship advances sustainable water policy.

FOR BP TO PAY UP

FEBRUARY 28, 2012

DEAD CORALS FOUND

Scientists discover a "graveyard of corals," 4,000 feet below the surface, that has been devastated by oil.

MARCH 20, 2012

OIL FOUND IN FOOD CHAIN

A new study confirms that oil is working its way up the food chain through zooplankton.

JULY 6, 2012

RESTORE ACT BECOMES LAW

The president signs a bill assuring that most civil penalties will go to restoration. EDF played a key role in passing the legislation in Congress.

NOVEMBER 15, 2012

CRIMINAL CHARGES: BP SETTLES

BP pleads guilty to felony misconduct. Agrees to pay a $4 billion penalty.

JANUARY 30, 2013

TOXIC FINDINGS

Scientists find that the chemical dispersant used in the oil spill is 52 times more toxic when mixed with oil than oil is alone.

FEBRUARY 25, 2013

CIVIL CHARGES: BP STALLS

BP goes to trial in New Orleans rather than pay civil penalties. EDF and partners step up the pressure on BP to pay up.

Humans have the power to destroy the oceans.

In California, EDF is working to save them.

When we helped write California's Marine Life Protection Act in 1999, only 0.2% of the state's coastal waters were within fully protected marine reserves. Now the total is 13%. In all, California has designated marine protected areas covering 852 square miles of ocean. Coupled with national marine sanctuaries, these MPAs safeguard kelp forests and other key habitat for marine life such as sea otters, whales and rockfish. EDF scientist Dr. Rod Fujita assembled the science showing that protected areas boost fish populations dramatically.

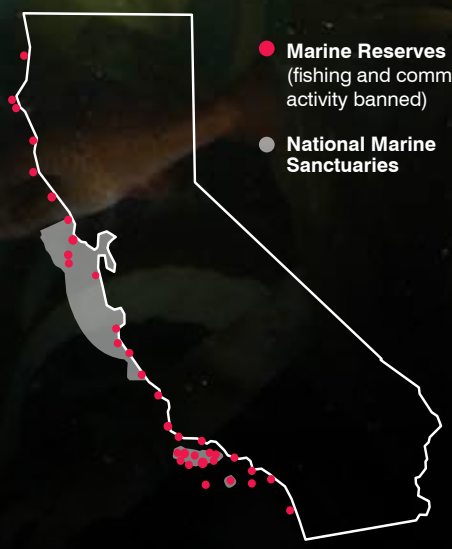


Photo: Norbert Wu/Minden Pictures