

SAGE MAGAZINE

volume IV, issue I



CHOCOLATE REVOLUTION

THE OTHER SIDE
OF THE MOUNTAIN

READER PHOTO CONTEST

\$ 6 US / \$ 7 Canada



SAGE MAGAZINE

volume IV, issue 1



Contents

Departments

- 6 Out & Around** Copenhagen Accord...ing to Whom?
- 10 Innovations** The German Package
- 41 Materials** Lightbulb Nutrition Facts
- 48 Listed**
- 50 The Cabbage** Fake News

Art & Prose

- 19 Reader Photo Contest:** Berkley Adrio
- 36 Reader Photo Contest:** Henry DeBey
- 49 Reader Photo Contest:** Kristin Tracz
- 54 Poetry** Dorothy Barth

Features

- 12 The End of Chocolate**
Judy Logback
- 20 Struggling to Survive in a Changing World**
Andre Mershon
- 28 Ruins and Restoration**
Chris Finney
- 42 The Other Side of the Mountain**
Marian Thorpe

Short Features

- 8 Reflections of a Researcher in Borneo**
Benjamin Blom
- 26 De- and Re-Mystifying Worms**
Frederica Helmiere
- 38 Ranger Black** Michelle Lewis
- 53 I'm on a Boat** Francisco Espinoza

Funding for **SAGE** Magazine was generously provided by the Office of the Dean of the Yale School of Forestry & Environmental Studies.

Please address all article queries, advertising inquiries and letters to the editors to:

sagemagazine@gmail.com

www.sagemagazine.org

SAGE Magazine • 205 Prospect Street • New Haven, CT 06511



SAGE Magazine is produced by a local printer on 100% post-consumer recycled paper by clean, renewable energy.



March Eighteenth Two Thousand and Ten

Dear and Most Cherished Readers:

Like a fine wine, or an overused cliché, with age comes sophistication. We would like to think of **SAGE** as a little grown up and like any good grown-up, we have gotten a little more serious.

We tossed out our old sophomoric jokes for vital self-reflection. After a year of meditation camp and thousands of dollars on yoga classes, we discovered our inner chakra and found what we were missing all along: we need to look closer.

In this issue, Ms. Helmeire shows us hidden miracles that exist all around us. Ms. Lewis presents to us the dark inner world of our beloved National Park Service Mssrs. Finney and Finney poke around forgotten beaches, looking for deeper meaning behind abandoned urban decay. Ms. Siart travels halfway around the world to learn the true story behind the much revered producer take-back.

In all this self-reflection, we see a magazine as a whole process. As Ms. Siart points out, we need to do a little producer take-back ourselves. That is why you'll see Reader Photographs throughout the whole magazine and winners of the reader photo contest highlighted in the . . .uh, centerfold.

Before we take ourselves too seriously, we would just like to add this...

Booger.

Strongest Affections,
The Editors



CONTRIBUTORS

EDITORS-IN-CHIEF

Nathan Karres
Elizabeth A. Thomas

SENIOR EDITORS

Thomas Chase
Gina Lopez
Brent Peich

CHIEF DESIGN AND LAYOUT

Thomas Chase
Elizabeth A. Thomas

MARKETING AND DISTRIBUTION

Brent Peich

ASSOCIATE EDITOR

Jacob O. Iverson

ASSISTANT EDITORS

Mary McGrath
Rich Press
Marian Thorpe

LAYOUT AND DESIGN ASSISTANTS

Marshall Duer-Balkind
Julie Goodness
Nathan Karres
Jack O'Wrill
Jamie Pool
Fauna Samuel
Grant Tolley
Dylan Walsh

ADDITIONAL SUPPORT

Matthew Garrett
Associate Dean Pilar Montalvo

EDITORS EMERITAE

Kate Boicourt
Joshua Berman
Laura Frye-Levine
Jed Holtzman
Simon Tudiver

WEBSITE & OUTREACH

Thomas Chase
Nathan Karres

WITH SPECIAL THANKS TO OUR ADVISORS

Paul Draghi
Fred Strebeigh

BEN BLOM will obtain a Master of Forestry degree in May 2010 from the Yale School of Forestry and Environmental Studies. Ben's interests include forest policy and management, as well as international development and conservation.

MARY FISCHER has a BA in Sociology and is currently a Master of Environmental Management candidate at the Yale School of Forestry and Environmental Studies. She spends much of her free time making experimental baked goods, and thinking about where she can travel next.

CHRISTOPHER FINNEY recently completed a Master of Environmental Management at Yale University, and lives in Boston, Massachusetts.

MICHAEL FINNEY is working toward a Bachelor's of Fine Arts in Photography at the University of Arizona.

FREDDIE HELMEIRE is in her final year of a joint degree program in Divinity and Forestry, focusing on the intersection of spirituality, ecology and justice. After completing her undergrad at Dartmouth she spent some time on a small island in the Philippines with the Peace Corps.

MICHELLE LEWIS is a candidate for a Master of Environmental Science and Master of Divinity degree at Yale. She spent twelve years working for the National Park Service at the Martin Luther King Jr. National Historic Site, Fort Sumter National Monument, Cuyahoga Valley National Park, and Cape Hatteras National Seashore. She is also an award winning filmmaker.

JUDY LOGBACK hails from the Kansas plains, but spent over eleven years in Ecuador helping found and foster the Kallari Association. She is a Moore Foundation fellow at Yale and completing a School of Management-School of Forestry joint degree. Logback continues to develop sustainable rainforest harvesting initiatives and is a board member of Eco-Madera.

ANDRÉ MERSHON spent two years in Mali with the Peace Corps and three years in Washington, D.C. managing international development projects. He holds a Master of Environmental Management from Yale and will be joining the US Agency for International Development as a Climate Change Program Specialist.

STEPH NIALI was born and raised in Melbourne, Australia. After fleeing the world of corporate environmental law, she came to Yale to study climate change policy. Her departure from corporate environmental law is permanent; the departure from Australia not so much.

SHANNON SIART hails from Phoenix, AZ. She received her B.A. in Biology from the College of Wooster in Wooster, OH, where she also minored in Political Science and German. Shannon's interest is in extended producer responsibility and industry take-back policies.

MARIAN THORPE graduated from Brown University, where she majored in Environmental Studies and Ethnic Studies. She is finishing her master's degree at Yale, where she has enjoyed exploring her interests in environmental justice, activism, and ethnic identity.

COPENHAGEN ACCORD...ING TO WHOM?

An insiders word on the mess that was the Copenhagen Climate Conference.

Stephanie Niall

At an early morning meeting in the Bella Centre, after having faced the full onslaught of the Danish winter, a delegate from one of the Pacific Islands whispered to his colleague, "One place off my migration list... I would rather float on my last [expletive] log than move to Northern Europe". Giggling quietly to myself I hailed this man as a comic genius, yet the wry expression across his frozen face indicated he was only partially joking. Amusement aside, this statement is unfortunate, because the outcome of the Copenhagen climate conference does not bode well for the future of his, and many other, island states. Refugees flowing from their sunken borders will need all the migration options they can get.

Even ignoring the weather, which was brutal, it was hard not to be left with negative impressions of Copenhagen—the whole event felt like a disaster from the very beginning. On the superficial level, the actual organization of the conference was an affront to supposed Danish efficiency. The queues to get into the conference center at the beginning of the second week beggared belief. It was so badly run, in fact, that you suspected it was a deliberate ploy on the part of the conference organizers to limit entry of the unprecedented number of NGOs (the fire regulations permitted a maximum of 15,000 in the Bella Centre, which was a little unfortunate for the 40,000+ people who registered).

One morning spent standing in line, however, hinted at pure incompetence on the part of the organizers: standing on my right was the head of the National Oceanic and Atmospheric Administration; on my left was the Mayor of Mexico City (who assured us that COP16, to be held in his city, would be far better organized)..

Delegates, high-level officials and activists alike were left at the mercy of the particularly officious and unyielding Danish military personnel in charge of shepherding us through the queues. In truth what we glimpsed was the socialist ideology for which the Danes are famous: the stuff up was applied universally and reasonably evenhandedly across all participants. Even Dr Rajendra Pachauri, Chairman of the Intergovernmental Panel on Climate Change, was forced to wait for a couple of hours before gaining admission to the conference center, and country delegates frequently waited in excess of 5 hours for registration. One lovely academic who, on a particularly freezing day, lent me her spare beanie waited over 10 hours, only to be refused entry. On this note, I would like to thank Vestas, who kindly provided free coffee to all those in line.... If I ever buy a wind turbine, I promise it will be from you. Who would have thought my guaranteed loyalty cost only \$2 and some warm milk?

What earlier on in the week was pegged as incompetence in queue management turned rapidly into obvious and deliberate targeting of NGOs and observer groups by the conference organizers. As the proportion of heads of state increased, paranoia increased exponentially and the proportion of NGO representatives decreased on a similar trajectory. As a result of the actions of one NGO during a protest day, collective punishment was threatened and the conference organizers announced the following day that no NGOs would be permitted entry. One of our law student classmates argued with the conference authorities for over 2 hours on the legality of collective punishment, threatening to sue (Oh, Americans!), and succeeded in

having this blanket ban lifted... but only to allow in 300 people (or 1.4% of the total observer presence). To his credit, the then Chairman of the UN Framework Convention on Climate Change, Yvo de Boer, noted this situation and openly lamented that the principle of civilian oversight had been completely discarded. This was particularly unfortunate given such oversight had previously been



A bicycle covered in snow near the climate talks in

considered a hallmark of these negotiations. Apparently his security advisors told him there was no alternative, given the record "VVIP" attendance (apparently the single classification of "VIP" is insufficiently discerning nowadays...). This admission did not help ease the frustration and anger of those NGOs who were completely shut out of the building—let alone the negotiations.

But the real heartbreak occurred inside the conference halls. On the negotiating floor, hope faded fast. The G77 (an awkward alliance of developing nations with a diverse range of interests) struggled to remain united. Rumor abounded—about secret versions of the draft agreements (some of these were true), about break-aways from negotiating alliances (also true)—destroying any shred of trust that

Final versions of the agreements were meant to be ready to submit to the high level plenary on the last Friday of the conference, but progress was excruciatingly slow. Negotiating blocks argued interminably over small, seemingly irrelevant details. Debates as to whether mechanisms should be called “programmes” or “frameworks” dominated (subjects that are comforting, easy, resolvable), as a means to avoid discussing the more fundamental and intractable issues. Developing country commitments; developed country responsibility; financing; intellectual property rights—it had been clear since the conference in Bali in 2007 that resolution of these was key to any future agreement. Despite this, they had been continually deferred since then—a hot potato thrown from conference to conference, without being allowed touch the negotiating room floor. That these issues were no closer to resolution so late in the Copenhagen process just added to the sense of frustration.

Another feeling that crept in, however, was one of futility: by this stage it was becoming increasingly clear that something was being developed at the higher level, out of the hands of the technical negotiators, and there was a good chance nothing in the lower level

texts would be carried over to any final agreement. On that final Friday, despondency set in. As the high level meeting carried on behind closed doors, the exhausted negotiators, left alone in the cavernous Bella Centre now devoid of the life and color provided by the NGOs, were all collapsed on couches. From this position, they suffered the indignity of watching via plasma TVs as years of their work was being unceremoniously discarded.

Top negotiators muttering under their breath, grim faced and fighting exhaustion, comforted only by their coffee and hot dogs (the highlight of the cuisine on offer at the Bella Centre... it was slim pickings in there).

And after all this what are we left with? The bare-boned and hurriedly negotiated Accord hangs in legal limbo (or purgatory). No mention of binding targets, no mention of the mechanisms by which the vast funds, offered to secure agreement from developing countries, will be secured. An agreement that, according to a document leaked by the UN Framework Convention on Climate Change itself, cannot limit warming to 3 degrees. This is in the face of a loose agreement to limit warming to 2 degrees, and comes as evidence mounts that a temperature increase of not more 1.5 degrees is required to avoid catastrophic and irreversible consequences for those most vulnerable. It also fails to specify how negotiations should proceed from this point, or clarify the role that the draft negotiated agreements, sidelined by the Accord, will play in any future discussions. Oh joy.

Standing outside the front of the Bella Centre, all day and in all weather, was a group dressed up in huge bird costumes, distributing books and strange vegan sandwiches, promoting their obscure cause which they managed to loosely tie to climate change. These “crazy bird people”, as they became affectionate known, were the most dedicated of anyone observed at the conference. If only such dedication, guts and fortitude had been displayed by all, we might have achieved a different result from Copenhagen. The crazy bird people were distributing a book called “Birds are my Friends” written by their “Supreme Master” Ching Hai. Although the text was not quite as dense or politically laden, it is probably about as constructive to global climate negotiations as the “Copenhagen Accord.” And you don’t even have to bully or buy off a most vulnerable country to get this: it is available to all from Amazon for a mere US\$12.50.



Copenhagen. Photo courtesy of Matthew Jokajty

might have carried the negotiations in a different direction. The hours were grueling, and the number of parallel sessions running at any time meant that smaller delegations had no way to ensure their presence at all—a real point of concern, given that particular words and phrases hard-won at earlier negotiating sessions, if removed, would be virtually impossible to reintroduce before the agreements were meant to be finalized.

Reflections of a Researcher

Day 1

Lonely is a poor word to describe how I feel on my first few days alone here in a remote Dayak village in Setulang, East Kalimantan, Indonesia. At home when I'm lonely, at least I have space to think about things. In this Dayak village I don't have that luxury. People are very curious about what I am doing here, how I got here, and whether I know any of the other white people who have visited over the last 10 years.

My trip to Setulang this summer is for research. I intend to interview Dayak people about a new carbon forest conservation project in the area. I wanted to understand what the villagers thought about the idea of saving trees to sequester carbon, even though the whole idea of carbon forestry is probably about as comprehensible as astrophysics to anyone who doesn't study in the fields of conservation and forestry. How do you explain global climate change to a villager who has never left his village? How do you explain carbon to someone who already values trees for spiritual and cultural reasons? Do the values of villager conservationists not matter to Western carbon forest conservationists? How do you convince people—who already have traded forest goods for thousands of years to people outside their community—that they should now start selling a good that they can't see, smell or feel?

Day 2

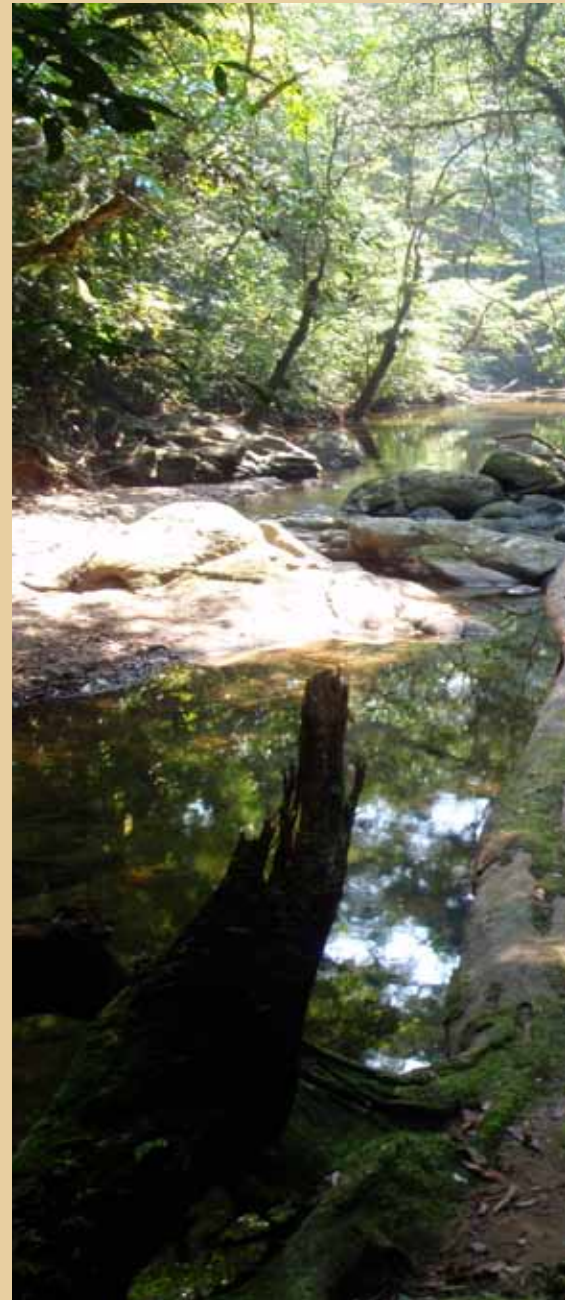
After pondering these questions for a few days in Setulang, a bigger question started to trouble me: what the **** am I doing here? The fear that I had been wrong to come to this part of the world started creeping into my brain as I gnawed on bony river fish with my host. I couldn't tell if I had been naïve or just plain stupid in setting up my research project. I came here with the goal of discussing an abstract concept with villagers who were sick and tired of

foreign visitors giving them abstractions and wanted Westerners to start giving them action and results. What could my visit as a lone graduate student provide to them?

Setulang was the first village that I visited because the story of the village was so interesting to me. In the late 1990s and early 2000s, most villages in the area had chosen to allow timber concessions in their village territory. Setulang was one of the only villages in the region that resisted this urge for rapid and easy income generation.

During every interview I conducted, villagers in Setulang told me that whether or not they received money for conservation, they still favored conserving their forest because the concept was a part of their identity. Without their forest they were just another village. They took pride in the fact that they held out against the money of big companies and foreign financed corporations. The villagers of Setulang had descended on the logging camp of a company that was operating without permission on village land. On their first foray they stole the keys to the logging machinery. On their second foray they entered the logging camp at night, stole the starters for the machinery, and brought the stolen equipment back to the village.

The people of Setulang are warriors, descendents of a people who defended their village with hand-made weapons and achieved spiritual satisfaction from hunting for the heads of other rival tribes. This warrior culture was hidden behind a veil of friendliness and hospitality. But I could still see the warrior in these people peeping from behind the shades, like the traditional headhunting sword that was displayed behind my host's satellite-fed TV as we watched a Chinese martial arts flick translated into Bahasa Indonesia. I



Headwaters of the Kapuas River. Kalimantan, Indonesia

couldn't keep my eyes away from that sword and what it meant to them now that heads weren't things that they hunted anymore.

Day 3

When playing soccer, the Dayak people of Setulang play with wild abandon. Their

rocher in BORNEO by Ben Blom



Indonesia. Photo courtesy of the author

version of soccer is a test of each players' strength, speed and agility. Short passes aren't even considered. Instead players attempt heroic and daring darts through the defense or whack the ball forward to open space where a fellow warrior will sprint towards the ball at full throttle, jumping over cow patties, dips in the

playing surface and terrified chickens. The women of the village watch from the sideline, identifying feats of strength in the men of the village. It is easy for me to imagine that the energy and athleticism that allowed the villagers to be heroic soccer players were once used to headhunt. The older male villagers are crafty soccer players, but not as agile as they once had been. However, they are not afraid to be physical with the younger and quicker players. These older men wear tattoos, scars and disheveled hair. They are short, but extremely powerful and hardened from years of upland rice cultivation, logging camps in Malaysia and pig hunting. They are the ones who had once led the charge into the enemies' camp, unafraid of death but smart enough to avoid it. In Setulang, it was believed that by returning home with trophies of war, a man could ensure the success of his family's crops. These soccer-playing elders before me are the ones who would always return to their home village with enough heads to ensure a bountiful harvest.

The younger male soccer players are strong as well, but more agile and inexperienced. They whack the ball around without regard for where the ball is headed, but what they lack in experience they make up for with athleticism and speed. In the old days, it was younger, speedy, athletic men who were once the most feared in battle because they lacked the experience to know which head to cut and which to keep intact. On the soccer field, the fearlessness of the older men still shines through when occasionally I see an older player stop an athletic, younger player on the field.

Day 4

I played varsity soccer back in the States, but here in Setulang I have to try not to make a fool out of myself. I just can't get used to their brand of soccer, which lacks the style of passing that I am accustomed

to. The Dayak connection to warrior culture is completely obvious to me. In Setulang, it takes more than athleticism to play soccer. After all, it took more than athleticism for these villagers to hunt for heads.

After the game ended today, they thanked me for playing and I walked to my host's home. The sound of chickens and the start of a generator replaced the roar of my imagination. We ate rice with bony river fish for the third time that day. I am thankful that for the first time, I am viewed favorably in the eyes of these people.

Day 7

As the days have gone by, I realize that I have become more comfortable in this Setulang village. I find that my fears about the irrelevance of my trip and my research were overstated. People have a lot to tell me about the past, their values and the ways in which they would like to see carbon forestry projects develop. They have asked me to pass this information along to the powers that be. After this week of data collection, soccer, visiting ladangs (upland rice fields) and eating river fish with rice, it is time to leave Setulang. The next village where I will do my interviews is 20 minutes away by motorized canoe. I imagine that the residents of this next village will have their own concerns regarding conservation and development, as well as their own ideas about how carbon forestry should be implemented and the compensation distributed. I don't think I will ever forget the feelings of fear and insecurity that I felt in my first few days in Setulang. While the wave of 'development' and deforestation that is currently spreading through Kalimantan may soon change every facet of village life in this region, Setulang will remain fixed in my mind, forever as it was when I leave it.

The German Package: Extended Producer Responsibility

Shannon Siart

I went to Germany last summer thinking I would find a silver bullet for sustainable materials management. At FES, I study industrial ecology, whose core vision understanding the resource demands and waste outputs of industry will enable us to create a more sustainable society. The objective is to transform waste (industrial, agricultural, etc.) into resources. I particularly am interested in policies that nurture industrial ecology. Extended producer responsibility (EPR) appeared to be the exact environmental policy I was looking for.

EPR makes producers responsible for their products at the end of their life cycle. Normally, producers are only responsible for environmental impacts of their products during the manufacturing and use phases. For example, car producers are responsible for the impacts of manufacturing and to some extent, the impacts of use by having to meet emission standards. An EPR policy would make car producers responsible for properly disposing their cars after use by the consumer. The idea is that making producers responsible for their products at disposal will encourage design for the environment. This means reduced waste and use of toxic substances.

Eager to explore the outcomes of implemented EPR policies, I headed off to Germany—the homeland of EPR—to study the German Packaging Ordinance, the dual system, and the infamous green dot.

In 1991, Germany implemented the world's first national EPR policy. The German Packaging Ordinance gave packaging producers responsibility for the take-back and recycling of packaging material. However, the Ordinance

allows packaging producers to rely on a third-party for fulfilling obligations. For example, a packaging producer can pay a third-party to collect and recycle all the packaging that the producer put on the market in a given year. Such third-party organizations are known as producer responsibility organizations (PROs).

Until 2003, there was only one packaging waste PRO in Germany called the Duales System Deutschland GmbH (DSD). A packaging producer who buys the DSD's services is allowed to print the DSD emblem—a green dot—on their packaging, signaling that the producer is fulfilling its take-back obligation. The DSD, in return, orchestrates an entire waste management system for packaging (called the dual system) that is separate from the municipal system. The DSD is responsible for ensuring that the dual system fulfills recycling quotas mandated by the Packaging Ordinance.

Today, fulfilling the quotas is unproblematic. However, immediately after enacting the Ordinance several challenges emerged. At the time, the recycling capacity in Germany was not sufficient for meeting the quotas demanded by the Ordinance. The DSD went bankrupt and had to be propped up by the packaging industry. Subsidized exportation of packaging waste undermined recycling systems of other EU Member States, and illegally disposed packaging waste caused a series of scandals. The Packaging Ordinance was altered and re-enacted in 1998 in an attempt to address these issues. It has since been amended five times.

Even with these challenges, the German Packaging Ordinance is cited as one of the few EPR policies to achieve significant

and positive changes, including an absolute reduction in packaging waste—an achievement no other EPR policy can claim. I arrived in Berlin eager to learn how this model of EPR succeeded where others failed. But as I began to analyze the data, I found there was a story behind those numbers that wasn't being told.

The German Packaging Ordinance achieved an absolute reduction in packaging waste from 1991 to 1996. Unfortunately, studies in English that investigate outcomes of the German Packaging Ordinance only describe this time period. However, if there were a continuous narrative on the Ordinance, then we would realize that packaging waste production in 2007 exceeds 1991 levels. Thereby making the claim that the German Packaging Ordinance was the only EPR policy to achieve an absolute reduction false. This is the conclusion that I came to after sifting through numerous German studies and compiling two decades worth of data.

There are other interesting twists in the story of the German Packaging Ordinance, which I stumbled upon. One is the contentious issue of protecting the reusable bottle market for beverages against one-way beverage containers. In Germany, there is a decade long battle still being waged between reusable and one-way beverage containers. The German Packaging Ordinance attempts to protect the reusable beverage container market by mandating that if the market share for reusable containers drops below 72%, then a mandatory deposit-refund scheme will be implemented against one-way beverage containers.



Rolls of sheet steel awaiting shipment at a steel factory. Photo courtesy of Richard Press.

Even under protection of the Packaging Ordinance, the reusable beverage container market fell below 72% in 1997 and has continued to fall since. Instead of deterring consumers away from one-way plastic water bottles, the mandatory deposit-refund scheme as inspired an entire culture around collecting and returning plastic water bottles for money. It is true that purchasing a plastic water bottle is more costly because of the 25 cent Euro deposit for each bottle, but this deposit is refunded once you bring the bottle back to any grocery store. The deposit-refund scheme has simply made consumers more diligent about returning their plastic bottles and has made it profitable for people to scour trashcans and the streets for discarded plastic bottles, but has not protected the tradition reuse systems.

While the German Packaging Ordinance has achieved high levels of recycling of packaging waste, some of the other goals such as waste reduction and protecting reuse systems remain unattained. Yet, Germany's recycling system is held up by the world as the poster-child of success. What does this mean in the context of achieving sustainable waste management and recycling practices when the leading example is still found wanting?

It means that the world has not yet found the ultimate solution for waste and materials management that will lead us to sustainability. Ultimately, I went to Berlin to confirm EPR as the policy answer to eliminating a wasteful society. Instead I found what anyone who ever sought a silver bullet has found: solutions are never

easy, and always have a price. EPR is extremely complicated. Its achievements are far from straightforward, and its outcomes vary greatly depending on the specifics of legislation, which is clearly exemplified in Germany's case.

Despite shortcomings, the German example shows that EPR has achieved very high recycling rates and will remain a prominent policy tool in the field of waste management. My experience just illustrates that the world should not be satisfied with the status quo model of EPR because there is still much room for improvement. Hopefully, knowledge of Germany's Packaging Ordinance will enlighten policy makers, encourage intelligent innovation in policy and push the envelope for materials and waste management.

CHOCOLATE REVOLUTION



Scores of pods from a single cocoa grove demonstrate the range of genetic diversity that blends to create a symphonic flavor profile in Kallari chocolate.

Photo courtesy of John Gwillam

Judith Logback

Throwing off scarf, mittens, jacket and boots at the door, I rush to the kitchen table and climb up on a chair. I lean forward on the table, wrap my hands around my warm mug and breathe in the aroma of hot chocolate before taking a sip of the delightful smooth liquid with floating white puffs. My first memory of drinking chocolate on a winter day is unforgettable, but the classic comfort food has taken on a whole new meaning for me thirty years later. I am a tropical biologist, but my most valuable skill in Amazon conservation has turned out to be chocolate making. Chocolate has emerged as

the most powerful ally Amazon people have to save their rainforests, protect their cultural traditions, and provide for their family needs.

In 1997, the parents and teachers of rural rainforest schools in Amazon communities asked me to help them forge a direct link to international markets. This assignment required the heroic efforts of scores of indigenous staff as well as the over a thousand artisans and growers, to form the Kallari indigenous cooperative. Scores of foreign volunteers like myself have served as a crucial link to help with quality control, export, and marketing

of Kallari handicrafts directly to North America and Europe. Kallari's next task was to learn chocolate making and create a line of chocolate bars. After more than a decade of hard work, the Kallari Association cooperative of indigenous cacao growers from the Kichwa Nation are selling their own brand of chocolate throughout the U.S., and receiving 100% of the wholesale profits thanks to a no-interest start-up loan. The income boost from annual cacao harvests has proven to be an excellent alternative to the petroleum and mining industries that threaten the delicate balance of the lowland rainforest ecosystem. Chocolate

has brought renewed hope the Napo rainforests might survive this century.

Colonial Policies Persist in the Modern World

Cacao, also known as cocoa to English speakers, is the leading income for over 40 million producers worldwide and is presently the world's second most valuable commodity, in value traded per year, behind petroleum and just ahead of coffee. Botanists have located the botanical origin of cacao in the Amazon, but less flavorful beans cultivated in Africa dominate the market with over 60% of the total world production.

In the generations since the European invasion of the Americas, profits from forced labor in colonial cacao groves bolstered imperial economies. Despite the liberation of various colonies from the oppression of European command hundreds of years ago, cacao producing nations continue to export their beans for a pittance of the retail value of the chocolate in Europe or North America. The low prices force most of the world's small cacao growers to maximize the annual harvest per acre. To increase cacao yields, they must eliminate the fruit and hardwood trees necessary for their family's nutrition and housing and overplant their small plots with cacao. Chocolate makers contend that commodity prices for cacao are at one of the highest levels of the century, however these same multi-national corporations are not advertising that chocolate bar prices have increased on par with inflation. Cacao prices have not adjusted for inflation over the past few decades. The chocolate industry has become more consolidated, meaning that today the majority of the world's cacao harvest is ground by only three corporations: Callebaut, Archer Daniels Midland, and Cargill. The increasing power of these firms has forced low prices upon the various cacao producer nations, as the nominal or 'inflation-adjusted' prices for cacao are parallel with the same income farmers received in the early 1980's.

Kallari is Born

I first arrived in the Ecuadorian Amazon, in 1997, as a bright-eyed young conservation volunteer enlisted to serve as the sole staff member of an inept Environmental Education Program. My two-year volunteer commitment was



Bartolo Licuy gingerly harvests a ripe cacao pod with pruning shears. Photo courtesy of John Gwillam

to resurrect the program by working closely with the indigenous rainforest-villages in the buffer zone of a small conservation reserve. With the support of park guards to translate into Spanish from the indigenous Kichwa language, I interviewed parents and teachers in seven small isolated rainforest communities. I asked them "During my next two years as a volunteer, how can I help you keep your rainforests?"

They responded wisely and suggested the formation of an artisanal and agricultural cooperative. "We want you to find direct markets in other countries for our handicrafts and crops!" exclaimed one community president. Another parent mentioned: "You should help us increase our agricultural production and teach us to improve the

quality so we can get better prices." The most popular answer was: "Eliminate the intermediaries." Finally, a school teacher summed up the task: "If you can find a way we can make a living without cutting down our trees, then you will be helping people".

In the shadow of a looming economic depression that crushed the national currency and forced the 250 year old Republic of Ecuador to surrender to dollarization, Kallari's first landmark achievement took shape. I helped four of the rainforest communities sell rainforest seeds from fruit and hardwood trees to a reforestation project. I brought the seed order requests and price sheets and shared them with the leaders and teachers. They immediately set about dividing up quotas per family, in order to distribute the earnings equally among all the families of each village. Mostly women collected the seeds and brought them to the school for accounting purposes. I transported them to the buyer and in a few weeks a new market emerged with minimal natural resource impact. The initial sales from three months of seeds sales were nearly \$10,000. I earned the trust of a few hundred rainforest families, and the first cooperative harvest was a smashing success. Twelve years later, the cooperative has grown to several thousand members and the Kallari Association is beginning a revolution. The Amazon members of this small cacao cooperative are no longer subjects to low prices for cacao paid by multinational chocolate corporations. The indigenous farmers are processing their own cacao beans into chocolate and earning 100% of the profits from their hard work.

Creating a Gourmet Flavor Profile

The art of chocolate making practiced by large corporations has taken several hundred years to evolve. However, one of the world's leading chocolate technicians, Tomas Keme, claims that the quality of Kallari cacao beans grants them an opportunity to make a bar parallel in flavor to those of famous gourmet chocolate corporations with generations of experience. The advantage is



that farmers provide beans directly from their own farms, and Keme reports that 80% of the flavor in a chocolate bar is derived only from the quality of the bean. Most chocolate makers have the opportunity to purchase good beans, but only cacao growers like Kallari can supervise the harvest, collection, fermentation, drying and bean selection to create a pinnacle flavor profile.

On a cool evening in the Amazon town of Tena, Juan patiently awaits a small pick-up truck. The muddy Toyota finally approaches, rumbling up the rock road with its lights glimmering through the deafening downpour. The driver is returning from a circuitous route passing through both of their communities; he brings news from Juan's family. The work of placing squishy part-fermented cacao beans into the wooden boxes takes priority, but Juan looks forward to chatting briefly once they finish.

Juan Andi works at the cooperative center and is one of the staff responsible for fermenting and drying the annual harvest more than fifty tons of valuable cacao beans. He jumps to action and climbs up the stairs between wooden fermentation boxes filled of several thousand pounds of moist beans. As he works, Juan coughs and turns his head outward to gasp for air. His lungs are left weak by concentrated alcohol and acid in the air similar to the scent given off

when opening a tawny port wine bottle.

The driver backs up the truck centimeters at a time, gingerly approaching a shed where Juan and two other Kallari staff will unload the four tanks of fresh cacao beans into wooden boxes that allow a precise fermentation of cacao beans. The 2,400 lbs of pulpy beans from today's harvest, with a sweet-acidic fruity flesh coating each one, are in the middle of their transport. One day before, Juan's wife and cousins, as well as the other three-hundred families on today's route, used machetes to harvest, cut open pods, pluck sticky beans out of the pods and drain off part of the sweet acidic juice. Today, everyone returned to the cacao orchards to bring their harvest out from their groves to the roads, bridges and river ports. The growers left

their homes well before dawn; some carry the beans on muddy trails to the limited road system. Families far from roads will float dugout canoes on Amazon tributaries until reaching a port or bridge the truck can intersect.

Two other men help Juan to open the wooden tailgate on the truck, carefully unload a massive scale and begin dipping sturdy buckets into the large tanks of fresh beans. The men cautiously remove the beans and pass full buckets up to Juan, who then pours them into wooden boxes. It is an arduous, but necessary, process to assure high-quality cacao fermentation. The high lipid content of cacao commands that it should not come into contact with metal or reactive plastics for longer periods of time. Industrial augers and conveyer belts would likely upset the flavor of the beans. Until they create a more time efficient process that does not threaten the flavor of the moist beans, Kallari will continue cautiously transporting the beans only a few gallons at a time from the truck to the boxes. Less than twenty beans are dropped, but each time the guilty person makes an immediate glance downward, more to avoid other stares and demonstrate remorse, than to follow the path of an individual bean.



Cocoa in its various forms: cocoa pod with the fresh, slippery beans, dried beans, roasted and shelled beans, and in the bottom right corner the beans have been ground into a rich cocoa powder after the roast. Photo courtesy of Sarah Rhodes

Any soiled beans that fall on the ground or in the truck bed are unfit for export. The imperfect beans will be separated from the batch and later sold to local intermediaries for a bargain price. Nothing is wasted, but the goal of each member of this team is to get as much of the production to the best market possible. Their friends and family that have labored arduously to bring in today's harvest, and it is now the responsibility of Juan and his cohort to follow through with each step to the best of their ability.

Juan is relieved that they will satisfy the demands of their bean and chocolate buyers; however, each harvest is a tremendous commitment for over 1,000 families. He knows that their long days of physical labor will carry on three or four days a week for the next five months until the harvest wanes and they focus more on the drying and selection process. The bean fermentation is merely one step in the process of making a great chocolate, but it is definitely the most important one. It offers Kallari a chance to do something no other corporate chocolate maker can do. These farmers control the quality of the bean from planting each cacao seed all the way through delivering finished bars to retail markets.

Cacao Grower and Chocolate Apprentice

I watch over the shoulder of Enrique Cerda my twenty-two year-old apprentice. I am lightheaded from breathing intoxicating fumes of passion fruit, cherries and mahogany. The chocolate aroma permeates the small workroom; part of it emerges from 100 lbs of chocolate blending in mills in the nearby room. A separate conching machine on the floor below us magnifies the floral bouquet of smells, pulverizing 900 lbs of cacao beans with massive granite cylinders and a six-inch thick granite slab. Each thump of a one-ton roller in the *mélange broyeur* machine vibrates through the soles of my feet as it grinds and blends the cacao nibs only meters below us.

Enrique carefully stirs two-gallons of viscous molten chocolate with a large spatula, letting it slowly cool in a giant

stainless steel pot. Despite shivering from lack of sleep and the cool 65 degree atmosphere needed for crystals to form as the liquid chocolate cools and hardens (a complex process called tempering), I cannot help but smile and see my own joy matched by his wide grin and a sparkle in his eyes. "Excelente!" I scream, over the roar of the chocolate milling machines, expressing my praise and excitement for Enrique.

Enrique will continuously stir for 30 minutes to guarantee that the desired crystals are distributed throughout the molten mass; once the dark liquid mass reaches 91.5 degrees F, he will remove the pot from the cool water bath and work with a team of four other staff to hand-mould the chocolate into a few hundred small bars in tonight's ten hour shift. The destination for the bars are varied: the Marriott Hotel gift shop in Quito, Ecuador, a few hours from this sparingly accommodated chocolate workshop, gourmet food stores in North America, and Torino, Italy for the Salone de Gusto food festival.

The process of preparing the desired Phase V crystal structure to create a gourmet dark chocolate bar is nothing new to science; this art has been practiced for more than two centuries at high quality chocolate makers throughout Europe and North America. The new wrinkle is that the chocolatier Enrique Cerda, trained specialist in cacao roasting, conching, tempering, molding and



even truffle-making, is working at a factory only one day's drive from his own small grove of cacao trees. The artisanal chocolate bars Enrique is molding are not just an economic achievement for cacao growers; in over one hundred blind tastings across North America it has earned the highest marks when matched against the leading European gourmet chocolate makers. The delightful taste is attributed to various factors, including the fruity / floral notes of the Amazon varieties of Kallari beans, the light roast and the brief conching technique we developed.

This step Enrique participated in during 2005 was the first time indigenous cacao growers would earn the full profit from their own gourmet dark chocolate bars, forever releasing them from the reliance upon commodity markets for cacao. In 2010, most cacao farmers still suffer the same fate Kallari farmers did before the

cooperative formed. Dispersed farmers individually sell their harvest to regional intermediaries. The middlemen or intermediaries transport the harvest and sell beans at double the price to distributors and exporters. Most cacao beans pass through several brokers, traders, and distributors before arriving at the warehouse of chocolate makers in Europe and North America. There is no profit sharing with producers to reward their hard labor.

With the revolutionary advantage of making their own chocolate bar near their fields, branding it themselves, and exporting directly to international markets, cacao farmers from the Kallari cooperative now earn five times more per pound for their harvest than in 2001. The process of collecting, fermenting, drying, classifying and exporting their own beans has further provided ten full-time jobs for this small cooperative and has encouraged young people like Enrique to complete their studies and receive a high school diploma. The time when Kallari farmers were dependent upon the whims of commodity markets and price fixing has become part of the past.

Will the chocolate industry ever be the

same? Since colonial times chocolate has been treasured in Europe and recognized as delicacy for citizens of affluent nations to enjoy. In the past barriers to enter this competitive market prohibited grower organizations from creating their own chocolate bars, much less have a chance to eat the enticing concoction derived from their harvests. Kallari members hope their work will inspire other cacao growers to process their own cacao beans and eventually topple the corporate oligopoly of chocolate.

Revolutionaries

Carlos shut off his alarm and flicked on the light switch to the bare bulb that dangled from the rusty tin roof of the small wooden house. It was 1 a.m., and he has just enough time to bucket cool water over his head from the rainwater holding tank behind the house, put on a freshly pressed white shirt, and touch up his jet black hair before walking to the regional bus station. His colleagues will meet him to catch the 2 a.m. bus from the small town of Tena, the capital of the Napo Province in the Ecuadorian Amazon. In six hours, the men arrive at the industrial section of Quito, the political center and highland metropolis of Ecuador. The trip is a pilgrimage with

the potential to influence the lives of the forty million cacao growers throughout the world and help halt tropical rainforest destruction.

In the north end of Quito, these four Amazon leaders will humbly admit to friends and co-workers that they consider themselves revolutionaries in a socialistic movement to turn back five centuries of colonial domination in the heart of South America. They are the elected leaders of the Kallari Association, a rainforest cooperative that has a mission of promoting economic viability, natural resource conservation, and cultural preservation. Kallari villages aim to combat the negative impacts of globalization that led to poverty, rainforest destruction, and threats to unravel the Kichwa indigenous traditions still vibrant in their Amazon communities. Their weapon of choice is gourmet dark chocolate.

On the production floor of the Quito factory, 60,000 bars of the 2008 Kallari shipment destined to be distributed in 200 stores of U.S. natural food retailer chain Whole Foods were awaiting a quality control inspection by the Kallari leaders. Despite only three years of training in chocolate-making, Carlos is one of the

Moist cocoa beans on the wooden surface of the solar greenhouse, where they will slowly release humidity from inside the bean for up to ten days. Photo courtesy of John Gwillam





After days of fermentation, Luis Poveda pours the cocoa beans from a fermentation box and will place them in the solar greenhouse to dry. Photo courtesy of John Gwillam

leading experts in Ecuador on the flavor analysis of chocolate beans. His experience and intuition earned him election as Director of Marketing of the farmer's association.

The others deferred to Carlos's expertise, and his final approval of each production lot of the chocolate shipment would release it for departure to Whole Foods Market, the world's largest all-natural culinary retailer for affluent consumers. Kallari was fortunate to receive a no-interest loan from all-natural deli-meat entrepreneur Stephen McDonnell. McDonnell helped the cooperative jump forward over more than a decade of painstakingly slow growth, by connecting the cooperative to Whole Foods, and providing a loan large enough to allow for large production at a modern chocolate factory. McDonnell organized national distribution, loaned his office as a work-station for the budding Kallari Chocolate Company, and lent his expertise in the natural foods industry - all free of cost.

This moment in August of 2008 was a turning point, it was the first time indigenous cacao growers could receive the full profits of the chocolate made from their harvest.

Anthropologists dispute how many millennia the ancestors of Kallari land-owners inhabited the region before the

arrival of European explorers. The Napo Runa, also known as the Lowland Kichwa Nation, are estimated to have arrived no less than 10,000 years before today. Their ancestors fostered biodiversity in the fragile ecosystem they inhabited. Kallari farms are part of a thin strip at the Eastern foothills of the Andes where the Amazon Basin begins. Conservation International recently noted the world's top regions of high biodiversity and anthropogenic threat of habitat destruction, naming them Megadiversity Hotspots. They selected the Tropical Andes, where Kallari is located, as the world's premier Megadiversity Hotspot.

One example is a small biological station centered amongst Kallari farms; it boasts one of the highest species counts and best long-term conservation levels for herpetology. The 20 square kilometer reserve named Jatun Sacha is home to 530 species of birds, more than half the number found in the continental U.S. The tiny parcel is a representation of the biodiversity found in the Kallari family rainforests.

Unfortunately, without economic incentives to preserve this world-renowned ecosystem, it may disappear in the next century, as powerful logging companies cross eastward over the Andes from the western Chocó forests of Ecuador. This nearby region of was once similar in biodiversity counts to the Kallari area.

After fifty years of intensive logging, Chocó forests have been stripped to less than 3% of the original stands. Petroleum reserves also threaten the Napo forests, because the single most important export of Ecuador is crude oil. The publicity generated by the lawsuit against Chevron, which purchased the ownership of Texaco, is just one example of the various cases of environmental mismanagement and hazardous pollution carried out by foreign and national oil corporations working in Ecuador.

Carlos has worked growing cacao trees and participating in the family harvests of cacao and other subsistence crops since his youth, on a small farm located on the bank of the Napo River. His family struggled to help him complete high school, but a nationwide economic crisis in 1999 destroyed his hopes of finishing college. Three years later, he enrolled in night classes and continued his coursework while working full time as a staff member of the small Kallari project. As he prepared his thesis research on vanilla for academic review, Carlos and I learned from the recommendations shared by international volunteers. We developed a series of technical advances that paved the way for Kallari to compete with the corporate giants of the chocolate industry.

When other cooperative staff doubted their own ability to make and sell chocolate, Carlos alone trusted my intuition to use an 800-pound batch of beans for chocolate production in a small Andean factory. His crucial contribution was perfecting cacao bean fermentation and applying the method his mother used to roast the beans for chocolate production. He worked for several years alongside a Canadian chocolatier, who helped him master the basics of making chocolate. Carlos, in turn, continues to teach scores of Kichwa youth, including Enrique Cerda.

After working with cacao producers in Ecuador, I contend that over the next century most chocolate manufacturing processes will be converted to in-country processing, close by the cacao groves. Kallari is one of several chocolatiers operating in the same nations where

cacao is produced. Others include El Rey, Venezuela; Santander, Colombia; El Grenada Chocolate Company, Grenada; Madecasse, Madagascar, El Ceibo, Bolivia; and Omanhene Cacao Bean Company, Ghana.

Conservation Impact

How can Kallari control deforestation within the region? It is a complex issue, and Kallari leaders admit it cannot be achieved with high prices for cacao beans. The leadership has established sweeping regulations and community extension programs to foster conservation and high quality standards amongst the member farms. Kallari landowners currently grow cacao on less than 2% of their total properties and include an average of 50 species of hardwood

and fruit trees in their cacao groves. In addition, the cooperative has organic and Rainforest Alliance certification programs that require annual visits to each farm. The third-party certification offers the cooperative a way to establish high parameters for both environmental sustainability and social responsibility.

In the past two years the cooperative members have planted thousands of fruit and hardwood trees in their cacao groves to increase the biodiversity of tree species and maintain the quality flavor of the beans through diverse plantations. Most of the 900 rainforest families of Kallari have small plots of cacao groves in the nutrient rich alluvial soils lining Amazon tributaries. The cacao harvest offers them a stable income

to provide for their families' economic needs and meanwhile maintain rainforest biodiversity. The conservation is not a mere side affect. The rainforest is an integral of the Kichwa culture and identity.

Amazon families have demonstrated their initial commitment to seek economic alternatives and forego deforestation; they have proven they can provide for their families without caving in to the offers of petroleum or logging interests. Their success could be a turning point in rainforest conservation, the quest biologists have struggled to reach for several decades. The acceptance of the Kallari chocolate bar into foreign markets has served as an inspiration for the world's millions rural families who derive their income from cacao or other commodity goods. Because the Kichwa organization has proven successful with their daring product launch, other growers are considering taking on the challenge of local processing. Most of the world's cacao farmers currently earn less than two dollars a day for their efforts. The visionary members of Kallari are out to change the system entirely. They have proven that cacao made into chocolate locally can solve the global disconnect between rainforest conservation and economic development.

Postscript: Kallari gourmet dark chocolate bars are presently available at more than 250 retail locations across the United States, and will soon enter market trials in the four Scandinavian nations and mainland China. Kallari Association has accessed most of the financing necessary for the construction of their own chocolate facility in Tena. Judy Logback SOM/FES '10 received the Moore Foundation scholarship to finance her graduate studies. Upon graduation this May, she will continue to serve Kallari and other Amazon rainforest partner organizations in developing business endeavors that generate sustainable incomes.

In May of 2009, the Ecuador granted Ivanhoe concessions to petroleum resources nearby Tena. The Canadian company is proposing the Heavy-to-Light refining process which utilizes sand. These untested methods are presently not permitted for use in North America.

Arturo hand molds molten chocolate after tempering. Photo courtesy of Nicole Cooper



ARTIST'S PORTFOLIO

BERKLEY ADRIO

SAGE reader Berkley Adrio won the Spring 2010 Reader's Photography Contest.

"Sometimes, it's easy to get so wrapped up in your research question and the mechanics of your study system that you forget where you are. But when I slow down long enough to take a photo, I realize the savanna's thorns are just as rare and beautiful as its lions."

YOUNG LION 2007
Hluhluwe-iMfolozi Park
KwaZulu-Natal, South Africa



ACACIA 2007 Hluhluwe-iMfolozi Park KwaZulu-Natal, South Africa

The West African nation of Niger symbolizes the struggles of the world's poorest nations to adapt to global climate change—a problem they did little to cause. As the United Nations and other aid agencies rush to respond, this report from the field puts a human face on the challenge.

The sun is rising towards its zenith in a cloudless sky as we drive across a flat, sandy landscape punctuated by scrubby acacia trees armored with inch-long thorns. We are in Niger, a few miles south of the Sahara, on a mission for the United Nations Development Programme (UNDP), attempting to find the exact spot where we will meet a group of local farmers and herders to talk about the impact of climate change on their lives. Our driver stops our Toyota Land Cruiser 4x4, the standard vehicle for international development workers the world over, to let a family of nomads cross the road. They amble by, herding sheep, goats, camels, and carrying a few possessions. The road dwindles to tire tracks in the dirt as we pass millet fields and an occasional village of mud huts. The huts are square and low-slung, built from mud bricks in an adobe-style, well adapted to the arid landscape.

In wetter locales, these houses would dissolve within a few days, but here they only need to withstand a dozen or so heavy rains every year. At the edge of one village, a donkey hitched to a long rope walks slowly across the plain, pulling water from a 100 foot deep well for thirsty herds of cattle. After stopping to ask directions from a woman carrying a load of firewood on her head and a baby in her arms, we arrive at our destination: a tree seemingly in the middle of nowhere.

Far from being in the middle of nowhere, however, we are on the front lines of an emerging global effort to help the

world's poorest people find ways to adapt to a changing world and avoid the worst impacts of climate change, a problem they didn't cause but nonetheless will have to face. Under the tree, a dozen people are awaiting our arrival for an important meeting. The assembled group will be among the first to receive assistance from a pilot project to help communities confront the challenges posed by climate

as fundamental shift towards integrating climate change considerations into all levels of planning and management. This shift is important because climate change threatens to undermine or fundamentally alter many of the natural systems and processes which provide food, clean water, and a stable environment. These alterations will be felt more quickly and profoundly in countries like Niger where people depend directly on natural resources for subsistence.

My guides for this work are Katiella Mai Moussa, the coordinator of the CBA initiative in Niger, and two of his colleagues. All three are experienced development workers, intimately familiar with both the daily struggles faced by the average Nigérien and the mechanics of the international aid system that funds projects like this one. Like them, I've seen development from different perspectives, starting as a Peace Corps volunteer in neighboring Mali, where my home for two years was a remote farming village with no electricity, phones, or running water. After Peace Corps, I managed multimillion-dollar development projects in West Africa for the U.S. Agency for International Development, where I observed the inherent contradictions facing the international aid system. Based on my experience in the region, UNDP asked me to travel to Niger to help field test and refine an innovative tool for monitoring CBA's

progress. This tool is based on community workshops and will eventually be used in all ten CBA countries.

Working directly with local communities is essential because, while climate change is a global problem, its predicted impacts, such as higher temperatures and changing rainfall patterns, will be felt locally in millions of communities around the world like the two we'll visit today. Our mission is to interview community members and get their perspective on climate change's impacts and how we can help them deal more effectively with these changes. This learning process is important, because adaptation efforts

STRUGGLING TO SURVIVE IN A CHANGING WORLD

André Mershon

change. This project, called Community-Based Adaptation (CBA for short), is a 5-year effort by UNDP—funded by the Global Environment Facility—to assist communities in ten countries to adapt to changing climatic conditions.

The CBA project is one example of how international aid agencies are starting to help poor, vulnerable countries adapt to a changing climate. UNDP, one of the aid agencies leading the charge, defines adaptation as “a process by which individuals, communities and countries seek to manage the consequences of climate change.” UNDP views adaptation

require locally-appropriate approaches. In a country like Bangladesh, where millions of people are threatened by sea level rise, building sea walls or discouraging construction in low-lying areas are possible adaptations. In arid countries like Niger, introducing more drought-resistant varieties of staple crops is one possible adaptation.

change) represent less than one tenth of one percent of global emissions, but the potential ramifications of climate change for this impoverished land of 13 million are a powerful reminder of the inherently unequal impacts of this most global of environmental problems.

The average Nigérien earns only about

year round, making it one of the hottest places on Earth.

Under the tree near the village of Ardo-Choro, the heat is stifling. Many of the meeting's participants wear turbans to protect themselves from the pounding sun. I'm told later that 30 years ago only the nomadic Touareg people, who live



Villagers participating in the meeting at Sabaru. Photo courtesy of the author

Niger (pronounced 'nee-jeer') is a place unfamiliar to most, making it an unlikely candidate to represent the challenge of climate change. This former French colony in West Africa is among the poorest countries on Earth. This year, it ranked dead last out of 182 countries on the United Nations Human Development Index, a global ranking of development based on indicators such as life expectancy and school enrollment. It is also one of the most remote, 360 miles from the nearest seaport and more than 1,400 miles from a McDonalds. Niger's emissions of carbon dioxide (the principal greenhouse gas responsible for climate

\$2 per day and depends directly on the environment for food and income. Most people farm hardy crops like millet, herd cows and goats, or collect wild products for sale. Due to Niger's arid climate, these climate-dependent livelihoods provide little more than subsistence even in good years. The rainiest parts of Niger receive only about one half to one quarter of the rain that falls on the well-watered eastern coast of the United States. Precipitation is almost exclusively confined to a short rainy season from June to September. Three-quarters of Niger is desert, and daytime temperatures hover near 90°F

almost entirely in desert conditions, wore turbans. Now, everybody wears turbans, anecdotal evidence that the strong winds and high temperatures, once characteristic of the Sahara, have become commonplace farther south in Niger. The idea that average temperatures here will likely get hotter with climate change seems unconscionable.

While I'm offered the only available chair, Katiella and his colleagues sit comfortably on mats. It's immediately clear, as they skillfully coax the assembled men and women into answering our questions, that they have led similar meetings before. The participants are all herders and



A woman expressing her views at the meeting in Sabaru. Photo courtesy of the author

farmers, traditional ways of life that have been under enormous stress recently. Climate change may seem like an esoteric concept until you listen to the people of Ardo-Choro. For them, climate change is very real, even if there is no word for “climate” in Hausa, the local language.

The signature feature of climate change in Niger is drought. Average rainfall has been declining over the past 30 years and during this period the country has experienced several devastating droughts. During the 1975 to 1985 drought approximately half of Niger’s livestock died. In 2005, drought combined with a locust infestation caused famine conditions so severe that images of starving Nigérien children appeared in international media outlets. These droughts have taken a toll on long-term human development. According to the UN, children born in Niger during a drought year were 72% more likely to be stunted due to lack of food. Approximately one-quarter of children born in Niger don’t live to see their fifth birthday.

Man-made climate change will make just surviving in Niger much tougher over the coming decades. Computer models that are used to forecast the impact of climate change predict higher temperatures, more variable rainfall, and longer-lasting droughts for the country. While wealthier countries can invest in irrigation systems or other adaptation measures, Niger’s poverty and indebtedness leave it few resources to help itself adapt.

Ardo-Choro is no exception to these national trends. Droughts have ravaged this area so severely that each bad drought year has a name that’s used as a common frame of reference. For example, 1984 is known simply as “Buhari” because General Muhammadu Buhari came to power in Nigeria that year. He closed Niger’s southern border with Nigeria, impeding the movements of people and animals that are a traditional strategy for dealing with drought. The villagers tell us that lack of food and pasture during past droughts forced many people to leave the community, a situation one man describes as a

“moral wound.” While it is not uncommon for people in Africa to leave rural villages in search of jobs or education, they return eventually or send money and other support home. Many of those who left Ardo-Choro during drought years simply never returned—a severe blow in a society where extended families are an essential social and financial support structure. With few remaining assets and the loss of familial support, most participants feel powerless to withstand the future shocks climate change will bring. One participant puts the feeling bluntly: “What do you want me to do if there’s no rain? I can’t make it rain.”

In view of the challenges facing Ardo-Choro, adaptation seems a tall order, but the CBA project plans to fund several small-scale adaptation activities over two years. These activities, which will be carried out by local nongovernmental organizations, will help the population meet basic needs such as food and water, which are becoming scarcer in the face of drought. One such activity is the reha-

bilitation of traditional wells. Access to water for people and animals is crucial for survival in such an arid landscape, but existing wells have been drying up, forcing inhabitants to compete over the remaining viable wells. The project plans to rehabilitate three traditional wells, an action expected to improve access to water for about 1,000 people and reduce the potential for conflict. As part of the rehabilitation work, the wells will be dug deeper—a back-breaking task which community members will do by hand. Project funds will be used to purchase cement bricks to line the top of the well, creating a solid structure which requires little maintenance, unlike traditional wells that must be repaired every year.

The cost of the planned activities is modest: about \$135,000, with about one-third coming from the CBA project. The rest comes from two nongovernmental organizations, one Nigérien and the other Swiss, and community contributions in the form of manual labor and local materials. These actions will not undo the wounds of the last 30 years, but everybody under

the tree expects an improvement over current conditions. The villagers are hopeful that with the project's help, they will be able to stay on their land and keep their families together. I'm heartened by their optimism, even though their hope is tempered by realism in line with the precariousness of their situation. While the project will help, they tell us, it won't solve all their problems and that future droughts will make their lives very difficult.

Our second stop for the day is the village of Sabaru, where more than 200 people are awaiting our arrival. Before the meeting starts, we are led to a small hut for lunch. Nigériens take hospitality

very seriously, and our meal reflects this. As the dishes are opened, it's clear that we are being offered a better meal—and more meat—than most people here will eat all year. As we eat, a group of curious children stares at us through an open door. Their clothes are tattered and a few have protruding bellies and reddish hair, telltale signs of malnutrition.

The people of Sabaru are principally farmers and their stories illustrate the hardships they are facing. Harvests are down—the average field yields only about one third of what it did 30 years ago—and most families can't grow enough food to get them from one harvest to the next. As we listen to the comments, a few stand out. A young man

stop the meeting temporarily.

After the meeting, I interview one of the participants for an individual perspective. Katiella interprets between Hausa and French as I talk to Moussa Kané, a slender man in his late 40s. He's a breadwinner with six children and no formal education. When I ask him how much money he makes in a year, he tells me that he really doesn't know. Instead, he talks about how much millet he produces. He never grows enough food to feed his family for the entire year, he says. "The fields don't give anymore," he complains, and, echoing the fatalism I heard so often, he tells me that he "depends on God to make ends meet." But he's not solely dependent on God, since he admits that he also cuts firewood

to sell. This is a common practice in the area—and an understandable behavior considering Moussa's poverty. Unfortunately, it's also an action that exacerbates the area's already severe environmental problems by reducing the number of trees available to slow the wind, control erosion, and fertilize the soil.

I ask Moussa if he has a plow, as

I know from my experience in Mali that the poorest of the poor often work their fields by hand without the benefit of draft animals and plows. When he's understood the translation, he chuckles a bit and makes a gesture towards his hands. They are large, strong, and calloused from work. The answer is evident—he does the work by hand, spending hours every day working the land with a traditional hoe. He tells me he hopes to get animals and a plow. The fields that get manure—the natural fertilizer animals provide—give better, he says.

The one-year project planned for Sabaru won't solve all of Moussa's problems, but it will address some of the community's



A nomadic family crossing the road in front of our vehicle on the way to Ardo-Choro. Photo courtesy of the author

named Bureima stands up and addresses the crowd. "The rain is insufficient," he says. "We plant seeds and they start to grow, but there isn't enough rain to produce plants." The village chief explains that there have been years when nothing was harvested due to locust infestations. Even now, there are locusts in the village, although they have not done any significant damage to this year's crops. One man complains of violent storms and high winds, while another talks about the need to plant trees for wind breaks. As if to prove their point, a storm with strong winds and driving rain blows into the village a few minutes later, sending everyone scurrying for cover and forcing us to

immediate needs and provide a learning opportunity for all involved. The project will purchase basic agricultural tools, which most families can't afford, such as plows and draft animals for about 10 poor households. The plows, together with the use of drought-resistant seeds and fertilizer, should allow farmers like Moussa to put more food in the family granary without clearing new land. While these actions are an important start, the problems we observed in both villages are the result of decades of recurrent drought, and, ultimately, only long-term investments will ensure that these communities are prepared to meet future shocks.

Sub-Saharan Africa, whose 720 million people emit less carbon dioxide than the 23 million people in Texas, will be especially hard hit

What I saw in Niger is representative, unfortunately, of larger trends. Billions of people like Moussa in poor countries are struggling to adapt to a changing climate. CARE, an international relief and development organization, predicts that reduced rainfall, lengthening droughts, rising sea-levels, and related phenomena are expected to force hundreds of million of people, perhaps up to one billion—most of whom are poor, uneducated and unwelcome elsewhere—to evacuate their homes by 2050. Sub-Saharan Africa, whose 720 million people emit less carbon dioxide than the 23 million people in Texas, will be especially hard hit. In some African countries, yields from rain-fed crops that millions of people depend on for subsistence could be cut in half by 2020.

Despite the magnitude of the challenge, resources for adaptation have been both slow to materialize and inadequate. According to UNDP and other development agencies, adaptation is expected to cost billions of dollars every year for the foreseeable future. Paying this bill will require significant new resources, not just minor increases in aid. To date, a few developed countries have pledged to contribute several hundred million dollars to various United Nations funds for adaptation. The

United States, the world's largest historical emitter of greenhouse gases, has contributed almost nothing, although U.S. funding for adaptation is expected to increase soon.

More resources for adaptation are essential, especially financial contributions from rich countries. Still, as my experiences revealed, there will be no one-size-fits-all or quick-fix solutions. Adaptation will be complicated, lengthy, and highly contextualized. Even with adequate resources and a sincere desire to help, making adaptation a reality will require patient listening, careful execution, and many more meetings under trees. Aid agencies like UNDP still have much to learn about how to respond effectively to the challenges of adaptation. Our trip was one step forward on a very long path.

I followed up my trip to Niger with a visit to the United Nations Climate Change Conference in Poland two months later, where paying for adaptation was one of the major agenda topics. When the official negotiations started to seem esoteric and disconnected from reality, I found myself thinking back to Niger. My experiences there revealed for me an essential truth central to the climate change debate, but often overlooked by the United States and other rich nations. The real losers from climate change won't be those of us in rich countries who will have to make a few lifestyle changes to reduce our carbon emissions. The real losers will be the billions of poor people like Moussa who didn't produce the emissions that are causing climate change and are already struggling to survive. There are no easy or quick solutions to these challenges, but, as the adaptation funding debate dragged on in Poland with little progress, I found myself wishing that the negotiators had been with us in Niger. I suspect that they would have had a much harder time holding up progress on adaptation had they spent a few hours with us under that tree.

Postscript: This article was written during the fall semester of 2008 after my trip to Niger in October 2008. Since then I have worked as a consultant for the CBA project. Activities in both Ardo Choro and Sabaru are now well under way and local residents are starting to see the benefits. A



December 2009 mission back to the same area led by Katiella and colleagues from the CBA project included another set of community meetings. In both communities, participants said that improvements brought by the project, including well repairs and the introduction of new seed varieties and better agricultural techniques,



Local women at the meeting in Ardo-Choro. Photo courtesy of the author

helped mitigate the impacts of a poor rainy season. The projects have also increased community solidarity by bringing people from different ethnic and socioeconomic groups together to solve problems collectively and prepare for the future.

At the international level, funding for

adaptation was once again a major topic of discussion at the COP 15 UN Climate Change Conference in Copenhagen. As part of the final agreement, developed countries, including the United States, promised billions of dollars over the next few years to support adaptation in developing countries. How much of this money will

actually be delivered and whether it will find its way to those most in need are open questions, but the CBA project is creating an example of how adaptation funds can make a difference at the community level. More information about the CBA project is available at www.undp-adaptation.org/project/cba.

De- and Re-Mystifying Worms

by Frederica Helmiere

The delivery usually includes some leafy greens, always wilted, a variety of vegetables, but usually just peelings. There are bits of fruit, nutshells and coffee grounds, and perhaps a crust of stale bread. Every few days when the food delivery arrives, dropped from above with its predictable contents, a miracle unfolds. Unperturbed, the thousand-member workforce approaches their provisions with slow exploratory meanders over and around the new arrival to their dark underworld. Over the course of the day, each one will perform an act of baffling transformation. They moisten the food scraps in their mouths, ingesting miniscule particles that break down in their gizzards where dirt and sand grind and cleanse, before passing through to their intestines for further refinement. Consuming up to four times their individual body mass, each one of these armless, brainless, blind invertebrates performs a divine, thankless act of grace, generate life-giving grime that ultimately keeps you and I alive.

These red wrigglers, habitating in their own poop in a bin underneath my kitchen sink, embrace my discarded food scraps. "Dead" in a utilitarian sense, these food scraps will soon be transformed within the compost's dark underworld into a medium from which life springs forth again. Their nearly imperceptible renaissance reminds me of a poem by Edna St. Vincent Millay which goes,

*Ah! Up then from the ground sprang I
And hailed the earth with such a cry
As is not heard save from a man
Who has been dead, and lives again.*

Answering unasked prayers, these worms enact a perpetual, fascinating drama, transforming my kitchen scraps into healthy loam, reshaping a rotting green pepper into nutrient-rich soil now ready to reenter the food chain. For me, this process is profoundly spiritual, and my involvement in it is sacramental. It reminds me of where the atoms in my body originated and where they're headed. It connects me to something larger than myself. And it asks me, in return, to reflect with gratitude on this fundamental connectivity with an Other.



A miracle unfolds! Photo courtesy of Jessica Feingold

Just as I am a creature existing in creation, so too are the inhabitants of this vermiculture bin. As such, they help orient me to the Creator. I probe the cool dirt with my hand and extract a miracle worker whose atoms are made of stardust. I feel the slow exploratory squirm in my palm, inhale the earthy scent of the castings, and contemplate the cycle that I am invited to witness. Every few months

I feel moved by the Annelida spirits to purge my worm bin of its casings and liberate the wrigglers from habitatting in their own poop. This is when I get to hold in my hand a spectrum of life stages and life ingredients: gritty soil sprinkled with shredded newspaper bedding, writhing pink worms of varying lengths, undigested bits of former meals, and tiny worm larvae in teardrop shaped capsules, each containing four to twenty tiny children of God, poised to enter the world. Communing with my wrigglers facilitates a radical openness to the earth, one I don't yet fully understand because the exchange requires that we listen to what the earth may ask of us in return. Gratitude is a part of it, this I know. Listening, thanking, listening, thanking. This is my form of discipleship.

I spend a lot of time amongst people of faith and identify with a rising progressive Christian movement, an inclusive, innovative approach to Protestant Christianity that questions traditions and emphasizes social justice and environmental stewardship. We join many others in observing the model of life all around as a dysfunctional relationship with the earth that is ultimately destructive to people, organisms, and earth systems. Bred from an individualistic market model, this way of life, this "Mother Culture" as Daniel Quinn calls it, whispers sweetly in our ear that we ought to consume more, that we are entitled to feast at the latest model banquet table of life every day, and that it's best not to listen to the poo-pooers out there who ruin your meal with their naysaying. And this Siren's song of consumption has resulted in some pretty alarming trends: a widening gap between rich and poor, the extinction of species, the decline in

natural resources, the escalating climate crisis... with the burden falling disproportionately upon poor people in the global south, beyond the walls of our banquet hall.

But emerging out of this realization is a logical question: can this opulence at the expense of earth systems and human justice last? For people of faith, we ask ourselves specifically, do our religious convictions permit us to live in such a manner? Christian environmental activists such as myself respond with a resounding no. For us, the Creator of the Cosmos manifests divine love in the created order, and stands on the side of the oppressed. We can no longer live in this dysfunction, this mentality of deep "otherization" that separates us from ecological systems of which we are a part. I believe that our obliviousness to and gradual separation over time from vital earth functions lies at the root of our environmental crisis today. If the ultimate problem is an erroneous placement of ourselves as the pinnacle of all creation, then what we really need is a massive paradigm shift on the scale of a global revolution, a seismic alteration, a titanic transformation. So where do we start? Perhaps with a handful of worms.

Red wigglers can teach us a great deal about the kind of relationship we have with nature, and how it might be changed. We live in lines, in linear orientations. Our food, for example, originates in one place and often ends up in a very different place, rarely closing the loop. Granted, landfills are not overrun by apple cores and potato peelings; they are teeming with automobile carcasses, computer monitors and plastic packaging. But when we scrape food scraps into the trashcan, we reinforce a cradle to grave mentality of human-food relationships. We banish this act, a kind of tangible witness of microorganism nutrient revival, away from our living spaces because it often involves dirt and creepy crawly things. I wonder

what acts of persecution and discrimination these mute nematodes would accuse us of if they could. Why are we taught to cringe at worms? Perhaps it is because within the animal kingdom they are some of the creatures most unlike humans, or perhaps we respect them less for their lack of relative complexity. Maybe it's because metaphorically, these creatures represent putrefaction, death and decay. But in the case of earthworms, the entirety of their existence acts to bring about the conditions for new life. We are blind to the cycle that these worms complete, invisibly, secretly, in the underworld. This is precisely the kind of re-thinking that a shifting paradigm, an Ecological Reformation perhaps, might require of us.

Humans may have come to understand some of the deep mysteries of the earth in recent decades but these now need to be brought to the forefront of our consciousness. We are empowered to give expression to this fantastic action happening in the soil and underneath our kitchen sinks, and in the process we are reoriented to something greater than ourselves. Change your action and it will change your thinking. Vermiculture may be simple but it sweeps us up into a momentum of necessary change that can shape a restructuring of society, our nation and the world towards greater equitability, and a new understanding of the good life.

A food delivery arrives. Photo courtesy of Anna Ruth Pickett and the Kroon Hall Compost Project



RUINS & RESTORATION

Christopher Finney with Photos by Michael Finney

A single row of abandoned beach cottages lines each side of the overgrown street. Everyone seems to have left in a hurry. Everyone. They left their dishes behind in the cupboards, their bikes on the lawns. Broken windows glint in every facade, and the scent of mildew drifts into the street on a sea breeze. A rabbit startling from the brush breaks the eerie silence. Kicked-in doors—forbidding yet inviting—stand open to reveal the cheap summer novels and playing cards that litter each living room floor. The first time I visited, this place seemed beyond repair. This is Pleasure Beach, Connecticut, a new face of conservation.

A few years ago, a group of environmental organizations including the National Audubon Society, the Connecticut Audubon Society, and the Trust for Public Land noticed a narrow barrier beach along the crowded shores of Long Island Sound. On the eastern border of Bridgeport, the largest and poorest city in Connecticut and one of the ten poorest cities in the nation, this sand peninsula stretches a mile and a half between the open waters of Long Island Sound and the shallow marshes of the Great Meadows National Wildlife Refuge, which is owned and managed by the US Fish and Wildlife Service. Audubon and the Trust for Public Land hope to buy the property, demolish the beach cabins, cart away the debris, and re-sell the land to Fish and Wildlife. If the sale proceeds as the organizations

hope, Pleasure Beach will be annexed to the adjacent Great Meadows Refuge, with public access guaranteed by a legal agreement.

The fate of Pleasure Beach is still uncertain. In a recent referendum in the town of Stratford, which owns half of the peninsula, local voters approved selling their land by a wide margin. Support, however, was far from universal. Out-of-town environmentalists planning to pass a local treasure on to the feds are controversial in some circles, incendiary in others. The city of Bridgeport owns the other half of Pleasure Beach, and it promises to be a higher hurdle. The environmental organizations, some fear, could be making a land grab; maybe they just want to protect threatened piping plovers, locking people out completely. One local articulated a shared unease as he carried his tackle home down the beach: "I've been coming here a long time. If they put up signs saying 'Keep Out,' I'd really hate that."

To complete the Pleasure Beach project, the Audubon Society and Trust for Public Land will have to convince Bridgeport locals that their approach to conservation values both nature and people. For decades, conservation has been thought of as a battle to save the "last great places," as the Nature Conservancy has long described its work. If that battle remains the only form of conservation,

Pleasure Beach, along with most of the Eastern Seaboard, is a lost cause—marred by crumbling development and a stark urban setting. At Pleasure Beach, however, the Audubon Society and Trust for Public Land are trying to expand conservation by connecting it to the revitalization of human communities. Fears among Bridgeport residents that they may lose the right to visit Pleasure Beach may amount to a simple misunderstanding rooted in the long history of a form of conservation that viewed people as a problem, not a purpose. Instead of simply protecting nature from humans, conservation may now become an effort to reestablish our relationship with the world around us. In that case, the most accessible yet isolated public beach in New England will be at the forefront of a new kind of restoration.

A few months before the Stratford referendum to determine whether Pleasure Beach would be sold, my brother Michael and I decided to visit the site and learn firsthand about the land and its abandoned cabins, inside and out. Locals and seagulls clustered on the beach a few feet from the only gateway to Pleasure Beach, a parking lot at the eastern end of the peninsula. Seniors basked in one-piece swimsuits and anti-cataract sunglasses. Teens tanned, rebelling against their bad luck at being born on the wrong coast.

The Pleasure Beach Peninsula runs east-west, parallel to the coast, a mile of narrow barrier beach that widens into a broad triangle in the west. At the western, seaward end of the peninsula, a burned bridge provided access to the East End neighborhood of Bridgeport until 1997. Now, the only access is from the eastern parking lot. At the end of the asphalt, a line of rough-hewn boulders stands guard against motorized vehicles. Beyond this line, the landscape bears little resemblance to the developed seafront of the rest of Long Island Sound. The Great Meadows National Wildlife Refuge buffers the Pleasure Beach peninsula on its northern, landward side, dampening the roar of Interstate 95 and pushing most of Bridgeport just out of view. Countless minnows dart through the shallows, and herons hunt among

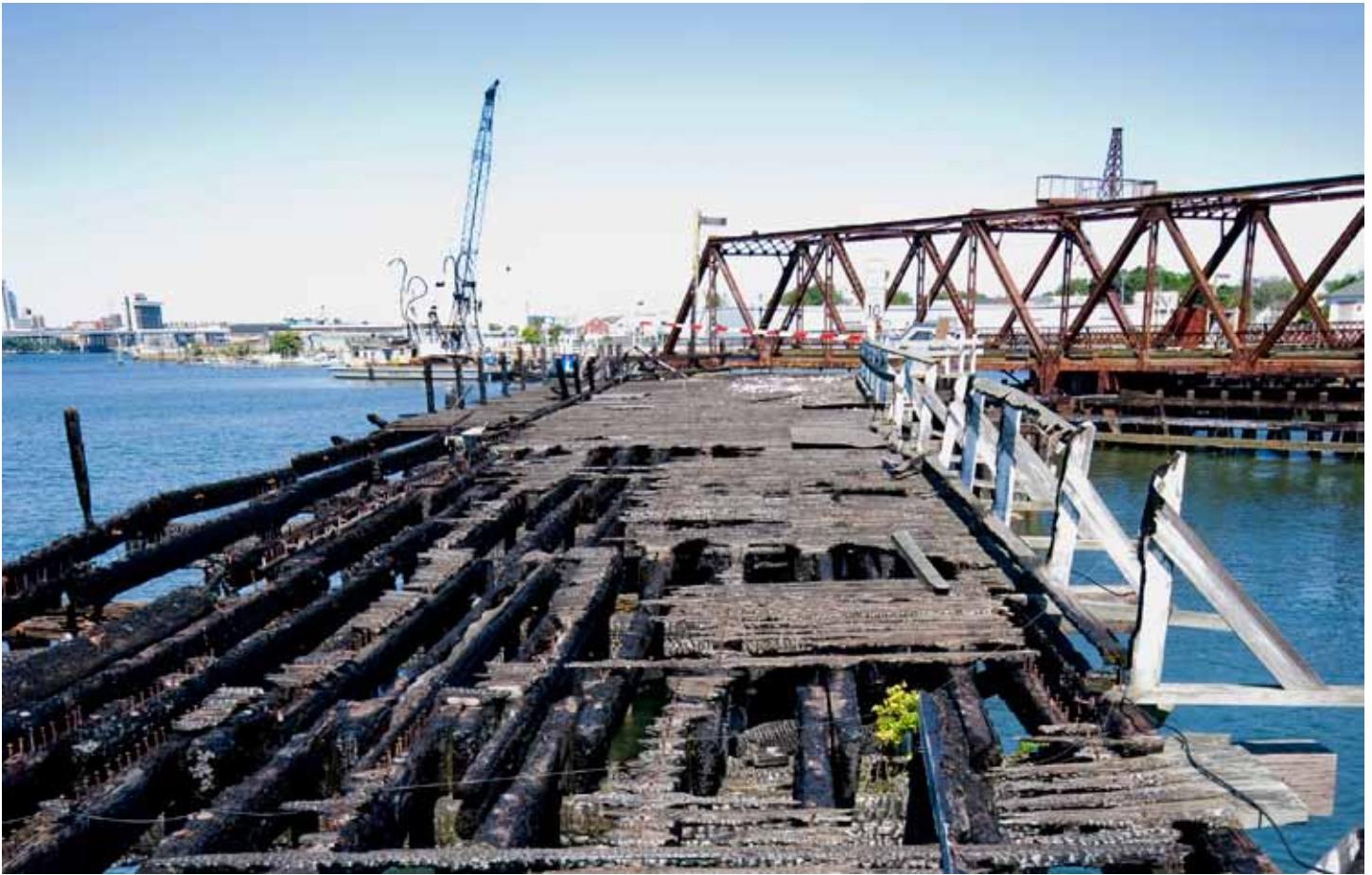
the reeds in one of New England's prime stopovers for migratory birds. Long Island Sound laps the southern shore just two dozen steps through the dune grass and piping plover nests. The beach is awash in seashells, several feet deep in some places, and punctuated by the sheddings of horseshoe crabs. The Great Hurricane of 1938 tore right through this section of the peninsula, and the Army Corps of Engineers rebuilt it from scratch using dredged sand in 1947. A little more

the road. Maritime décor dominates. Buoys dangle from the rafters of almost every garage; thick, three-strand rope borders almost every porch. Weeds grow in the abandoned hull of a 20-foot rowboat near the dock.

The bridge that once linked the seaward end of the peninsula to the East End neighborhood in Bridgeport burned mysteriously in 1997, cutting off motor vehicle access. The city decided not to re-

five garages full of insecticides, antifreeze, paint cans, thermometers, and gas canisters, myriad festering compounds leaching slowly to the land and water. Surveying a landscape littered with future litigation, Andrew Nunn, Bridgeport's chief of staff, gave an understated assessment at a recent community meeting: "It's a liability for us."

When I was less familiar with Pleasure Beach, I saw it as a liability too. An hour



The bridge to Pleasure Beach. Photo courtesy of Michael Finney

than 60 years later, only the jetties bear any obvious human touch.

After twenty minutes of straining through deep sand, still on the narrow portion of the peninsula, Michael and I reach the eastern edge of the abandoned neighborhood. A sign attached to the lightpost at the very end of the road warns that the area is monitored via webcam. We ignore the sign entirely. The electricity has been out for years.

The Pleasure Beach peninsula is no pristine wilderness. Forty-five cabins, each a perfect, fractured bit of Americana, line

new the cabins' 99-year leases a year later, citing the cost of rebuilding the bridge and inaccessibility to emergency vehicles. Not long after, the utility companies cut off the gas, water, and electricity – chasing out the last stubborn residents. Finally, the vandals rushed Pleasure Beach, leaving a scarred landscape of ransacked cabins, broken glass, and one rusting truck.

Real hazards abound: a room full of used syringes thrown like darts into every flat surface, broken glass and rusty nails on every deck, rusting cylinders of natural gas the size of Volkswagen beetles, forty-

or so from the South Rim of the Grand Canyon, where I grew up, conservationists tend to concern themselves with -endless, empty spaces. Heavy industry, where it exists, is dwarfed by the scale of the Arizona landscape and pushed out of sight. The first time I visited Pleasure Beach, just after learning of plans to restore it, I was distraught at what apparently passed for a conservation project on the East Coast. Could this be the best land left, I wondered, a spit of beach at the edge of a rusting city, a string of blighted cabins rotting in the shadow of a power plant? When Melissa Spear, the

view of the open horizon across Great Meadows. Everywhere else in the abandoned neighborhood, derelict cabins block the waterfront on either side, giving the road a vaguely claustrophobic air. Looking over the burn, we can see a wide swath of open water edged by tall marsh grass. The Audubon Society and Trust for Public Land plan to demolish most of the cabins and haul away the remains using a small fleet of amphibious boats, veterans of D-Day; the US Fish and Wildlife Service would like to remodel a few cabins for visiting researchers and office space. This is no wilderness area, but a renewal is taking root.

The nascent renewal of Pleasure Beach is a rare alloy of ecosystem restoration and urban revitalization, as comparison with superficially similar projects nearby makes clear. Just 15 miles directly across Long Island Sound, the town of Stony Brook evicted 95 leaseholders from their cabins on the West Meadow barrier beach in 2004. As in Bridgeport, the owners resisted and sued. As in Bridgeport, the city won. The Stony Brook cabins were demolished four years ago, and the restored beach gives an idea of what Pleasure Beach may soon become. The crystalline water, like a well-maintained aquarium, undulates gently over a substrate of sea-rounded stones. The footprints of the houses are still bare sand, except for an occasional weed. A newly-paved path parallels the beach, traversed by a steady stream of retirees at sunset. In terms of simple restoration, the Pleasure Beach project is nothing new, but Bridgeport and Stony Brook are very different cities. In Stony Brook, just inland from West Meadow Beach, a picturesque brackish marsh lies below a cliff topped by a line of mansions. Each has a stairway leading to a private boathouse. Several have atria, and it is easy to imagine patrician residents eating breakfast, enjoying panoramic views of Long Island Sound and their newly-empty landscape. In contrast, Bridgeport's Pleasure Beach promises to provide greater waterfront access to the East End, an impoverished neighborhood where residents have few other opportunities to interact with nature.

As Michael and I reach the western end of

the neighborhood, the peninsula widens into a broad, flat triangle of land; at the very center you can't quite see the beach. This part of the peninsula is richer in wildlife. Rick Potvin, who manages the Great Meadows Refuge lists oystercatchers, piping plovers, and a great-horned owl that recently moved into the abandoned bathhouse among the resident species. Gregg Dancho, who used to manage the Bridgeport Zoo, adds thrashers, ospreys,



A suitcase left behind at Pleasure Beach. Photo courtesy of Michael Finney.

and barn owls to the list of birds, and makes special note that diamondback terrapins, the turtles of turtle soup fame, are "nesting and doing well out there."

At a public meeting in preparation for the Bridgeport referendum, where the lists above were compiled, discussion turned quickly to threatened piping plovers. Plovers, which have dwindled in inverse proportion to beachfront development, are a flashpoint in Bridgeport. Among certain people accustomed to thinking of environmental protection and human activity as incompatible, the piping plover takes on a sudden, fearful resemblance to their western cousin, the spotted owl. In order to defend the project, the conservationists took turns explaining that on Pleasure Beach, plovers and people are not particularly incompatible. Gregg Dancho, from the zoo, spoke from personal experience, "I have yet to be in any spot in the country with these birds that

has been entirely closed." Melissa Spear of the Trust for Public Land voiced an estimate of the necessary beach closures: just 3%, and only during nesting season. State legislator Don Clemons took the floor, ostensibly seeking clarification. "The piping plover has been identified as a threatened species, could you give an idea of how many there are and whether they could increase?" A conservationist might have asked this question with a hopeful lilt; Clemons delivered it with all the bristle of a cross-examination. You say 3% now, he implied, but how many nests will be blocking beach access in the future? Rick Potvin, manager of the wildlife refuge next door, answered Clemons' question with the tragic precision reserved for species very near extinction. "About 50 pairs in the state."

History hangs heavy over Pleasure Beach. Captain Kidd may have buried his lost treasure here in 1699. More recently, Pleasure Beach housed a series of amusement parks from 1892 to the 1970s. The parks included a wooden roller coaster, vaudeville theater, and a carousel that still offers shade on summer days, although the hand-painted horses were removed years ago. That history may make it more difficult to restore the beach—many locals seem more at ease imagining Pleasure Beach's past than its future—but it also makes this project even more significant. As Chris German, a local who once sought to open a nonprofit sailing school on Pleasure Beach explained, "Bridgeport has old blood. People have memories. They really do care."

Since the demise of the amusement park, Pleasure Beach has been the subject of endless re-development schemes. In 1984, Disney visited Bridgeport at the behest of Rick Porto, then the Director of the Parks Department, to consider the site for a "regional entertainment center." Three years later, Donald Trump proposed a \$350-million amusement park and seaport village complete with cruise ship docking. At the time, Trump claimed that "the magnificence of the park will make Bridgeport a world-class destination." Trump never broke ground, and Bridgeport is not a world-class destination.

Fourteen years later, several prominent opponents of selling the Pleasure Beach

peninsula still quietly back developing the site. One of the most vociferous told me the peninsula could easily hold a four-lane road, apparently to shorten trips to the airport. Rick Porto, the former Parks Department Director who might be expected to favor restoring Pleasure Beach for public access, considers the commercial development of Pleasure Beach an important potential addition to the city's tax base. After a recent public meeting, Porto expressed his general displeasure with conservationists to me: "We're fortunate the dinosaurs are extinct; they'd be protecting 'em and we'd be getting eaten."

In Bridgeport, even conversations about providing access to Long Island Sound have a history. P.T. Barnum, circus founder and single-term Bridgeport mayor, devoted a chapter of his 1888 autobiography to creating Sea-side Park, just west of Pleasure Beach across Bridgeport harbor. As if speaking directly to modern citizens of Bridgeport across the span of 120 years, Barnum wrote that he "dwelt upon

the absurdity, almost criminality, that a beautiful city like Bridgeport, lying on the shore of a broad expanse of salt water, should so cage itself in that not an inhabitant could approach the beach." As if speaking directly to Rick Porto, Barnum complained about the opponents of Sea-side Park, who told him "if people want to see green grass and trees, they have only to walk or drive half a mile either way from the city limits." A statue of Barnum now looks out on Long Island Sound from his Sea-side Park, a fair tribute to the showman who shaped both his circus and his favorite city according to his best understanding of the public good. Across the harbor at Pleasure Beach, conservationists guided by the same public good, but with a smaller appetite for public adulation, are hard at work with an updated version of Barnum's vision.

Whether the Audubon Society and the Trust for Public Land succeed as Barnum did will depend on Bridgeport's voters. The past here was idyllic for residents:

Trivial Pursuit cards, puzzle pieces, and mass-market paperbacks litter the floors of the abandoned cabins. But the past is irretrievable, safely beyond the charred remains of a thirty-million dollar bridge. Here, like everywhere else, we can't go back, and the way forward is a matter of debate. Voters may come to believe the environmental organizations offer a compelling vision of the future of Pleasure Beach, but to do so, many will need to reconsider their own compelling memories of its past.

At the western edge of Pleasure Beach, Michael and I reach the charred remains of the bridge to Bridgeport. Although about two dozen missing or blackened planks seem to be the only problem with the structure, Bridgeport has left the rotating middle section of the bridge to rust into a permanent open position. As one local newspaper columnist joked, you could almost toss a plover egg across,

The carousel at Pleasure Beach. Photo courtesy of Michael Finney



Connecticut State Director of the Trust for Public Land, introduced me to the project, she mentioned that beaches don't come cheap this close to Manhattan. "We can save about 80 acres of beach habitat for \$30 million." Playing with the numbers later, I found ranchland near Yellowstone National Park is advertised for \$575 per acre, meaning you could buy a little over 52,000 acres for the price of Pleasure Beach.

On a more recent visit to Pleasure Beach, my mind shifts from dollars to more immediate concerns as Michael and I slip gingerly through the jagged edges of a shattered glass door. I quietly quiz my brother about his latest tetanus booster as we survey the ruins. Window glass crunches underfoot, making me regret my decision to wear sandals. Something moves behind us, and we both spin around, certain we are trespassing not in an abandoned vacation home, but in the current residence of a maniac. A sea breeze rattles the yellowed venetian blinds again.

Old dishes, miraculously untouched, fill the cabinets. It's probably better not to even open the fridge. On the table, a half-packed box of wine glasses marks the limit of someone's will to move out. Unchecked mildew is pervasive, sickening. We creep back outside.

In the sunlit road, weedy shrubs and trees are already finding rootholds in the cracks. A ten-inch carving knife lies at my feet; feeling vaguely unsafe, I pick it up. Pleasure Beach suddenly feels much like the post-apocalyptic set of a disaster movie. As Michael takes pictures of empty suitcases lying abandoned in the street, a small man with a shaved head walks toward us silently. I shift to keep the knife out of sight. The man approaches, passes within a few feet of us, and continues on – without even a flicker of eye contact.

Three cabins burned here last year, and the ground is already an open field of charcoal and quickly rusting nails. A few objects cling to their identity – a large pot, the innards of a clothes dryer, bathroom plumbing. Here, windows melted and resolidified, forming sculptural blobs of glass. The burn site offers a striking





when the wind is at your back.

Bridgeport's East End neighborhood lies just across the water. East End is, as Melissa Spear explained "a poster child for Environmental Justice," meaning it is largely poor, largely black, and home to more dirty industry and less greenspace than any community deserves. The Bridgeport Harbor Generating Station, the largest coal-fired power plant in Connecticut, looms over the East End and Pleasure Beach. It emits over 50 pounds of mercury compounds each year, and ten times that much lead; both cause brain damage, especially in children. The plant also releases well over 1500 pounds per year of a group of suspected carcinogens known as polycyclic aromatic compounds. Health effects aren't always easy to trace back to a single polluter, but asthma is three times more common among the residents of East End than in the United States in general, a clear reflection of the neighborhood's polluted air. A bit further west, Connecticut's largest waste-to-energy plant, Wheelabrator, describes its operation as "the safe and environmentally sound conversion of municipal solid waste—and other renewable waste fuels—into clean energy." In other words, Wheelabrator burns over 2000 tons of garbage and dried sewage per day in the heart of Bridgeport, every day of the year. As its name implies, waste-to-energy solves two problems at once: tons of trash are reduced to smaller, if more toxic, piles of ash, and thousands of light bulbs glow without any fossil fuels being burned. But from the vantage of East End, this clean energy dynamo is just one more smokestack, one more source of childhood asthma.

The complicated relationship between Pleasure Beach and East End is the source of some of the most strident discussion in Bridgeport. More than one white resident of Bridgeport has blamed the current state of Pleasure Beach, indirectly, on the black population of East End. When East End became predominantly black in the 1970s, one local asserted, "Whites wouldn't go to Pleasure Beach because they had to go through the neighborhood. So the city let it go to hell." More than one black resident of Bridgeport has accused the city of ignoring the needs of the East End community, not only in fail-

ing to rebuild the bridge in 1997, but also in current planning. At a recent community meeting held on a very different part of Bridgeport's waterfront, next door to the home of 21-year Congressman Chris Shays and just down the street from the home of Rick Porto, one black resident of the East End complained "I look around and don't see my community sitting here." She described her four children playing on Pleasure Beach until the bridge burned, and wondered when the East End might have access again. "Everybody just sits here and makes decisions and then takes it to my community for a referendum."

By January 1, 2030, the last undeveloped land in this densely populated region will be either built up or protected. Our "last great places," as the Nature Conservancy calls them, will be saved or lost. As we approach the end of conservation as it has always been conducted, our access to nature will depend more and more on the skills of organizations that see places like Pleasure Beach as opportunities to foster the rebirth of natural public space. Corners and pockets of land hidden in the industrial aftermath of the Eastern seaboard, like Pleasure Beach, afford the promise of renewal. With effort, this renewal may bring others. Just across the remains of a burned bridge, the East End, one of Connecticut's poorest, blackest, most industrial neighborhoods, has plenty of kids, and nowhere for them to learn about nature. A few people still talk about developing Pleasure Beach, but the more likely risk, as along much of the abandoned Eastern seaboard, is that Bridgeport will continue to see the beach as a blighted liability and simply lock the gate—claiming to protect its citizens from their damaged city. Our culture—a culture mired in disposable goods and disposable landscapes, a culture still convinced another unspoiled frontier is just over the western horizon—is what the Audubon Society and the Trust for Public Land are working to change. This is fixer-upper conservation. But fixer-uppers require, above all else, imagination. It takes little imagination to envisage a nature preserve where pristine brooks gurggle through untrammelled meadows. Pleasure Beach is another

story. These modern ruins seem to portend much larger collapse, but they also promise rebirth.

As the day draws to a close, Michael and I turn back to the east and re-enter the street of derelict cabins. Strangely, the abandonment loses some of its menace at sunset. The shadows lengthen here like everywhere else. No sunlight glints from the crags of shattered windows. Garage interiors darken to hide the piles of rusting garbage. Twilight masks the emptiness, and this could be any other small-town street. Maybe everyone is just inside eating dinner.

I climb to the second story of cabin number one seeking the long view. A few tendrils are sprouting directly from the shag carpeting amid piles of ransacked women's clothing, watered and illuminated through shattered French doors. I step cautiously through the doorframe onto an Astroturf deck. Thousands of irregular bits of glass seem well on their way to becoming sand again. To the north, fishermen troll the brackish waters of Great Meadow for striped bass. In the west, the sun is setting orange behind the Wheelabrator incinerator. To the south, gulls bob lightly on the muffled waves of Long Island Sound. Eastward, the undeveloped mile of Pleasure Beach looks improbably fragile, a slim spit of land between waters. The evening is quiet; we are the only hikers trespassing. I remember retirees strolling in Stony Brook, just across Long Island Sound, along a beach without abandoned cabins. I think of the residents of Bridgeport's East End, whose children used to play on Pleasure Beach, eating dinner in the shadow of a power plant. I consider the 52,000 acres of ranchland just east of Yellowstone that wouldn't cost any more than this peninsula, and I realize that these are very different projects with very different purposes. Wide open spaces are, in practice, reserved for those who can get there. For the children of East End, who live on the sea-side but cannot reach the sea, Pleasure Beach was, and may be again, a lifeline to nature. When you are ten years old, a half-mile of flotsam, seashells, and horseshoe crabs may be all the nature you need.



A seedling sprouts from dirty clothes and shag carpet. Photo courtesy of Michael Finney



Weeds break through the abandoned parking lot of the Pleasure Beach amusement park. Photo courtesy of Michael Finney

ARTIST'S PORTFOLIO

HENRY DeBEY



GROUPERS AND SNAPPERS 2009
Anse Royale, Mahé, Seychelles

SAGE reader Henry DeBey won the Spring 2010 **SAGE** Reader's Photography Contest. While at Yale, his focus has been on understanding the influences that humans have on coastal and marine ecosystems. His photos often capture many coastal or marine related scenes. His keen interest in these environments, along with some good timing and sheer luck, allows him to get the shots that he wants and tell the stories that need to be told.

SARGASSUM FIELD 2009
Point Au Sel, Mahé, Seychelles

"Part of me often feels uncomfortable taking pictures of people or their livelihoods, like this man's modest but beautifully arranged chilli harvest or these fishermen's fresh morning catch. Pulling out a camera, no matter how small or discrete can often spoil a moment or worse - upset people. But the other part of me feels a sense of obligation to capture these people and their lifestyles in order to share them with another world that has become completely disconnected from these types of activities and ways of life."





RED AND GREEN CHILLIES
Victoria, Mahé, Seychelles

RANGER BLACK

MICHELLE LEWIS

I never considered myself an anomaly. I began what would become my career with the National Park Service (NPS) when I was fifteen, with the Youth Conservation Corps, a program for young people. The summer that I graduated from high school I held my first summer seasonal job with the Park Service, and was hired into a permanent position my freshman year in college. I worked all during college and graduate school in various NPS positions and by the time I ended my career with the Park Service, I had become a law enforcement officer. It was while I was in college that I realized that the career field that I had chosen wasn't normal, at least for people like me.

I was a black park ranger. People told me it was amazing to meet a black park ranger so many times that I stopped counting, stopped being indignant, and then began my attempt to educate people about the work that park rangers do.

As a United States park ranger, I enforced federal, state, and local laws within the boundaries of national parks. I was trained to work with people. Although what rangers do largely depends on the type of park where they work, I was trained in tracking both animals and people, all-season search and rescue, and as a First Responder (similar to an EMT). I trained with the FBI and worked with Secret Service and law enforcement officers from federal, state and local agencies. Rangers are charged with protecting and preserving the cultural and natural resources of an area as well as protecting the visitors from nature and each other.

When I arrived at the Federal Law En-

forcement Training Center (FLETC) back in January 2003, my class was comprised of 24 individuals. A quick glance around the room revealed that of the 24 trainees, three were white women, one Hispanic man, a Native American woman (who wouldn't graduate), and myself. The rest of the class was comprised of white men. I was not the norm. While at the dining hall, the black ladies working the food service line would comment to me that it was the first time they had ever seen a black woman in my program. It prompt-



The National Park Service Federal Law Enforcement Training Center graduation class. Photo courtesy of the author

ed me to ask one of the top managers of my program at FLETC how many blacks he actually saw complete the training academy. His response was, "We might see one every five years."

What happened at the Training Center just gave me a taste of what would happen all throughout my career at the Park Service. I was tested by people who thought I didn't deserve the job or that I had been hired just because I am black. On several occasions park visitors asked my coworkers and I what I was doing at a national park. The tests didn't just come from the public either—they came from my supervisors and coworkers as well.

A week after graduating with my law enforcement credentials, I reported for my first ranger post at Cuyahoga Valley National Park. I was overcome with excitement. Cuyahoga Valley is a 33,000-acre park situated between Cleveland and Akron, Ohio. I would find out later that among many of the staff, Cuyahoga Valley is known as the "one-a-year park." This means over the course of a year, the park would experience at least one case involving suicide, rape, murder, missing person, marijuana crops, or methamphet-

amine labs. The "one-a-year" label was true. There really was no limit to what I experienced. There were also plenty of opportunities for me to exercise the emergency first response skills I picked up in training. Too many park visitors started out on what they thought would be an easy hike and ended up being carried out of the park on a stretcher.

On my first day of active duty, I arrived excited at the ranger station and met my new supervisor, Acting Chief Ranger Josie. Josie

welcomed me to the site and immediately started working on our first project together. We spent the afternoon driving the patrol car through the north portion of the park to check possible trespassing along the boundary. That evening, as we pulled back into the lot at the ranger station, she looked at me and said, "You know Michelle, you're going to have to work harder at your job, to prove yourself. People are going to look at you differently, because you're black, and a female, and working in law enforcement, and people around here aren't used to seeing that."

I was shocked, but attempted to justify



The author during rifle training at the Federal Law Enforcement Training Center. Photo courtesy of the author

her comments thinking, "...maybe she's just trying to be helpful." During the two years that I worked there, I found out that she wasn't. She held me to a different standard than my coworkers. It wasn't just me that sensed this. Even my coworkers would come to me and ask, "Do you realize that she doesn't treat you like she treats the rest of us?"

After two years at Cuyahoga Valley, my next ranger duty was at Fort Sumter National Monument, the site of the start of the Civil War. One hundred and forty two years later, I found that the employees at Fort Sumter were still fighting the war amongst themselves. My first day on duty was much like the first day that I spent at Cuyahoga Valley National Park, but this time, I wasn't told that I would have to work harder because I was black. Instead, my supervisor warned me that two employees in particular had issues with blacks. As if to make the situation better, the supervisor told me that "you probably won't have any problem with them because you carry a gun."

My colleagues at the park told me about instances when the Confederate flag had

been hung in the fort in recent years. Management told me that although they couldn't prove it, they believed that one or both of the employees I had been warned about were responsible. Those two employees were brothers, white males hired by the Park Service to work on the maintenance crew.

I was at Fort Sumter for three months when I was approached by one of the black men who worked for maintenance. I was the only law enforcement officer

"You probably won't have any problem with them because you carry a gun."

-Chief Ranger, Fort Sumter National Monument

employed at the park, and had been out of town for the three weeks. On that first day back, the maintenance worker came to me at nine in the morning and told me that he had something to show me.

As we walked through the parking lot toward the government vehicle that

he drove while on duty, he pointed to something swinging from the light on the top of the vehicle and asked the question, "What's that look like to you?" As I looked closer, I realized it was a hangman's noose. The employee informed me that the noose had been swinging from the back of the government vehicle for almost three weeks while I was gone. Whenever he took the noose down, someone would put it back up.

When I approached the acting park manager to tell her that I would be investigating the noose in the maintenance worker's car, her response was that I didn't need to investigate, because they already knew who had done it. I interviewed her and she gave me a formal statement telling me which employee had hung the noose from the vehicle and even added in that it was a stupid thing for him to

do. The acting park manager went on to tell me that although the superintendent was out of town, the suspected employee would be reprimanded when the superintendent returned.

About an hour after the interview, I received a phone call from the same man-

ager who then told me she wanted to retract her statement. She also said that she was no longer sure of who had hung the noose from the vehicle.

Knowing the history of race relations at the park, I called the regional office, to apprise them of the situation. Two special investigators were sent to the park to continue the investigation. They couldn't prove that the employee that was originally accused had actually hung the noose. He wouldn't confess, and there were no fingerprints or anyone who was willing to give a witness statement.

After the investigation had been closed, the superintendent called me into his office. He wanted to let me know that he was retiring and that his retirement was my fault. As I sat in his office that day, the superintendent told me that he was being forced to retire because I had let the regional office know of the issues regarding race relations at Fort Sumter National Park. It was apparent that these race relations were as much a part of the culture of the site as slaves were to plantations in the Old South.

Race and gender bias were something that I would continue to encounter during the time that I worked for the National Park Service. While stationed at the Martin Luther King, Jr. National Historic Site, I worked with Ranger Don, who openly expressed his disdain for blacks. He repeatedly referred to the black violators that we caught as "turds". His disdain for women was also plainly evident. For example, I had gotten a call about a disturbance in front of the visitor center. I headed to the scene to find a group of five black male teenagers fighting. I called Don for back up. There weren't any visible weapons and I was able to break up the fight without any assistance. However, while breaking up the fight, I saw someone standing in the shadow of the building, watching me. It was Don. He had decided that instead of providing assistance, he

would watch. Later that day he told me, "I don't think women should do law enforcement."

Ranger Don would later be relieved of his duties as a law enforcement officer, after it was shown that he had a pattern of mistreating women. A personal domestic situation would make the NPS take a hard look at whether he was an asset or a liability to the service. It was determined that he was the latter. As a former govern-



The author practicing at the shooting range. Photo courtesy of the author

ment employee, I can say that only a serious offense will actually result in a problematic employee from being let go from the Park Service. Usually, supervisors just transfer an employee from site to site as problems arise, a pattern that goes on indefinitely.

Over the years, I would meet other black rangers who had similar experiences to my own. They were also tested by coworkers and visitors. It wasn't hard to have conversations with all the black rangers in the Park Service, because there weren't that many of us. When I left the NPS, there were approximately 20 black protection rangers in the NPS, and only four of us were women.

Sadly, the conversation that I'd had with my supervisor at Cuyahoga Valley wasn't unlike the conversation that another black female park ranger had with her supervisor almost twenty-five years before. Ranger Jean told me about her experiences decades ago working as a district ranger,

a managerial position, in a park in the Southeast. Then, just like now, black female park rangers weren't the agency norm. One day, Jean was called to her supervisor's office. The supervisor gave Jean a park ranger position description to read. It said rangers are supposed to have blonde hair and blue eyes. Rangers are supposed to be a certain height, and a certain weight, they are supposed to ride horses, and work in canyons.

After reading those qualifications, Jean told me she looked at her supervisor and told him that she didn't meet those qualifications, but that she could do the job. The park supervisor had worked for a park out west, and Jean surmised that was where her supervisor had gotten that particular ranger description. Jean told me that in the late 70s, and 80s, people just expected rangers to have blonde hair and blue eyes. It's not written on paper anymore, but that underlying assumption still remains: in the past and still today, the National Park Service culture is driven by a predominantly white male work force.

The NPS is one of the only agencies that doesn't conduct psychological evaluations on its law enforcement officers. Recent incidents have caused the NPS to begin looking at the very real possibility of conducting these psychological evaluations on new rangers entering the Service. My suggestion to the Service is that when the psychological evaluations are being conducted, the NPS should also create a solid program to help stop the gender and race bias that still exists and operates within the system today.

Though I had some very negative experiences working with the National Park Service, I had some great experiences as well. I also had the opportunity to work with dedicated people that were working from within the system to diversify the NPS, in an attempt to end that antiquated culture of the "good ole boy".

Lightbulb Nutrition

by Mary Fischer

In October 2009, the Federal Trade Commission proposed new labeling requirements for light bulbs in response to the Energy Independence and Security Act (EISA) of 2007, a bill which, among other things, revised U.S. standards for appliances and lighting.

The bill directed the FTC to research which types of labels were most effective in disclosing information about various products. They came up with new labels they think should help consumers choose energy-efficient bulbs. The back of the packaging would display "Lighting Facts" modeled after the "Nutrition Facts" label on food packages. Facts would include brightness, energy cost, the bulb's expected life, color temperature and wattage.

How did they come to this design? In 2008, the FTC invited public comment about what a label should look like. NRDC proposed a 1 to 5 star system that was ultimately rejected. GE suggested a standardized report for mercury content à la "May contain peanuts."

GE's main beef with the "nutrition fact"-like label is that unlike calories or grams of fat, no one knows what a lumen is, much less the difference between lumens and watts. Even if the average consumer did know what a lumen is, what difference would a label make? For example, cars have been labeled with their estimated mile-per-gallon fuel use for decades. Why have consumers started paying attention? Because gas prices shot through the roof. Call me cynical, but what have product labels ever done

Lighting Facts	
Per Bulb	
Brightness	820 lumens
Estimated Yearly Energy Cost	\$7.49
Based on 3 hrs/day and 11.4 ¢/kWh. Your cost will depend on your rates and use.	
Life in Years	1.4 yrs
Based on 3 hrs/day.	
Color Appearance	
Warm	Cool
2700 K	
Energy Used	60 watts

to change behavior? Let's review what labeling has done for us thus far: Looking at the proposed FTC label

again.

Should we label and hope that consumer education will solve the issue? Should we outlaw things like incandescent bulbs and Ho-Hos? Or just make them so expensive people won't buy them?

The European Union started banning the sale or import of most incandescent bulbs in September 2009. The US will begin implementing a similar ban in 2012. Good or bad: the government has to tell people they have no choice to upgrade to a better product? Good (however unfortunate) if it applies to light bulbs or more fuel-efficient cars. Bad if it's for iPhones or skinny jeans. The bottom line is that we can label

What we labelled...	What actually happened
Nutrition labels have been required on food packaging since the early 90s.	Obesity rates are at an all-time high.
Cigarette boxes have creepy, threatening labels.	More people stop smoking because of cost than for any other single reason.
Parental advisory/Explicit content labels have been on CDs since 1990.	It didn't stop Marshall Mathers LP from selling almost 2 million copies in its first week.

things all we want, but that won't keep people from using more and more electricity to suit our ever-increasing consumptive habits.

doesn't tell consumers much about whether the bulb is "green." Leaving it up to consumers' own interpretation of what is "green" is probably a mistake. Consumers may see that the cheaper bulb will cost more per year in energy use, the fact is that the crappy bulb is still cheaper now, so they'll continue to buy it again and

The bottom line is that we can label things all we want, but that won't keep people from using more and more electricity to suit our ever-increasing consumptive habits.

If we're going to label bulbs, I propose introducing a simpler scale that everyone can understand, which includes corresponding celebrity mascots. For example, a scale that appeals to consumer intelligence. An inefficient bulb could carry an endorsement from, say, the cast of Jersey Shore. Choose that one, and BAM! You are one with The Situation. Alternatively, an efficient bulb would get a picture of someone like Alex Trebek. Who wouldn't want to be as smart as Trebek?

Top Words Confused with Lumen:

- Rumen
- Cumin
- Newman
- Albumen
- Screw you, man

We have come to free a mountain. Amidst the mundane morning activities of lighting cooking fires and putting water for coffee and rice on to boil, an anxious energy hums through our small camp on this peak in western Panama. While some of my Ngäbe companions prepare breakfast, others size up our objective, a handful of small white buildings clustered on a nearby hill known as Cerro Chorchá. Eyeing the

condemns the impending copper mine while validating the traditions that have sustained the Ngäbe for centuries.

I arrived in Panama ten days earlier, hoping to learn how the Ngäbe are responding to Panama's emerging mining industry. When I climb Cerro Chorchá with the activists, I am still adrift in the newness of Ngäbe culture, making so many facets of Ngäbe life that are normal to my hosts strike me as peculiarly out of

village where some of the activists live, I watch my host brother and sisters fight over the family's one flashlight so they don't have to brush their teeth in the dark.

These seeming contradictions speak to the challenging moment at which the Ngäbe, and Panamanians in general, find themselves. The Ngäbe must discover a way to provide for the basic needs of a people in economic crisis while also

THE OTHER SIDE^{OF THE} MOUNTAIN

MARIAN THORPE

buildings, a Ngäbe (pronounced "NAH-bay") activist named Mario Palacios sums up the reason behind our trek up the cordillera. "These mountains are sacred," he tells me. According to Mario, legend holds that his Ngäbe ancestors entombed evil spirits in these mountains so that they could not disturb the villages on the slopes below. In order to make sure the evil spirits remained imprisoned, the hills have been off-limits to farming, hunting, and logging for generations, in effect creating an ecological preserve that protects the natural resources on which the Ngäbe depend. Thus, for my hosts — about three dozen Ngäbe students and activists — the small cluster of buildings represents an ominous threat: a copper mine. The proposed open-pit mine would destroy Cerro Chorchá, unleashing the evil spirits imprisoned in it and upsetting the natural balance of this fragile mountain ecosystem. These activists have climbed here both in protest and in affirmation. Their slogan, "¡No a la mina, sí a la vida!" — No to the mine, yes to life —

place. Our meager arsenal of protesters' tools exemplifies these seeming incongruities. One community leader, a practitioner of the traditional Ngäbe faith called Mama Tata, carries a small bundle of ground cacao beans. In the evening he will prepare the cacao in a pot over our campfire, intoning prayers that plead for the mining company's departure. Another activist carries a different form of magic: he brings a cell phone and, standing on a high hill in the dense tropical forest, calls the region's largest radio station to read a press release about our pilgrimage.

The co-existence of the traditional with the modern extends beyond the territorial boundaries of Ngäbe lands into Panamanian society in general. In the airport in Panama City, pastel cable knit sweaters in the Polo Ralph Lauren store face off with traditional Ngäbe dresses at a handicraft shop across the concourse. The sparkling night skyline of the capital city flashes through my mind when, sitting in the unelectrified mountain

preserving their natural resources and their culture. The nation of Panama faces a similar test in that it must create jobs and care for its poorest communities while protecting its status as one of the most biologically diverse regions in the world. The country's rich mineral veins offer the hope of economic growth to a government looking to diversify its revenue streams beyond the Panama Canal, but this growth would come with a high environmental and social cost. And that is why we are now standing on the knobby green backbone of the isthmus, warily examining the neighboring hillside. We are groping for insight into the Ngäbes' place in Panama's future.

We finish breakfast and hike a few kilometers to the mining camp. Everyone is anxious about whether we'll encounter security guards and how they might react to us. Just before climbing over the crest of the hill into the camp, the activists set down their machetes and walking sticks to ensure that their peaceful intentions



The Soloy activists offer prayers in Spanish and Ngäbere before hiking to the mining camp. Photo courtesy of the author

cannot be misinterpreted. The group takes a deep breath and plunges over the hill, chanting “No to the mine! Yes to life!”

When I emerged ten days earlier from the customs area in Panama City’s sleek, modern airport, waiting to greet me were my primary hosts, Fabiola Mendoza and Joe Fitzgerald. Fabiola, my new host mother and a long-time Ngäbe activist, was a sturdy woman with long graying hair, pink Crocs, and a flowing blue *nagua*, the traditional dress of Ngäbe women. Father Joseph Fitzgerald, a Catholic priest who assists Fabiola’s group, spoke English and Spanish with a rapid-fire Philly cadence. (He later told me that he played drums in a Celtic rock band in his native Philadelphia before becoming a priest.) They led me out to Joe’s battered truck and we began our journey west to Fabiola’s home near the town of Soloy in the Ngäbe-Buglé Comarca. Our five-hour ride along the Pan-American Highway gave us time to discuss Fabiola’s activist work and recent

developments in Panamanian politics.

A comarca, I knew from my background research, is an administrative region governed by the area’s indigenous inhabitants. Panama has five of these regions, including the Ngäbe-Buglé Comarca, which was established in 1997. The comarca spans much of western Panama, sprawling from the sparsely populated roadless areas along the Caribbean coast, south across the forested peaks of the central cordillera, and down to the towns and villages along the Pan-American Highway on the Pacific side of the isthmus. The Ngäbe, Panama’s largest indigenous group, share this territory with the Buglé (pronounced “boo-GLAY”), a much smaller tribe with common linguistic and cultural roots. Fabiola told me in Spanish that she has been an activist since she was a teenager, when she participated in the organizing efforts that culminated in the comarca’s creation. Joe and Fabiola pointed out that legal recognition has

done little to address the financial, health, and environmental problems facing the Ngäbe and Panama’s six other indigenous groups. For instance, even though the Ngäbe supposedly govern the comarca, the Panamanian state, through the Ministry of Commerce and Industry, administers the development rights for the territory’s mineral resources. The National Environmental Authority is supposed to vet proposed projects, but Joe reported that the winner of the recent presidential election, a millionaire businessman named Ricardo Martinelli, had just appointed an international business consultant to head the environmental agency. Joe and Fabiola worried that the country’s environmental protections would be weakened by the pro-development agenda of the incoming Martinelli administration.

Three hundred kilometers west of Panama City, we turned off the Pan-American Highway and drove north into the foothills of the cordillera. Raindrops



Thirty protesters march into the mining camp. Photo courtesy of the author

streamed out of the clouds and swarmed through deep red gullies in the eroded pastureland. After about an hour of climbing, we reached the community of Soloy, where Fabiola and many of her fellow activists live. The town, really a collection of neighborhoods strung out along one of the few paved roads into the comarca, is fortunate enough to have a medical clinic, a high school, and several elementary schools. The high school even has a solar-powered computer lab, donated by Microsoft, where hundreds of students and residents flock on the weekdays to check email, play computer games, and charge their cell phones. While the people of Soloy may have the information superhighway at their fingertips, they also know the feel of the earth in their hands. I began to understand just how tied the Ngäbe are to their farming way of life when I asked Fabiola's 11-year-old son, Pablo, what he wanted to do when he grew up. "Work,"

he said, smiling shyly. "Work at what?" I asked. "Work!" Working, I soon learned, meant working the land.

But working is starting to mean other jobs as well. The fragile forest plots the Ngäbe have been cultivating for centuries can't sustain their rapidly growing population, so to supplement their small farms, many Ngäbe find seasonal work on coffee and banana plantations in the highlands of Panama and Costa Rica. Increasing numbers of Ngäbe are also making their way into professional careers in teaching, medicine, and civil service. Despite growing employment opportunities, however, the income disparity between the Ngäbe and non-Ngäbe Panamanians remains stark. According to the 2000 census, the national median household income was \$380 per month. In the comarca, the median household income was only \$60 per month. And although

the cost of living in the comarca is far lower than elsewhere in Panama, a nagging gap persists between family income and basic living expenses. So far most families in the comarca are able to survive by pairing meager cash incomes from relatives working on plantations with subsistence crops coaxed out of the tender mountain soils. Should the Ngäbe lose their land to mining, they would lose their livelihood and the traditions so closely tied to it.

Stories like the one I stepped into on Cerro Chorchá are unfolding on hundreds of other mountainsides throughout Panama. According to a September 2009 document published by the Ministry of Commerce and Industry, the government has received requests for exploratory mining permits for over two million hectares of land since 1990. That's over 25% of the country's land area. This wave of mining development dates to the late 1960's, when Panama's benign populist dictator, General Omar Torrijos, sought foreign investment by peddling his country's rich mineral resources. Cerro Chorchá was identified during this time, when geologists for a Canadian mining company found traces of copper and gold. Between 1969 and 2006, five different mining companies spent at least \$5.3 million to take the measure of one mountain.

In the mid 2000's, a new company entered the picture. Bellhaven Copper and Gold, a Canadian mining firm, and its Panamanian subsidiary, Cuprum Resources, took over exploration of Cerro Chorchá, assisted by an American firm called Dominion Minerals. Together the three companies negotiated payments totaling \$287,800 per year

Community members listen as activists give a presentation about the Cerro Chorchá mining project. Photo courtesy of the author



with local Ngäbe communities for permission to conduct exploratory drilling. Dominion eventually purchased Cuprum Resources, and the exploration rights to Cerro Chorchá, from Bellhaven in April of 2009, and is now the sole company responsible for the site. “Dominion understands that it has significant social responsibilities particularly to the local communities adjacent to Cerro Chorchá,” the company says on its website. “Cuprum [which Dominion purchased in 2009] has a signed an [sic] exploration agreement and enjoys a very strong working relationship with the Ngobe [sic] people.”

Just who were these Ngäbe with whom the mining companies claimed to have a strong working relationship? Most residents of Soloy, where my host, Fabiola, and the other activists lived, strongly opposed the mining project. But I learned that the community of Quebrada Tula on the other side of the cordillera, on the Caribbean side, had been persuaded to agree to the project by the guarantees of jobs and social programs. I decided to visit Quebrada Tula, to meet the people who said yes to the mine.

My guide and I were the last passengers to disembark from our motorized dugout canoe after a three-hour ride upstream from the Caribbean coast to Quebrada Tula. Victor, my sixty-year-old guide, was once a schoolteacher,

Photo to the right: Activists examine the cliffs along the Guariviara River for evidence of gold and copper. Photo courtesy of the author

and it showed. He passed the time exuberantly shouting the names of different plants at me over the roar of the motor and rush of the wind. He traded dirty jokes with a lanky twenty-two-year-old teacher who was returning to his school post after a weekend trip home. After two and a half hours of inaudible plant names and salty humor, we steered into a quiet tributary to release the young teacher into a crowd of waiting schoolchildren. We then turned back into the main channel and continued thirty minutes further upstream to our destination.

Quebrada Tula was unlike any of the Ngäbe villages I visited on the southern side of the mining area. Visually, the community seemed to hover six feet in the air. Many of the houses in this perpetually rainy region of Panama perch on sturdy stilts, an architectural style that is both grand and practical: it keeps the inhabitants off the soggy ground and provides shelter for their pigs and other domestic animals. Other differences were visible as well. I noticed that most of the women had replaced their long, loose Ngäbe dresses with tight-fitting baby tees and capri pants. And, as residents soon explained to me, the difficulty of travel in this roadless region means that children receive fewer years of formal education and families have fewer public services such as medical centers and potable drinking water.

Victor and I clomped along a narrow



cement sidewalk through town, trailing curious children and muddy bootprints. Victor found the house he was looking for and we approached, ducking into the patio space under the lofted main floor of the house. Victor’s acquaintance, a village elder named Francisco, invited us to sit down at a makeshift picnic table, and Victor explained why I was there. Soon Francisco, his wife, and other villagers were telling their own version of the story of Cerro Chorchá.

According to Francisco, the community learned of the mining project about three years ago, when a local leader convened a meeting. A company called Cuprum wanted to look for copper and gold on Cerro Chorchá, and they would provide assistance to the community in exchange for permission to conduct the exploratory drilling operation. “They said they would hire our own people to work at the mining site,” said one of Francisco’s neighbors. The community even met with a foreign woman who said she was the chief of a band of indigenous people from Canada. “She said that her people were going to support us,” said Francisco. He unearthed for me a full-color brochure that mentioned the Lac LaRonge Indian Band and its fifty-year history of “sustainable human development.” The Lac LaRonge had been able to develop successfully, the brochure said, thanks to a large-scale mining project on their territory in Saskatchewan. Now the lessons learned by the Lac LaRonge would be applied in the comarca in order to promote the “sustainable human development” of the Ngäbe people. Development projects would include goat husbandry, cultivation of tilapia, and nurseries for commercial agricultural products like coffee and cacao. The brochure estimated that the projects would benefit 420 people, thanks to funding from Cuprum Resources.

The social programs promised by Cuprum and the Lac LaRonge chief rolled along successfully for two or three years. Building materials arrived and a medical clinic was built. Goats and tilapia were brought in, plant nurseries sprouted, and residents learned how to grow and market the agricultural

products. But then one day, word drifted up the river that fishermen had noticed a number of dead fish. No one knew what had killed the fish: some villagers blamed chemicals from the mining site; others blamed the deaths on excessive soil erosion caused by the drilling. The rumors were never proven, but most people I talked to faulted the mining company. More questions and suspicions arose. Residents began to wonder when the health clinic would open — the building was completed, but no medical equipment or doctors arrived. And finally, about May of 2009, the project personnel from the Canadian sustainable development agency abruptly left. “They didn’t even say goodbye,” said Francisco. “How many people benefited from the development projects?” I asked him. “About 50,” he said. “Were the projects successful?” I asked. He answered thoughtfully, “The projects helped a few families, but not all of them. But they were good for those who participated. I am still working in my nursery.” Francisco’s wife interjected, “the goat husbandry project has almost failed. We’re not going to continue the project because we don’t have time. We need more technical help.” A local government representative summed up the ambivalence many residents seemed to feel towards the mining project: “We said yes because we thought they would help us, but then they left us.”

So what exactly, besides confusion and a sense of abandonment, had Dominion Minerals left behind in the communities below Cerro Chorchá? The medical center remained empty, the goats faced an uncertain future, and an estimated 50 people benefitted from projects that were supposed to help 420. And residents up and down the river worried that the mysterious fish kill foreshadowed other environmental problems to come. Wanting to know more about the environmental impacts of the proposed drilling at Cerro Chorchá, I headed to the regional offices of the National Environmental Authority.

Panama’s environmental agency oversees affairs in the Ngäbe-Buglé Comarca from a crowded office located in Sabanitas, about four hours west of Panama City. The building was packed with the usual detritus of a busy office: boxes of files, empty Coca-Cola bottles, copy paper, obsolete computer equipment. The air conditioning was on full blast to compensate for the waves of steamy tropical air rolling in the open door. I told a busy secretary that I’d come to see Adalberto Montezuma, the head administrator of the agency’s comarca operations, about the Cerro Chorchá mine.

“The environmental impact study [submitted by Cuprum Resources] speculates that there could be landslides, contamination of many communities’ water sources, and loss of forest cover,”

Adalberto told me when I asked about the potential environmental ramifications of a mine on Cerro Chorchá. “It is in a very fragile site,” he confirmed. Adalberto also called attention to the lack of public participation in the environmental impact assessment process. Local communities were promised jobs and other benefits if they agreed to the project, but they weren’t fully informed about the environmental effects of the mine. “The law requires that the company conduct an information campaign and provide a space for public participation,” he wrote in a letter to his superiors. “But the company hasn’t done this.”

Thanks in part to Adalberto’s memo, the agency rejected the environmental impact study in March of 2009, halting the exploratory drilling. The rejection apparently catalyzed a series of related events: in April, Bellhaven sold Cuprum and the Cerro Chorchá concession to Dominion Minerals, which then resubmitted a modified environmental impact study to the environmental agency. In May, the project personnel from the social programs in Quebrada Tula left the village, causing residents to wonder about the future of the mining project. Then on June 2, four days before the activists from Soloy and I reached the mountain, Dominion announced on its website, “Preparation is now complete and the drilling equipment is on site to begin the 2009 drilling campaign.” Laden with questions and fears — Had the drilling already begun? Was it too late to save Cerro Chorchá? — the Soloy activists

set out for the mountain.

Climbing to Cerro Chorchá from the south side of the comarca, we resolutely approach the mining camp's main office, ready to confront Dominion Minerals with our banners and our outrage. As we file onto the weather-beaten deck, we see that our "enemy" is an uncomfortable-looking Ngäbe man in his late thirties, dressed in the same rubber boots and grubby clothes as the rest of us. He slouches in a folding chair and stares at a spot on the floorboards while the leaders of our group make speeches about the mine and ask him to deliver a written statement against the project to his employer. An older female leader lectures the employee in Ngäbere, and I recognize the word "unity" repeated several times in Spanish. I can't tell if the man is worried about keeping his job, afraid of the activists, or embarrassed to be the object of such pointed criticism. In spite of his obvious discomfort, he agrees to let us tour the drilling sites and sends his two teenage sons along to show us the way.

The drilling sites disappoint and galvanize at the same time. In contrast to Dominion's four-day-old statement that the drilling equipment was on site, all we find are several cleared terraces carved out of the mountainside, with a few tubes emerging from the spots where a lightweight drilling rig has extracted long cylinders of rock to verify the presence of copper and gold. While I am unimpressed, many of the activists are audibly horrified: the absence of tree cover on what should be forested slopes shocks and disturbs them. They also fret over the evidence of recent landslides on the newly bare mountainsides. "I thought these landslides were caused by nature," says a petite woman in a black

nagua, "but now I know the company did it." I can feel her resolve build with every glance around the denuded hillside. A man interrogates our two young guides and learns that they are from the Caribbean side of the comarca, though they won't say where. I wonder if they are from Quebrada Tula. The young men say that each of them earns \$20 a day to keep an eye on the project site. The three employees bring home \$60 a day, an astounding salary in a region where most households are lucky if they see \$60 per month. The activists around me soften in understanding, thinking what this money would mean to their families. The information confirms what they already knew: this is not a fair fight.

We trudge back to our tents in an afternoon downpour. While we wait for the coffee water to boil, a young activist turns on his radio. Many people carry radios with them when they travel in the comarca, listening to music or news as they walk, often for hours, to their destinations. My sodden body and mind are glad to hear the yodeling vocals of Panama's traditional music break through the static and brighten the damp gloom.

In a sense, the drilling on Cerro Chorchá has already released evil spirits from the depths of the mountain. Discord and dissent have swept down into communities that desperately need to find common ground in order to effectively negotiate the terms of their relationship with the Panamanian state and the mining industry. The activists' trek to Cerro Chorchá was an attempt to unite around what they thought was the one clear enemy amidst the other, more nebulous threats of poverty, unemployment, and loss of traditional culture. But when they arrived on the mountain, they found a problem more complex than they had guessed, for the faces they were glaring into resembled their own. Cerro Chorchá has become a mirror on the divisions that poverty and desperation create within a group that is

trying to define itself and assert its rights in the face of encroaching development.

The more I reflect on the unfolding story of Panama's drive toward economic development, the more clearly I perceive the different layers of meaning in the slogan, "No to the mine, yes to life." "No to the mine" rejects more than the Cerro Chorchá project. The slogan rejects a government, a mining company, and the choice between economic opportunity and cultural survival that has been forced on the Ngäbe.

Similarly, "yes to life" is more than a catchy add-on to the activists' slogan, it is an affirmation of a way of life, and of a people's right to decide how and when their lifestyle and landscape will evolve. Just as a radio brings Panamanian music to an isolated peak high in the mountains, the Ngäbe understand that they are inextricably bound to modern life. In that spirit, the two pieces of the slogan do not reject the outside world, but express a desire to control the station and volume at which the outside enters in.

The author wishes to thank the Tropical Resources Institute, the Yale Agrarian Studies Program, and the Yale Center for Latin American and Iberian Studies Tinker Fund for their generous support.

Epilogue: On December 24, 2009, the Supreme Court of Panama suspended all exploratory mining activities on Cerro Chorchá. The court's ruling was based on lack of citizen participation, possible environmental damage, and the lack of an approved environmental impact assessment. The Soloy activists are cautiously hopeful. "We may have found some breathing room," wrote Father Joe in an email. "Of course this is a temporary victory, as the government and companies will not simply forget about the copper there. But I figure we have to celebrate any victory we reach."

Top 10 things unemployed grads will do this summer

1. Crying
2. Hiking for long periods of time.
3. Desperately applying for more grad school
4. Growing food (to save money!)
5. Brewing beer (to save money!)
6. Swimming. Naked. (Hey, bathing suits cost \$\$\$ too.)
7. Bumming around Africa, Southeast Asia, or Latin America. But not Europe.
8. Flipping through Facebook photos of Tacky Prom and the Halloween party.
9. Couch surfing across the USA.
10. Hanging around D.C. in a suit.

Top 8 Hottest Global Warming Dance Tracks

1. Evacuate the Dance Floor ... and head to higher ground
2. Bad Bromance ... between Obama and House Republicans
3. Whatcha Say? ... Global Warming is real?
4. Tik Tok ... We only have so much time before the ice sheets melt
5. Fire Burning ... Fire Burning in the Amazon
6. Party in the USA ... Meanwhile, starvation and drought in Africa
7. Get Low ... Get Low Get Lower Sea levels
8. 4 minutes (To Save the World) ... but change all the lyrics so they actually have something to do with the title.

Top 10 Films Most Affected By Climate Change

10. Titanic: "Iceberg! Not Right Ahead!"
9. Passion of the Christ: With no timber available to build the cross, Jesus is let go with a slap on the wrist.
8. Bee Movie: No bees available for the roles. Producers cast cockroaches instead.
7. Finding Nemo: Dory succumbs to mercury poisoning. Nemo is lost forever.
6. My Big Fat Greek Wedding: My Medium-Sized Malnourished Greek Commitment Ceremony.
5. Little Mermaid: Sebastian disintegrates.
4. Batman: Batman cannot see the distress signals due to smog. The Joker takes over Gotham City.
3. Castaway: Tom Hanks drowns. Wilson floats.
2. The Wizard of Oz: A more intense tornado overshoots Oz and Dorothy winds up on Pandora.
1. Schindler's list: Unclear how climate change affects this film.

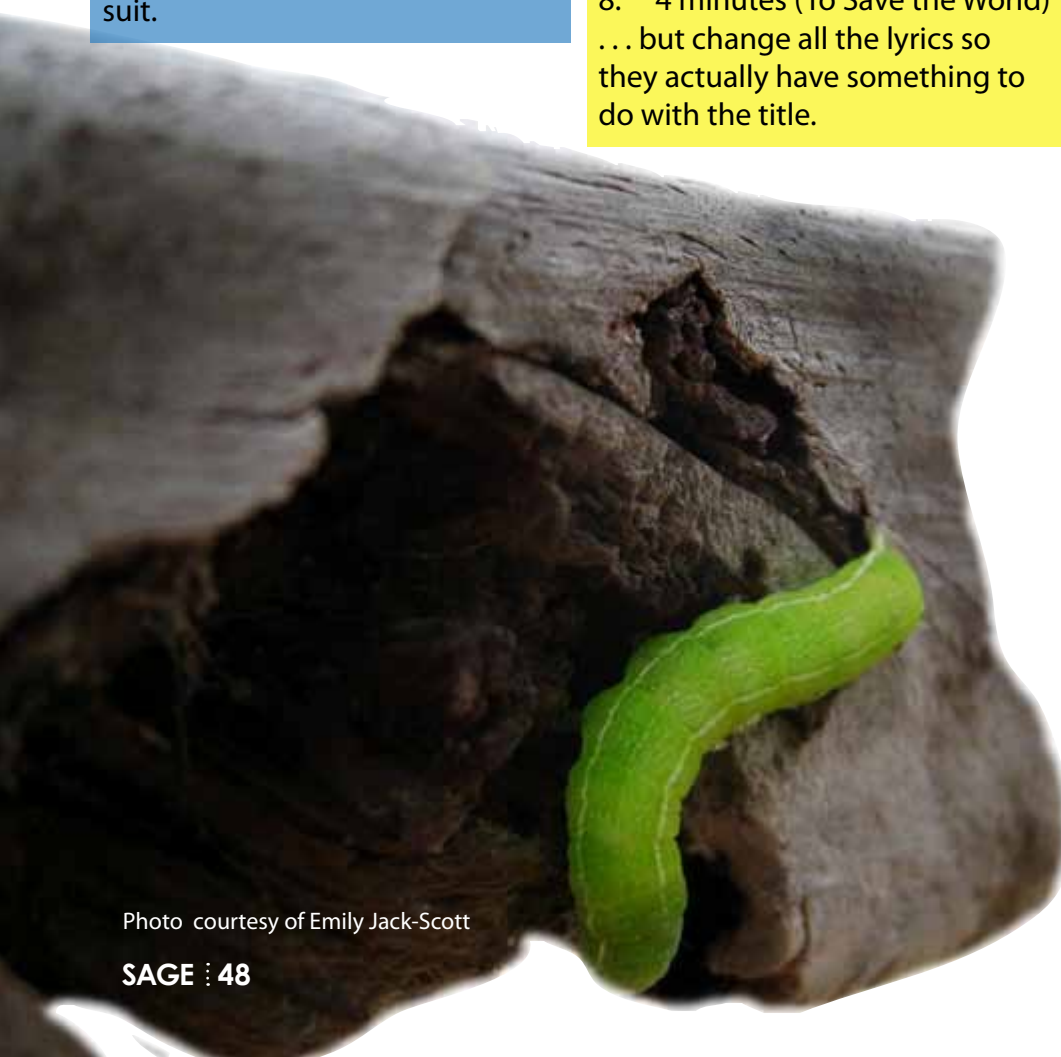


Photo courtesy of Emily Jack-Scott

ARTIST'S PORTFOLIO

KRISTIN TRACZ



SAGE reader Kristin Tracz won the Spring 2010 **SAGE** Reader's Photography Contest.

Kristin's portfolio examines life in Central Appalachia, including the opportunities created through sustainable agriculture and the challenges of destructive mining practices. Her work hopes to advance a conversation about a transition away from extraction and towards a just, sustainable economy for the region.



Above: KENTUCKY PROUD 2009
Best Family Farms, Berea, Kentucky



Left Above: BROKEN 2009
Wise County, Virginia

Right Above: HERITAGE NOT HATE 2009
McDonald's Parking Lot in Hazard, Kentucky.

President Obama Invited to Nature Retreat

by Sean Dixon

In a startling move by the Biodiversity Coalition of the United States, Alvin Chipmunk (D-Forests), the ranking mammalian-bloc member, officially invited the President to a political strategizing retreat in rural North Carolina. Not long after making the announcement, coalition spokesanimal Roger Rabbit told the media that the President had accepted the offer "to make good on his promise to step back from the partisan brink." "Meeting with the mammals, birds, and whatever other things out there in order to discuss the future of

the USA," the President said, "is what the people want to see their politicians doing."

Topics expected to be open for debate range from the Coalition's call for the President to bail out the Ecosystems Services Bank to the Coalition's call for the President to make good on his promise to televise natural resource exploitation "discussions." Administration officials have told SAGE Magazine that Republican pressure on the President to cut any and all funding to the Ecosystems Services Stimulus Package will likely prohibit him from expanding the program. "We're used to doing the heavy lifting ourselves, our oysters filter the water, our trees give you oxygen, our birds and insects spread plants and flowers," Chipmunk opined, "but we're up against a wall – a Wal-Mart, to be precise." "We need some showing of good faith; otherwise we might just follow the shifting climate up into Canada where our contributions can be adequately safeguarded." The President's hands are tied in the matter. Each time spending for Biodiversity Coalition projects is proposed, the conservative media convinces the public that such action is communist and socialist.

Messrs Clean and Steele, the co-chairmen of the industrial lobbying firm People for the Objectionable Leverage of Lies and Un-True Idiotic Opinions and Nonsense (POLLUTION), stand by their



ABBAGE

AND UNBALANCED

opposition: "In a free market enterprise system, we would pay for ecosystem services if they gave jobs to Americans or if they were profitable." According to POLLUTION, keeping government spending away from Biodiversity Coalition interests is a way of "ensuring that there is plenty of clear-cut space made available for the estimated 100 million new Americans expected to be born in the next 50 years," according to Mr. Clean.

Not all people have been supportive of this (metaphoric) bridge-building effort by Chipmunk, Doo, and the Administration. The Teachers for Eating Animals (TEA) Party, a group specializing in distorting the minds of our schoolchildren by force-feeding them meat, said that this meeting is "yet another example of the President standing on the rights of corporations and turning his back on the meat-eating public." The TEA Party has

become especially successful in getting anti-vegetarian political policies passed at the local level. This recent success has been blamed on fractures in the Biodiversity Coalition's cohesiveness the centrist caucus of the Coalition, the Urban Animal Workgroup, the skunks, raccoons, pigeons, rats, and insects, have been undermining the Coalition's "cute, cuddly, and harmless"

image, according to Rabbit.

Political analyst Starling Childs concurs: "The image that the Coalition has built up over the millennia is being eroded each day that some of the party members encroach upon our encroaching development." Even so, Childs adds that "the Biodiversity Coalition still represents the majority of the nation's biomass votes, if not electorate votes. As such, they need to work together to make effective use out of their supermajority.

Have you been looking closer? This issue of **SAGE** Magazine has hidden items all throughout the magazine. Look below to see how many of these features you noticed.

1. Lion on page 4
2. Danish flag on pages 6-7
3. Liz's banana peel page 27
4. Henry spells "chillies" the British way on page 37
5. The stormy mountain photo was taken in Virginia, and you can see trucks doing mountain top removal in the foreground

Photo courtesy of Emily Jack-Scott



SCHEDULE

- 4/6 **HOUSTON WE HAVE A PROBLEM** / 7pm
Dinon believes being tickled to death is nearly destroying our empire
- 4/7 **BLOOD OF THE ROSE** / 7pm
Joan Root and her campaign to save Lake Naivasha in Kenya
- 4/8 **THE END OF THE LINE** / 7pm
The effect that over fishing is having on fish stocks & the health of our oceans & how we can solve it
- 4/9 **FOODSHED** / 3pm
Chronicles the first summer of the Urban Foodshed Collaborative in New Haven, CT
...and **DIVE!**
Dumpling diving and the ugly truth about waste in America
PEACEABLE KINGDOM: THE JOURNEY HOME / 7pm
Explores the awakening conscience of several people who grew up in traditional farming culture
- 4/10 **SHORTS PROGRAM** / 3pm
BANANASI* / 7pm
The historic case of twelve banana workers who claim to be suffering from sterility & who are seeking a ruling against Dole Fruit
PARTY @ GPSCY 21+ / 9pm
- 4/11 **OCEANS** / 11am
Special Advance Screening of DisneyNature's new film at the Criterion
THE COVE / 3pm
2010 Oscar winner, Best Documentary Feature
GASLAND / 5:30pm
A 24 state journey to uncover the deep consequences of the United States' natural gas drilling boom

April 6-11, 2010
environment.yale.edu/film



2010 ENVIRONMENTAL
FILM FESTIVAL AT YALE

All screenings will be held at THE CRITERION except where noted. Additional
SHORT FILMS going on at each festival - see full listing online.



Photo courtesy of author

I'M ON A BOAT

Francisco Espinoza

As a kid growing up in Santiago, Chile, I always thought it would be great to reduce my ecological footprint by living in a tiny space. When I was young, I used to have a house up in a tree, then one under my mother's grand piano, then my own tent, and when I was older, even a motorhome. By the time I got into Yale I was a master at living in small spaces.

As soon as my fiancée, Leslie, and I got to New Haven, we started looking for that one-of-a-kind place where everything would be at hand, our bills would be painless and cleaning up would be as easy as brushing a pair of shoes. It took six months but we finally found it.

Our place is only 120 square feet, but there's space to sleep six, a table for those six to have dinner, a desk the size of an end-table, a bathroom the size of a college locker and a kitchen the size of a pin-ball machine. Does it ever feel cramped? Not at all. We live on a sailboat, so we also have a 31 foot deck, which is both larger and more enjoyable than the deck at the apartment Leslie and I were living in back in Santiago. We also have much better views, since we now see the ocean and the stars, where before all we could see out of our windows were roofs.

This is the secret of how a boat can be so comfortable: they are tiny inside but the sea is the limit for outdoor space. This makes the inside of the boat seem cozy and inviting rather than small and cramped.

How has it actually worked out? Living aboard has many advantages, but it can also be challenging. I can't fit a grand piano on board or play table tennis, but the interior is so easy to heat that our energy bills have basically disappeared.

Of course when we first moved aboard, the amount of stuff we took along was overwhelming. We discovered an overstock of sleeping bags, rice cooking pots, shirts, jackets, boots, suitcases and many, many books we would never even read.

Our first weeks living aboard were slightly depressing. We could hardly climb inside the boat, couldn't sleep in any of the overloaded beds, and spent two weeks eating, sleeping and reading on a couch.

Each day we'd give something away until we managed to fit everything in only the available storage lockers and shelves on board the boat. Without all our old junk, we could move around the boat, sleep on the beds, and experience civilized

living again. We removed most all of our belongings, and still we had everything we needed. Missing only were things we had never worn and likely would never use anyway.

We were so successful at downsizing that we actually had more empty space than necessary. Of course a boat is much more than floating storage. More than just a lack of space, we actually chose to keep less. Our boat was designed to be sailed around the world, and a jam-packed vessel is no way to journey across the sea. I wouldn't mind having more things. But I choose to not have them because in order to sail, a boat must be light enough to move with the wind.

A properly maintained sailboat can take you anywhere without using a drop of fuel. Can you think of a "greener" mode of transportation? I cannot.

This is a story about living small and simply, so I'll skip the stories we have about sailing to Maine last summer, stopping for a party at Martha's Vineyard, and cruising alongside whales near Nantucket.

Instead, I'll end by disclosing the one true challenge of living on a boat: once aboard you don't want to go back ashore at all.



Photo courtesy of Emily Jack-Scott

Rosewood to Redwood

Of fire and lightning rosewood flutes discourse,
A serenade from distant times to you,
More ancient than the music's gentle force,
Did elemental thunder split your trunk in two?

When lo, by break of morn, a sacrifice,
As fragrant rosewood fell instead of grew,
To bring to life our pipes, let joy arise,
And celebrate your majesty anew;

In misty month of maying did we meet,
A brief encounter in the north coast's land,
Our madrigals we placed on creviced feet,
Your trunk a welcome weathered music stand;

Oh redwood tree, your wisdom can't be wrong,
Did you prefer the silence or our song?



Photo courtesy of Emily Jack-Scott

Asilomar

In artful haven by the sea evolve
Those therapeutic secrets, healing's lore
Alone, outside, no sadness seeks resolve
The gentle reborn dunes stretch far before;

Too late to bloom, but silver sagewort stand,
Botanical enablers' binding glues,
Stalwart guards to tame the windblown sand,
As white-crowned sparrow greets uncommon goose;

Some yellow sand verbena I mistook
For old invading iceplant that once reigned,
Beleaguered dunes their native life forsook,
A healing turn, a habitat regained;

In redwood rooms communication thrives
In sculpted dunes the stillness now arrives.

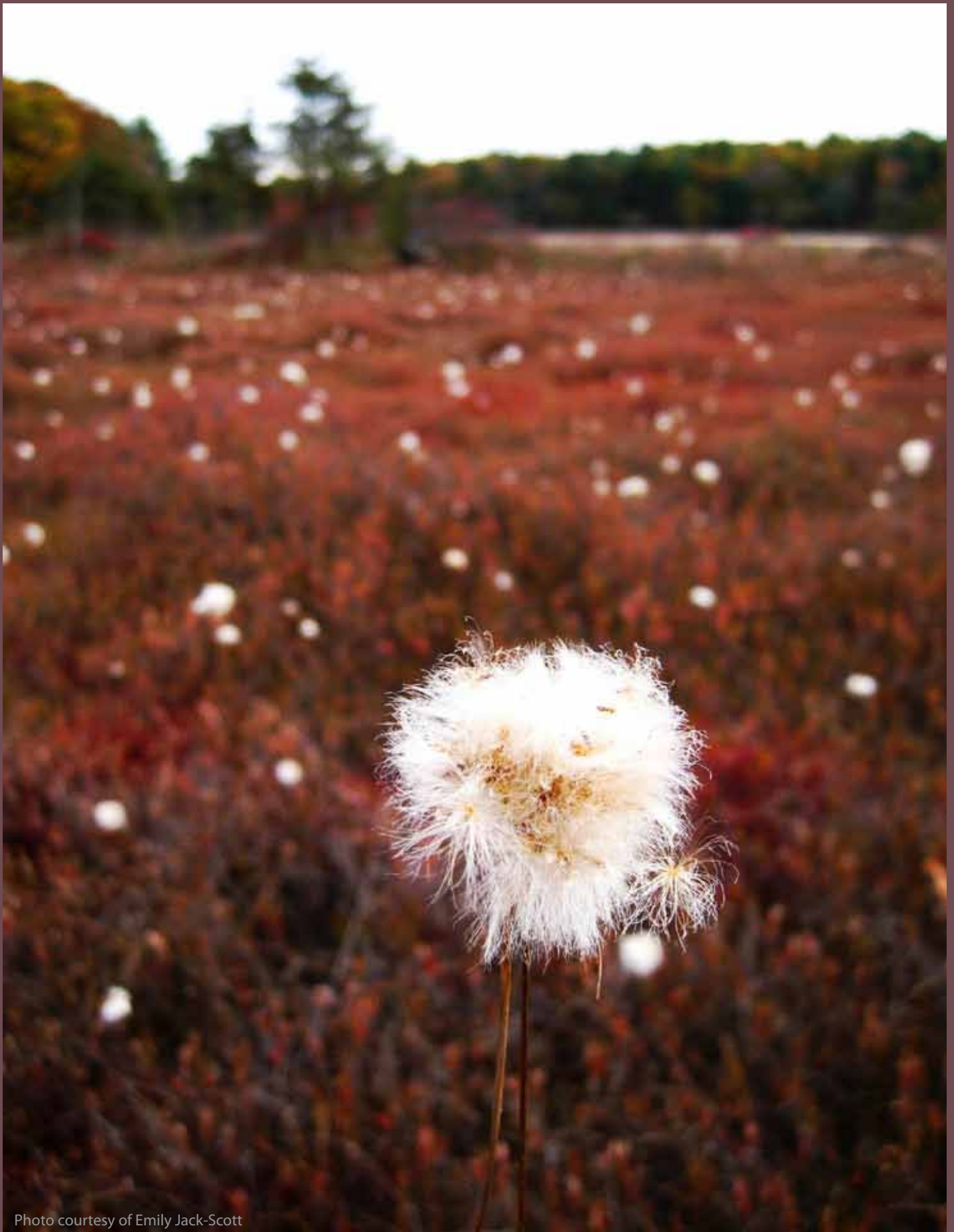


Photo courtesy of Emily Jack-Scott

Many resources went into making this issue of SAGE Magazine. When you are done reading this issue, instead of throwing it out, pass it on to a friend or leave it at a gym or library. Thanks for helping the planet.

Image courtesy of Grady O'Shaughnessy



Printed on 100% recycled paper