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Equinoctial Mix and Match

Air Pollution: Why It Should Matter to TNC 3

TNC, Sustainability and 'Food Security': Clarifying the Debate 7

Drinking from the Fire Hose 13

Fat Fish, Sick Fishery? New Research 14

Julie Morse: Conservation, Fast and Slow 17

The Rollup: Reflections on Completing the U.S. Ecoregional Assessment Database 20

Science Shorts 25

The Coda Files: Karen Wong 29

Book Review: 'Quiet' 31

Announcements and New Conservancy-Authored Publications 32

Editor's Note

By Bob Lalasz

Alan Alda (yes, the actor, who was also the host for many years of PBS's "Scientific American Frontiers" and is a passionate science advocate) has come up with a simple, elegant and productive task for all of us interested in communicating science: Answer the question "What is a flame?" in a way that an 11-year-old could understand and maybe even find fun. And to make sure the answers work, he'll have a jury of 11-year-olds choose the winners. The world of sci comm has, naturally, gone crazy.

One of the points of "The Flame Challenge," of course, is to get scientists into the habit of answering everyday but not-so-simple science-based questions in clear, interesting, memorable ways. (The deadline for submissions to The Flame Challenge is April 2; [you can submit your entries here](#), and they can be text, audio, video, interpretive dance...anything.) Some of us, naturally, are proving not very good at picking up this particular thrown glove: [check out some of the initial](#)

[eye-rollers Andy Revkin got on his blog when he posted the challenge.](#)

And one of the hopes of The Flame Challenge is that it turns lots of 11-year-olds on to science, and the promise science has of explaining life's mysteries in ways that make question-asking and mystery-solving a lifelong habit. (Alda was inspired to hold The Flame Challenge by the first answer he got to his question, some 65 years ago when he was an 11-year-old, and which still bugs him. "It's oxidation," his sixth-grade teacher told him. Gee, thanks.) As any parent knows, quick comebacks to such sudden queries come in handy for maintaining one's top-dog status with Junior: [A recent U.K. study said that the top five questions kids ask their parents all can be answered by science](#) (e.g., "Why is the sky blue?" "How do airplanes stay up in the air?") Unfortunately, two-thirds of parents, the study goes on, struggle with their responses...and *one-fifth make up answers or pretend no one knows the answers*. Somebody call a social worker!

Everyone's worried about kids, and rightly so. But (and I am dead

serious) what about these hapless, shame-filled adults? Why have we, the science-based community (within which I of course place conservation organizations), given up on talking science to people older than 18? To the point where science has lost its currency and authority, becoming "just one story of many for Congress," as one of our senior government relations people bemoaned to me last year?

Since The Flame Challenge, I've been watching the home pages of the major U.S.-based conservation groups. Only EDF and, to a much lesser extent, TNC, even say "science" above the fold, and both as simple links rather than vivid feature stories. Conservation seems to have decided to bury its foundation. Now, I was in digital marketing here for nearly five years, so I know click-throughs for run-walks and furry-fuzzies will be higher than for connectivity theory. But we have our own plays that can build audiences and stay true to the science. I'll discuss some next month. **SC**

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Viewpoint

Air Pollution: Why It Should Matter to TNC

By Tim Tear, David Evers and David Higby*



Image: Air pollution and power lines outside Beijing, China.

Image credit:
[AdamCohn/Flickr](#).

[Discuss on the Conservation Gateway.](#)

In the early 1960s, a visionary American scientist named Gene Likens and his team were the first to show that acidified precipitation was damaging to ecosystems and human health, and this harmful “acid rain” was the direct result of smokestack and other emissions. Likens knew, however, that this breakthrough was just the beginning of the effort to address air pollution in the United States. So, since acid rain had serious implications for trees, soil and water on properties The Nature Conservancy had worked so hard (and spent so much money) to preserve, Likens turned to our organization to help find a solution to this avoidable threat. TNC took a pass.

In retrospect, that refusal might have been the wiser course at the time. The Conservancy was itself still new and largely confined to its original, land-trust focus. And there was also considerable momentum building within the public sector and among other emerging NGOs to take on the many facets of what we now call environmentalism, especially pollution — a momentum that would result in such

achievements as the Environmental Protection Agency, the Clean Air Act, the Clean Water Act, the Endangered Species Act, the Safe Drinking Water Act, and Superfund.

But the Conservancy has transformed dramatically since Gene Likens made his request, and it's time for TNC to reconsider integrating the issue of air pollution into our work in a comprehensive way. Across the broad swath of new approaches the Conservancy is using to implement its latest vision — from broadening its base of support to taking up issues that connect people and nature, working in cities and engaging more in urban conservation, increasing our brand awareness, thinking less about conservation targets and more about ecological function and process, working at larger and larger scales, increasing our emphasis on valuing nature, and developing measures that show impact — there are compelling, if not irresistible, reasons why air pollution and its effects should be a focus of our work:

- Clean air and clean water consistently poll as the top two environmental issues that people care about; and discussion of “clean air” has been identified by the Conservancy as among the most effective that can be used in our communications.
- Support for measures that contribute to healthy air, like clean water, continues to be very strong among important U.S. constituencies such as urban and suburban families, polling much higher than other concepts like “biodiversity.”
- The media, too, find clean air of much greater interest than many ecology issues; TNC's mercury work has, in the last few years, generated no fewer than four major articles in *The New York Times*.
- While the United Nations Environment Programme's climate efforts have met with intractable resistance, UNEP's ongoing work toward an international mercury accord remains the only major global environmental treaty of the last decade.
- Since the Clean Air Act, air policy in the United States has centered on human morbidity and cost benefit analyses. The recent US EPA Mercury and Air Toxics Standards rule (MATS) — which includes a call for reducing atmospheric mercury levels by 90% by 2015 — has been estimated to initially prevent 11,000 premature deaths, 2,000 cases of chronic bronchitis, 4,500 heart attacks, 130,000 asthma attacks, 5,700 hospital and emergency room visits and 3,200,000 restricted activity days annually in the United States. All at a savings of \$30-90 billion.
- TNC's science work on air issues has also helped to insert the value of air pollution impacts on wildlife and ecosystems into the equation. A recent study, for instance, showed that pest suppression alone by bats in the United States — a species we now understand is greatly threatened by mercury pollution — is valued up to \$50 billion per year.

And, of course, air pollution continues to affect the lands and waters that support life. In January, the Biodiversity Research Institute and the Conservancy released a report called “Hidden Risk,” synthesizing the available information on what we know about mercury in the terrestrial food web. As recently as five years ago, much of this information was unavailable or hypothetical. Thanks to funding from RJKOSE and other private grants and donations, the Conservancy has been taking a leadership role in the

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unfolding scientific story of disentangling the transport and fate of mercury in the terrestrial food web.

The report's results showed enormous risks to bats and songbirds, several species of which serve as important indicators of mercury availability in key habitats (and could thus play a critical role in monitoring the changes that will come if the MATS rule survives inevitable litigation). Mercury deposition is more pervasive in these systems than we thought possible just a few short years ago, and thus of ongoing concern to our conservation work. In addition, mercury pollution in nature continues to be of great interest to the public: The report received front page coverage in the *The New York Times* science section.

All well and good, you might say; but still not a compelling case for the Conservancy to make air pollution a priority at a time when we have scarce resources and it has renewed federal attention. We counter that this is a critical moment for TNC and other NGOs to take the lead in the following areas:

- ***Broadening Scientific Understanding:*** “Hidden Risk” is part of a vibrant and essential ecotoxicology research movement. The more we look, the more we find, particularly with regard to mercury’s impacts on nature. We need to continue investing in this research.
- ***Raising Awareness and Building Support:*** Air pollution is a global problem for nature. Most of the mercury that falls in the United States now comes from China, not the American Midwest. Most of the nitrogen emitted into the U.S. atmosphere ends up in Europe. With our basis in science, TNC and similar science-based NGOs are uniquely positioned to raise awareness of the scope and scale of the air pollution problem in nature — and use their memberships and constituencies to build support for action and protective policies.
- ***Evaluate Policy Effectiveness:*** In the United States, we need to fill critical gaps in tracking key air pollutants, particularly a more robust system for tracking mercury contamination. We also need to establish clear thresholds for major air pollutants to know if our policies and regulations are good enough. Europe has figured out how to set such thresholds (called *critical loads*) across multiple countries for over a decade and have them inform policy.
- ***Evaluate Management Effectiveness:*** Landscape management actions (such as promoting cooler prescribed burns and preventing catastrophic wildfires that release more mercury from the soil) are among a range of management actions that could help reduce mercury emissions into the atmosphere. While we are just beginning to understand the full range of these actions, land managers including the Conservancy can and must play a role in building this knowledge.

Once it was revisited and revised, a much improved Clean Air Act dramatically decreased the amount of acid rain in North America. As a result, fish returned to some lakes and streams in the Adirondack Mountains where not so much as one fish had been seen for over a generation.

“Air pollution is a global problem for nature. With our basis in science, TNC and similar science-based NGOs are uniquely positioned to raise awareness of the scope and scale of the problem.”

But more needs to be done. The law's original authors envisioned periodic upgrades in the Act; but there hasn't been one for over 20 years. Those same fish that benefited in the Adirondacks (and many more across the northern United States) still cannot be safely consumed because of high mercury levels and are particularly dangerous to children and women of child-bearing age. Today, air pollution in the United States continues to cause more premature deaths than AIDS and gun violence combined.

However, the political climate has also become more toxic. In 1970, the Clean Air Act overwhelming passed both chambers of the U.S. Congress, then controlled by Democrats; but with considerable bipartisan help, it was signed into law by a conservative Republican president. Today, few Democrats mention clean air, while Republicans' "jobs agenda" consists of plans to weaken or dismantle environmental regulations (many of them air-related). While the Conservancy has no intention of joining a partisan squabble, there is ample need for non-confrontational, science-based approaches to making sound policy arguments that benefit people and nature.

It's time the Conservancy finally took Gene Likens up on his offer to become players in the effort to ensure clean, healthy air for all — not only for people, but for nature too.

SC

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Viewpoint

TNC, Food Security and Sustainability: Clarifying the Debate

By [Imen Meliane](#), director, international marine policy, and [Andrew Deutz](#), director, international government relations, The Nature Conservancy



Image: Scene from World Food Programme refugee camp, Kobe, Ethiopia.
Image credit: [Giro555SHO](#).

The Conservancy is increasingly touting a new value proposition for conservation: Positioning nature as a solution provider to big global issues such as climate mitigation, climate adaptation, poverty reduction, water availability and food security.¹ This shift is particularly the case for TNC's engagement internationally, and makes sense. Outside the United States, our activities are largely supported through public funding from international aid agencies, whose priorities are often expressed in terms of development challenges.

Food security is particularly high on various governments' agendas and has been driving a significant part of public aid funding internationally. It also is the subject of numerous recent discussions at the Conservancy, which have raised the following questions:

¹ FY12 TNC International Advocacy Plan.

- Do some of the definitions of “food security” used internally at the Conservancy square with the definition recognized by the international community — and what are the consequences for any disparities?
- Is conservation work that works to secure sustainable agriculture or fisheries necessarily also about food security?
- What would the Conservancy have to change about its work to become more relevant to the international food security paradigm?

We here attempt to shed light on these issues by clarifying how the development world sees food security, highlighting some of the key drivers of such a complex issue, and suggesting a few areas where conservation may play a role. We hope to spark discussion on potential connections of the Conservancy’s work to the food security and broader sustainability agendas.

What is Food Security?

To the best of our knowledge, there is no specific definition that TNC uses for food security. We have asked some colleagues what they mean when they use the term, and the answers vary significantly.

There is, however, a globally agreed definition of “food security,” adopted at the World Food Summit in 1996:

“Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.”

FAO, which is the UN expert agency on the matter, has refined the term by establishing four dimensions to food security (FAO 2006):

- **Availability** of sufficient quantities of food of appropriate quality, supplied through domestic production or imports;
- **Access** by individuals to adequate resources for acquiring appropriate foods for a nutritious diet;
- **Stability** — i.e., a population, household or individual must have access to adequate food at all times; and
- **Utilization and absorption of food** through appropriate diet, clean water, sanitation and health care.

For the development agenda, *availability* has been the main focus of food security, expressed through target 1.3 of the Millennium Development Goals (MDGs): “Halve, between 1990 and 2015, the proportion of people who suffer from hunger.” This focus intensified starting in 2008, when the spike in global commodity prices (through a combination of unfavorable weather events, macroeconomics and global trade factors) drove food prices up significantly and created a short-term food crisis in much of the

“When the international community talks about ‘food security,’ they mean providing enough quantity to feed the world, with immediate priority to the hungry in developing countries. Conservation and the Conservancy in particular need to reckon with this meaning when using the term in its planning and discussions with agencies and others.”

developing world. The G8 responded in 2009 by launching a global food security initiative, and the U.S. government responded in turn by making food security one of the three new priorities of U.S. foreign assistance, and reorganizing its foreign aid bureaucracy to support this objective. Other donor government and multilateral institutions did likewise, with a renewed focus on agriculture as a driver for rural economic development.

Bottom line: When the international community talks about “food security,” they mean providing enough quantity to feed the world, with immediate priority to the hungry in developing countries. Conservation and the Conservancy in particular need to reckon with this meaning when using the term in its planning and discussions with agencies and others.

Is Our Work Contributing to Food Security?

A complaint we’ve heard internally is that we have been presenting our conservation work externally as contributing to solving the food security problem when in fact we currently aren’t doing that.

We agree. Our emerging agriculture strategy is focused on increasing overall agricultural productivity — “sustainable harvests at scale” — as our Latin America program describes their work. And our fisheries work is about improving the health of the marine ecosystem and the sustainability of the overall fishery. Given the worldwide accepted definition of food security as well as the state of global and regional food security now and in the future, contributing to food security through our conservation activities would require us to identify and design strategies with clear and explicit objectives of increasing production and access to food for those who are food insecure.

Sustainable intensification of agriculture

With government and development agencies currently focusing on figuring a way to feed the additional 2-3 billion people expected by century’s end, many environmental organizations have been engaged in pushing forward an agenda on “sustainable intensification” to address the resource scarcity and ecological limits of a planet already suffering from water shortages, depleted fish stocks, biodiversity loss and the impacts of climate change. The Conservancy’s emerging global priority around agriculture clearly fits this mold. This strategy looks at ways to partner primarily with industrial-scale agribusinesses to help these corporations and their suppliers improve yields to feed a hungry and growing world while simultaneously maintaining or improving key environmental variables. For instance, in Brazil, sustainable intensification is about increasing beef and soy yields without deforesting more land and while improving water-use efficiency and reducing nutrient run-off.

Establishing the paradigm of sustainable intensification is very important work for conservation and for sustainable food production at scale. But it is not really a strategy

“Establishing the paradigm of sustainable intensification is very important work for conservation and for sustainable food production at scale. But it is not really a strategy to reduce food insecurity as the development community measures the term.”

to reduce food insecurity as the development community measures the term — food deprivation or undernourishment (when food intake regularly provides less than the minimum daily energy requirements). While the global percentage of those who are hungry has declined over the last decade, it remains an enormous challenge: One in about every seven people on Earth still suffers from hunger (FAO, 2010). In addition, the regions most at risk for hunger are also not geographies where the Conservancy has substantial presences: Sub-Saharan Africa, South and Southeast Asia (see Map 1).



Map 1: Level of Hunger (malnutrition) by country. Source: World Food Programme.

“We cannot simply assume that improving the health of fish stocks will increase food security in the places that are most insecure, absent specifically targeted interventions and strategies.”

Our work with fisheries

We also have an emerging priority around fisheries, and some in the Conservancy would like to link that work to food security. But unlike grain production, fisheries and food security are closely linked in only a few instances — such as small-island nations of the Pacific, where coastal communities rely on fishing for subsistence and tend to have few alternatives crops or livelihood options. At the global scale, the story is different: regions with high undernourishment are net exporters of seafood to regions with high undernourishment (Smith et al. 2010), because conditions in the global seafood market make it advantageous for many countries to sell or export their seafood and generate surplus value. While that surplus value theoretically should flow to communities, in practice governance and social factors often stand in the way. Generally, the diversion of fish and fish products from local communities to the export markets tends to disproportionately disadvantage the poor (Kent, 2003).

Table 1: The juxtaposition of interventions when aiming towards food security or biodiversity outcomes (fisheries).

Interventions	Food Security Objectives	Biodiversity Conservation Obj.
Harvest rate	Promote maximum sustainable yields in fisheries to increase catches	Reduce harvest rates to leave more fish in the sea for the ecosystem
Target fish at lower trophic level (forage fisheries) to increase amount of fish available for human consumption	Promote more efforts to fish more of these species	Reduce the effort to catch forage fish, as these species form the basis of the food chain and are essential for ecosystem function
Target high productivity areas to increase yields	Increase fishing effort in these areas	Increase degree of protection in these areas as they tend to be hot spots for biodiversity (=fish less)
Mariculture	Change species targeted for mariculture (to those lower in the food chain or GMOs) and increase operations and yields	Reduce mariculture because of impacts on coastal ecosystems No GMOs
Freshwater aquaculture	Increase production and culture of more species	Use only local species to protect native biodiversity and reduce re-stocking programs
Market-based approaches	Provide fish at an accessible price	Increases prices to reward sustainability

Source: Adapted from Rice and Garcia, per. comm. 2010.

“The phrase ‘food security’ (and those of other development challenges) will not work if we use them as buzz words to engage with development agencies or add them to proposals in the expectation that they will increase the likelihood of funding.”

TNC needs to also carefully consider the juxtapositions, conflicts and trade-offs that arise between food security and conservation objectives when assessing whether a strategic action or interventions for fisheries conservation falls under “food security.” Table 1 (above) summarizes this juxtaposition in interventions regarding fisheries, depending if the outcomes are food security or conservation objectives.

We cannot simply assume that improving the health of fish stocks will increase food security in the places that are most insecure, absent specifically targeted interventions and strategies.

Some Next Steps

Food security will continue to be high on development agencies’ radar screens, shaping many interventions in the international arena. The underlying economic and demographic trends that shaped global commodity price spikes in 2008 and 2011 are not abating, and the climate is certainly not getting less predictable. We need to discuss openly how to position the Conservancy in that debate.

There are several ways we can address these challenges:

- *Position conservation as a direct solution provider*; but we need to be careful in identifying where our work is relevant (e.g. the Coral Triangle, East Africa), and design innovative strategies and actions that truly deliver for target food insecure populations;
- *Use our science to improve the sustainability of other people's solutions to food security*; focusing primarily on resource efficiency and sustainability of intensifying production;
- *Highlighting conflicts and trade-offs*; because win-wins will not always be possible, we may need to identify the areas where there's a direct conflict between conservation and other development objectives.

We're already doing #2, both in the field in North and South America and in some focused policy arenas, particularly with USAID. It is worth being even more thoughtful about this work. And we should be a lot more assertive about the contributions to global food sustainability and resource scarcity issues that we are developing through our agriculture and fisheries strategy.

The conservation community as a whole has been pretty sheepish about addressing #3, but it is worth acknowledging more openly that we don't always live in a win-win world.

Lastly, we should have an explicit and informed conversation about the external global context of the global food security debate and what the Conservancy can do about the issue, recognizing the opportunities and constraints it may present to advance our work — particularly in agriculture and fisheries. The phrase (and those of other development challenges) will not work if we use them as buzz words to engage with development agencies or add them to proposals in the expectation that they will increase the likelihood of funding. They in fact represent areas of work that the international development community has spent decades on, refining definitions and approaches in order to maximize the benefits of its interventions. And they provide important opportunities for our work — in East Africa and the Coral Triangle, in particular — but only if we take the time to understand the global context. **SC**

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Drinking from the Fire Hose

A quick monthly roundup of interesting articles, websites and other experiences collected by your editor. Send your suggestions for future roundups to rlasz@tnc.org.

1) [Children's Books Increasingly Ignore the Natural World](#) (Miller-McCune): If you're of a certain age, the phrase "children's book" means a Golden Book with cuddly animals and adventures in nature. Not so much for kids these days, according to a new study in *Sociological Inquiry*, which surveyed images in books that won the American Library Association's Caldecott Medal for children's lit from 1938 through 2008. In: images of the built environment. Out: Natural environments, which "have all but disappeared," as have wild animals. Even depiction of *pets* (cats and dogs) are down to less than half what they were in the 40s.

2) [Filmstrips \(Information is Beautiful\)](#): I know TNC is talking about implementing measures in earnest — but wouldn't it be nice to have a visualization to shoot for, what we'd like to show folks in about 20 years? Something, like, say, "Filmstrips," which gives you the most elegant and absorbing depiction of the major film releases of the last four years by production cost, gross, category and critical rating? Yes, I know, it would be comparing rutabagas to rugby balls. Still: click, explore, get lost, get jealous.

3) [Kin and Kind: A Fight About the Genetics of Altruism](#) (The New Yorker; **subscription required**): $rB > C$ — the William Hamilton equation that explained how altruism fit into natural selection and that launched thousands of biology papers...not to mention the spectacular rise of E.O. Wilson. Now in his 80s, Wilson has publicly, gleefully renounced the equation, and Jonah Lehrer here elegantly chronicles the history of an idea and how Wilson's apostasy has exposed the lack of math in lot of biologists (including himself). And if you think Wilson is just the slightly wobbly, nematode-obsessed guy who spoke at TNC's 60th anniversary gala, you *must* read this.

4) [Tongue Parasites to People of Earth: Thank You for Your Overfishing](#) (The Loom): Yet another disturbing trend to add to your groaning collection: Parasites that eat the tongues of fish...and then just stay there in place of the tongue. Overfishing seems to make this more prevalent: Nearly half the Mediterranean's striped sea bream not in a marine protected area were found to have these "tongues." Gross, gross, must-see gross.

5) [The Hunter](#) (opens April 6 in the United States): A semi-tense movie about a contract killer (played by Willem Dafoe) sent to the Tasmanian wilderness by a mysterious bioprospecting firm to bag a thylacine, also known as the Tasmanian tiger, thought extinct since the '30s but rumored to have been recently spotted. Burdened with rather plodding direction and a stickman subplot of soused loggers versus crunchy granola greenies, what makes "The Hunter" worth it is the gorgeous in-country cinematography of Robert Humphreys and another one of Dafoe's habitually astonishing performances. The scene when he confronts the thylacine's demise as a species is as morally powerful as movies get, even if you might have already guessed what happens an hour earlier. **SC**

New Research

Fat Fish, Sick Fishery?

Walsh, S.M., S.L. Hamilton, B.I. Ruttenberg, M.K. Donovan, and S.A. Sandin. 2012. [Fishing top predators indirectly affects condition and reproduction in a reef-fish community](#). *Journal of Fish Biology* 80:519-37.

By [Sheila Walsh](#), senior scientist, Sustainability Science Program, The Nature Conservancy



Image: Sheila Walsh trying to catch a fish on the trip. Image credit: Kevin Lafferty.

[Discuss on the Conservation Gateway.](#)

Kiss good-bye to dry land and travel as far as you can from any continent and you will eventually find yourself on Kiritimati (Christmas) Island in the Pacific Ocean, 4,200 miles from Sydney, 3,300 miles from San Francisco, and the first inhabited place on Earth to greet the New Year.

Beneath the waves that surround this island, colorful reef fish roam the coral reef all day, live long lives, and are nice and fat.

Sounds like fish paradise, right? Not so fast. [New research](#) conducted by myself and my colleagues at Christmas Island and nearby Palmyra Atoll (and just published in *The Journal of Fish Biology*) suggests that **fat fish are a sign of a fishery out of balance**.

It's well documented that marine predators like sharks are disappearing due to overfishing, even in certain spots of places as remote as Christmas Island. Losing these predators seems as if it should send ripple effects down the food chain and cause small prey fish to explode in numbers. Yet, strangely, there have been few signs of a population boom on coral reefs.

That's because the enormous diversity of species on coral reefs can buffer these ecosystems from big shocks like removing a predator species. But, I still had to wonder: aren't prey fish noticing that they are no longer being hunted by hungry sharks? Were the previous studies measuring the wrong thing?

My colleagues and I set out to examine this question.

Our research found that, while the population numbers of prey fish in overfished spots on Christmas Island don't show that the predator-prey relationship has been altered, indicators of fish health tell another story. On coral reefs with high fishing and few predators, the prey fish are fat. On coral reefs with predators still intact, the prey fish are skinny....and a little bit nervous.

Trying to Catch an Escape Artist

One of the challenges we faced in looking at the predator-prey relationships on coral reefs is that there are few places where predators are still truly abundant. But Palmyra and the remote southeast coast of Christmas Island are like traveling back to a place in time when predators were more abundant than their prey and corals were lush and resilient. We compared these locations to the heavily populated northwest coast of Christmas Island, where predators have been overfished.

After months of painstaking preparation shipping weighing scales, dissecting tools, spearfishing equipment and SCUBA gear, we arrived in Palmyra to start our month-long expedition that would conclude on nearby Christmas Island. We had a plan to collect samples of the five most-abundant species representing all key types of reef prey fish, from damsel fish that sit in the current snacking on passing plankton to surgeonfish that roam the reef grazing like cattle.

Although the numbers of sharks and other top predators on the un-fished and lightly fished reefs of Palmyra and southeast Christmas Island was enough to keep us researchers on edge, it was the prey fish that seemed to be really worried.

All we had to do was dive, catch fish all day, dissect them all night and avoid sharks. But it wasn't so easy — these fish had the defensive moves of professional escape artists! When we came back with barely a fish in hand, we knew something was different about Palmyra.

“Although being fat doesn't sound like such a big deal, it may indicate that prey fish are growing more slowly and the productivity of the reefs is actually decreasing....Marine conservationists' bigger concern may be that the prey fish will be the next to disappear — because once predators are overfished, fishermen tend move down the food chain to fish prey.”

Skinny, Nervous Fish — But Not the Ones That Should Be Worried?

Previous studies have shown that prey fish on Palmyra spend a lot more time hiding and don't live very long compared to Christmas Island. It turns out that these changes have consequences for the health of the individual fish and the population in terms of body condition and reproduction.

Our hypothesis? If you're spending all your time trying to not get eaten, you probably can't put much energy toward getting bigger and fatter. And, if your chances of making it to tomorrow are low, it might just make more sense to hurry up and have babies to pass on your genes rather than save up for having babies later.

We eventually managed to complete our collections. (Ironically, we lost a few of our samples to sharks and hungry locals on Christmas Island.) However, our reward was a pretty interesting result. These data, representing the diverse community of reef prey fish in Palmyra and Christmas Island, showed that prey fish are consistently heavier and fatter on reefs with fewer predators. However, the patterns in reproduction were less clear (isn't reproduction always complicated?).

Okay, so what? Well, we used to think that fishing top predators, while not so great for the predators themselves, really didn't affect the prey fish on coral reefs. After all, we didn't really have evidence of their numbers changing. But, in fact, it turns out that loss of predators does affect the prey fish's health in surprisingly consistent ways — they're fatter.

Although being fat doesn't sound like such a big deal, it may indicate that prey fish are growing more slowly and the productivity of the reefs is actually decreasing. The jury is still out on these questions, but some ongoing studies may reveal the answer. Marine conservationists' bigger concern may be that the prey fish will be the next to disappear — because once predators are overfished, fishermen tend to move down the food chain to fish prey.

In the meantime, fisheries managers may now be able to use these indicators of body weight and fat to detect whether predator-prey relationships they previously thought were fine are really out of balance. **SC**

Have interesting new research you want to write a short descriptive piece about? Shoot a note to [Bob Lalasz](#), editor of Science Chronicles.

Viewpoint

Conservation: Slow Down to Speed Up

By [Julie Morse](#), ecologist, The Nature Conservancy in Washington



If you've ever trained for a marathon, or at least read a few training plans as I have, you know that all marathon training programs are some combination of three basic components: fast, hard, and slow.

Image credit: [James Nord/Flickr](#).

Individual trainers, of course, differ in the details, and each have their own exact formulas, but most agree you need each of these components to go fast on marathon day.

[Discuss on the Conservation Gateway](#).

Conservation, no doubt, is a marathon. That means we need to get smarter in the way we're progressing in order to be successful in the long run. As conservationists, of course, we love going fast, and we embrace hard challenges. But *slow*? It just isn't in our genetic code. Impatience is our game. A slow pace of change is a luxury that we feel we just can't afford.

But is it a luxury, or a necessity?

Fast and Slow Food

Take one area we can't possibly go slow about: developing solutions to the global food crisis. The planet now has 7 billion people and counting. About 40% of our terrestrial lands are already in some form of agriculture (yes, there are more farms than forests!). Global agriculture is already the single biggest contributor to climate change, while land conversion is the biggest contributor to habitat loss...Yet current global food production is nowhere near enough to sustain the growing human population. People, we have got to be paying attention!

Whatever your favorite solution to the agricultural crisis is, I agree with it: GMOs to increase yields, local food movement, smarter diets, incentives for farmers, trade subsidies...yes to all of them.

And yet, along with all those solutions, we as conservationists also need to take the time to build community support and motivation among the people who will be the long-term players in integrating these solutions. Which is not fast work.

Check out [this video](#) about the Conservancy's work with farmers in Washington State (produced by the awesome science communication firm HabitatSeven). Watch Keith the potato farmer closely — he participates in our Farming for Wildlife program, in which farmers flood their fields to attract and sustain shorebirds. Keith can't name different shorebird species like he could potato varieties, but he's still genuinely upset that his neighbor had more shorebirds than he did. That competition and sense of purpose — "I want to be left alone to farm, but I realize the world is bigger than that" — is *intrinsic motivation*.

Getting the world to a place where it's intrinsically motivated to endorse our conservation goals? That's pretty slow going. But here's the secret: Intrinsic motivation works — and sticks — in ways extrinsically motivated gains often don't.

Here's another great video: business author [Daniel Pink's TED talk](#), in which he emphatically argues that businesses *always* fail when they rely on extrinsic motivation. Pink is a really smart successful guy, with loads of data on the science of motivation. Yet many businesses just continue to ignore his message.

Conservation programs on private lands typically take the carrot-on-a-stick approach. Take the Wetland Reserve Program (WRP), the U.S. Farm Bill's preeminent program for creating wetlands. Implemented by the National Resource Conservation Service (as are all Farm Bill conservation programs), the WRP gave farmers across the country money to take marginally productive parts of their land and put them into wetland habitat. WRP was especially popular in the Midwest — that is, until corn prices skyrocketed because of the demand for corn as a biofuel crop. Farmers found that they could make more money from those marginal lands in corn than in conservation, so a lot of wetland habitat that ducks and other fowl had come to depend on had suddenly

“Getting the world to a place where it’s intrinsically motivated to endorse our conservation goals? That’s pretty slow going. But here’s the secret: Intrinsic motivation works — and sticks — in ways extrinsically motivated gains often don’t.”

vanished. As conservation, the program just didn't stick. It was just too extrinsically motivated.

Through its intrinsic-motivation approach, Farming for Wildlife is building more slowly, and is now six years old in Washington. But here's the thing: To date, it's influenced farming practices on 150 acres total. That's not just slow: that's *painfully* slow.

But in the long run, I'd argue, it's building a foundation with partners that will allow us to be successful and go faster in the future. It's a necessary complement to our policy work, a precursor for developing incentives for private lands management. It's the groundwork that will allow the groundswell. And there just aren't any shortcuts for that kind of work. As Farmer Dave says: "You can accomplish anything over 1,000 cups of tea." Problem is, you just can't gulp down hot tea.

Look at how widely successful [RARE](#) campaigns have been in inspiring conservation. Their whole model for conservation change is built on fostering pride — which is nothing more than simply intrinsic motivation. As we talk and think more and more about incentive programs, or any project really where we're enticing conservation action by offering a carrot, should we not also be considering how we can foster intrinsic motivation in our project stakeholders at the same time?

Back to that training plan. In the long run, conservation is going to be the longest marathon ever. It's the race of our lives. So we better have a damn good training plan. One with all three components — fast, hard, and slow.

Sure, I ran a marathon once. But like many marathon rookies, I skimmed on the slow training (boring!), only to end up with a torn hamstring. I hobbled across the finish line — if that's your measure of success. But I've never run another marathon since.

I hope that conservation is training smarter than I did. To eventually go faster, we often need first to go slower — and have the patience to know that's OK.

Disagree? Please, [leave a comment and start a conversation](#). **SC**

Q&A

The Rollup: Reflections on Completing the U.S. Ecoregional Assessment Database

Interview by [Joe Fargione](#), lead scientist, North America Region, The Nature Conservancy



The Conservancy's North America Region recently completed the "Ecoregional Roll-Up"—putting all of our conservation priority areas and targets into one database that can easily be viewed, searched and downloaded from this public website: <http://maps.tnc.org/USpriorityAreas>.

Image credit:
[valakirka/Flickr](#).

**[Discuss this article](#)
on the Conservation
Gateway.**

The database's completion is the culmination of an ambitious Conservancy project that began in the mid-1990s: **to generate a comprehensive conservation vision for the United States**. Many, many Conservancy staff members contributed to this project over the years. In honor of this landmark, Joe Fargione asked **Craig Groves** and **Robin Cox**, two long-time Conservancy employees who were intimately involved in this effort, to reflect on the accomplishment.

If you don't know: [Craig Groves](#) directs the Conservancy's Conservation Measures Team. [Robin Cox](#) is associate director of conservation for TNC's California program.

It's hard to imagine TNC without ecoregional assessments. When did we start doing them, and what did we do before them?

Robin Cox: During the 1980s, our conservation planning focused on rare species and natural communities, using an approach we called *range-wide planning*. Planning tools were pretty simple — clear acetate overlays showing the locations of important sites draped over USGS topographic maps...no GIS, no computer models, lots of expert input.

I was one of a couple of ecologists hired in California during the mid-1980s to develop early range-wide plans — which meant crafting custom conservation plans for each of the many hundreds of biodiversity targets tracked by our state's Natural Heritage program. Sounds simple, but it turned out to be a never-ending task. We started at the top of the alphabet with *Abronia alpine* — a globally threatened endemic plant. After several years, we had only made it to *Limnanthes* — at which point we began to question the wisdom of doing single-target planning. And though we were securing many of the priority places identified through rangeland planning, these sites were widely scattered, lacked connectivity and captured a very narrow spectrum of the state's complex biodiversity patterns and processes. We simply were not conserving an ecologically cohesive set of conservation areas.

From an implementation perspective, our state director in California, Steve McCormick, wondered how long he could convince donors that the latest list of “best places” was somehow better than the previous list. Indeed, some of our most sophisticated donors were asking “when are you done?” — challenging us to essentially map “mission success.” So, in 1991, we launched bioregional planning in California, using what we now call “ecoregions” as our organizing lens. We expanded our goal from preserving pockets of rare species and natural communities to safeguarding a suite of intact sites that collectively represented a full microcosm of ecoregional biodiversity. McCormick called the resulting maps our blueprints for successful conservation. The approach resonated with our agency partners and private donors, and many millions of conservation dollars were directed to protecting these systematically selected areas.

Craig Groves: Most TNC projects before the ecoregional approach followed the California approach: They were focused on the conservation of rare species and rare (ecological) communities and were often confined to only portions of some states. State TNC programs primarily relied on Natural Diversity Scorecards, which were prepared by state Natural Heritage Programs. These scorecards contained information on priority sites that needed conservation action; the elements (conservation targets) of biodiversity that were found on the site; and often information about threats, current management and landownership.

In the mid-1990s, TNC President John Sawhill asked Steve McCormick to lead a committee of senior conservation leaders (called the Conservation Committee) to develop a more forward-thinking vision for biodiversity conservation. It was the

Robin Cox: “We started at the top of the alphabet with *Abronia alpine* — a globally threatened endemic plant. After several years, we had only made it to *Limnanthes* — at which point we began to question the wisdom of doing single-target planning.”

Conservation Committee that produced the first version of that vision in 1996 — what we now know as the Conservation by Design framework, which directed the Conservancy to focus its conservation work on “portfolios of sites in ecoregions.” The Conservancy then undertook the task of completing ecoregional plans for the entire country (and for ecoregions outside the United States where the Conservancy worked) with the aim of conserving, in collaboration with the entire conservation community, all the biodiversity of entire ecoregions. The first plans were completed around 1998.

These assessments weren't just a TNC undertaking — we often convened stakeholder groups to conduct the assessments. Did that inclusiveness affect the kind of assessments that were produced and how they were used?

Craig Groves: The majority of early ecoregional planning efforts were primarily completed by Conservancy staff in collaboration with Natural Heritage Programs. Some state programs were quite concerned with making these efforts more public and, in some cases, sharing our land protection priorities. Although the Conservation Committee and Conservation by Design clearly intended to galvanize the entire conservation community of public and NGO parties to focus conservation efforts on the portfolios that emerged from ecoregional planning, that was not always the case — and there were many missed opportunities for broader engagement in the early years. The Sonoran Desert Ecoregional Plan, a bi-national effort with Mexico, was one of the first ecoregional assessments to be conducted in a very public manner.

Any culture clashes between all these stakeholders?

Craig Groves: Ironically, some of the earliest culture clashes the ecoregional assessments provoked were between TNC programs trying to work together across state lines, a practice that was largely new at the time and revealed the differing conservation philosophies and approaches among different state programs. In the long run, ecoregional assessment work had the really significant secondary benefit of getting Conservancy programs to work together more effectively.

What impacts did the ecoregional approach have that you didn't originally anticipate?

Robin Cox: We didn't anticipate the tremendous impact ecoregional assessments would have on the broader land trust community. Today, many local and regional land trusts that once decided where to work primarily on the basis of opportunity now use ecoregional assessments to shape decisions on where to invest their funds. Our conservation planning approach has been replicated around the world — by global, regional and local conservation entities. They will carry on this work as we pursue new directions. I think that the contagion of ecoregional assessments was largely a result of successful stakeholder engagement in the process and the underlying logic of striving for representation at a geographic scale that everyone could grasp. It didn't hurt that major donors like the David and Lucile Packard Foundation encouraged (and funded)

Craig Groves: “They provide a conservation vision for the United States. It is probably something that government should have done, but I’m proud of the fact that the Conservancy has ably filled this void.”

partners to incorporate this logic into their priority-setting. I doubt that many of us anticipated the ultimate reach of ecoregional assessments across the global conservation community.

What's the importance of having wall-to-wall conservation priority areas identified for the whole country?

Craig Groves: First and foremost, they provide a conservation vision for the United States. It is probably something that government should have done, but I'm proud of the fact that the Conservancy has ably filled this void. For example, the National Park Service and the National Wildlife Refuge System are both considering ideas for expansion. Having this sort of data available provides these and other agencies (both state and federal), as well as NGOs some critical information on where there are important conservation gaps that they could consider filling. It's important from a development perspective, too — providing valuable information to industry and business that should help in avoiding or minimizing degradation of these priority areas.

But the most visible use has been by state wildlife agencies, all of which have completed state wildlife action plans in the last few years. Many of these plans were driven in major ways by the data, maps and analyses that TNC put together in its ecoregional assessments. And the general methods that the state wildlife agencies used in preparing these plans were based in part on methods that TNC and other organizations have used in preparing ecoregional assessments and other types of systematic conservation plans.

Robin Cox: One of my favorite stories about agencies and our assessments is one often told by Steve McCormick. He would describe numerous occasions when he would walk into meetings with state and federal public agency officials, hoping to convince them to partner with us on projects identified through ecoregional assessments — and there, already on the walls of their offices, would be our poster size portfolio maps. The agencies already “owned” these maps because their staff had given us much of the underlying data and expert information. In California, our state, these early ecoregional assessments were the “only statewide vision in town” — and they gave us tremendous stature.

You were both involved in writing the original handbook for ecoregional assessments. If you knew then what you now know about conservation planning, how would you have altered that guidance?

Craig Groves: Pretty dramatically in a lot of ways; I'll highlight three. First, I would have placed a lot more emphasis on planning in freshwater and marine environments, as the first edition was very terrestrially oriented. Second, if we accept that biodiversity has three components of structure, function, and composition, I'd give a great deal more attention to biodiversity function and ecosystem services in the planning process. Finally, we never thought much about strategy in ecoregional planning, and that was a

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mistake (actually, a very senior TNC manager discouraged us from bringing strategic thinking into ecoregional planning). Today, we realize that spatial planning such as ecoregional assessments and strategic planning need to be one and the same process.

Robin Cox: I would have advised teams to be more flexible in their decision rules to accommodate the conservation context of the region. For example, in ecoregions primarily in public ownership, we often excluded large and reasonably intact public lands from our portfolios — not because they lacked biodiversity values, but because they were slightly less target-rich than someplace else, or because they didn't form the most efficient spatial configurations according to MARXAN decision rules. Looking back, I would suggest that teams take a more pragmatic view and make public lands part of our ecoregional conservation networks. Given the challenges of expanding the conservation lands network, making management of public lands more sustainable is a more cost-effective strategy than looking elsewhere for a more ideal configuration. It's also hard to get buy-in from public partners when we exclude their lands from the equation.

TNC's conservation planning is evolving to better address climate change, connectivity, ecosystem services, and multi-objective planning that shows how we can simultaneously meet the needs of conservation and human development. How would those approaches change these maps?

Craig Groves: Years ago, ecologist Jim Brown spoke about the importance of conservation in the "semi-natural matrix," meaning the lands and waters between conservation areas that still contain some natural land cover. I think the biggest difference between the current map and a map that would be drawn from today's approaches would be an emphasis on lands and waters in this matrix — for ecosystem services and functions, for critical connectivity areas, or for areas that are critical to meeting development needs such as have been identified in marine spatial planning exercises or Development by Design energy mitigation assessments. **SC**

Science Shorts

Magical Thinking re: Social Science?

Sievanen L, L.M. Campbell, and H.M. Leslie. 2012. [Challenges to interdisciplinary research in ecosystem-based management](#). *Conservation Biology* Online Early.

Do we expect the act of conducting ecological science to change the way an ecosystem functions? Maybe: if the results catalyze policy and policy changes management and management alters the ecosystem. But direct changes to an ecosystem are called stewardship.

This article finds that across multiple countries implementing marine ecosystem-based management, social science is being applied as essentially a stewardship strategy. Conservation organizations expect the act of conducting social science research to “facilitate[e] behavior change through education or public participation” or be a “huge outreach tool.” If the results further conservation interests, that is. And if they don’t, social science can be perceived as a waste of time and money.

Incidentally, this paper is an excellent example of qualitative social science research (semi-structured interviews) making it into a hardcore conservation journal. It remains to be seen how conservation will make it into the trans-disciplinary realm. **SC**

— **Jensen Montambault**, applied conservation scientist, The Nature Conservancy

[Shut The Hell Up! Shut The Hell Up!]

Karp, D.S. and R. Guevara. 2011. [Conversational noise reduction as a win-win for ecotourists and rain forest birds in peru](#). *Biotropica* 43:122–130.

Aahh: The tranquility of nature...a quiet walk in the forest...just you and nature...soaking it in...birds singing around you...peace on Earth...and then the peace is shattered by hikers, birders, nature-lovers — by their TALKING! But it’s not just your peace they’re disrupting. Now you have data: Their talking alone can reduce the number of species that you see — by up to a third! Outrage!

This recent study in a Peruvian forest has proven what loners like me (or “solitude-lovers,” as I like to call us) have suspected for ages: If you talk while in the field, you will see and hear less. Birds (and mammals, too, probably) are impacted by even a low speaking volume (such as 50db, that found in a library). The consequence? A decline of 35% in total detections and 33% in species richness. Even worse, not only do *you* see and hear less, but it appears there’s less to actually see: talking also impacts birds’ breeding behavior, predator detection, and territory defense. Ultimately, the more sensitive (and usually rarer) species may move away from the area of disturbance. So, by all means, get out and enjoy nature...just talk about it before and after! **SC**

— **Tim Boucher**, senior conservation geographer, The Nature Conservancy

Climate Wars Claim Another Victim

Peter Gleick, a member of the National Academy of Science, winner of the MacArthur “genius award,” and world-renowned climate hydrologist, did something that was not so smart in late February, and created yet another furor surrounding the interface of politics, ethics and science in the climate arena. Gleick called the Heartland Institute (a well-known climate denier “think tank”) and posed under a false identity in order to gain access to some of their documents and strategy discussions, which he then sent anonymously to journalists and bloggers. He got caught, and there is an investigation. There is a special twist on the story which makes it even more painful: Gleick chaired (and had launched) the American Geophysical Union’s task force on scientific ethics. Obviously, he had to resign that position.

I do not want to pick on Gleick — because all of us have made misjudgments, and he has made enormous contributions to the world as a scientist. His work on water scarcity and the impacts of climate on the hydrological cycle is foundational to much of the work we do as conservationists. I write about the story to remind us all how increasingly environmental science operates in a politically charged environment, where passions can run high and the phrase “war” is often used to overstate the severity of the arguments.

There has been some blogging and editorial writing following this Gleick event that has suggested maybe Gleick’s tactics were understandable and necessary when going up against the Heartland Institute. Wrong. Our job, and especially our job when debating some of the core issues in conservation — What is the impact of climate change? What are the impacts of biofuels or fracking on the environment, Should biodiversity be a priority for a nation with starving millions? — our job is to keep our cool, and make it all about the data and the evidence. What do the numbers tell us? In the end science will prevail, but only if scientists do not get sucked into the storm and stray from their main mission: ask important questions, answer those questions with data and models, deliver results clearly and compellingly for a wide variety of audiences.

If you want to read some of the exchanges about this Gleick event go to [the Guardian’s story](#) on what Gleick did, and the [The New American’s](#). **SC**

— Peter Kareiva, chief scientist, The Nature Conservancy

The REDD Menace? (Speaking of Controversies...)

Beymer-Ferris, B. and T. Bassett. 2011. The REDD menace: Resurgent protectionism in Tanzania’s mangrove forests. *Global Environmental Change* Available online

In a provocative paper now available online at *Global Environmental Change*, a pair of geographers and social scientists critique a forest protection and mangrove planting

program in Tanzania being run mainly by WWF. Essentially, relying apparently primarily on interview data, Beymer-Ferris and Bassett conclude that the Tanzanian government, aid donors and conservation NGOs violated local community wishes and rights in pushing mangrove protection and restoration at the expense of rice farming in the Rufiji Delta.

WWF has [issued a rebuttal](#), which claims Beymer-Ferris and Bassett do not present “hard” data that could be refuted, or describe methods that could be repeated. I agree — and am hoping details and data are available in the Ph.D thesis this article was based on and which apparently entailed three years in the field in the Rufiji Delta. WWF also argues that the scientists should not so readily trust the local villagers who were interviewed because the villages have their own agenda. True enough — but we conservation NGOs need to be very cautious when we start going up against local communities — this is why TNC has a global priority focused on indigenous people and conservation. And I am not a big fan of “rebuttals” that have an organization as opposed to people as authors (to whom would I write if I wanted to learn more?). I am expecting there are WWF scientists producing articles to submit to *Global Environmental Change* that will follow the peer review process and contribute to the debate.

TNC is filled with natural scientists. We need to realize that in today’s world of conservation, grappling with questions about how villages feel about our projects, and whose rights are being trampled on (or not), are core to our efforts. These are questions for social science, and this is why I am hoping TNC invests increasingly through partnerships or our own hiring in scientists willing to tackle these social questions as rigorously and effectively as we have tackled questions about ecological processes and species habitat requirements. **SC**

— **Peter Kareiva**, chief scientist, The Nature Conservancy

Staying Cool Under Global Warming: Get Smaller

Secord, R., J. Bloch, et al. 2012. Evolution of the earliest horses driven by climate change in the Paleocene-Eocene Thermal maximum. *Science* 335:959-962.

Size has always mattered to mammals. Size determines energy demands, how far and fast animals can travel, generation time, and in this era of global warming — the ability to stay cool. In fact this size thing has led to one of evolutionary biology’s most widely known rules — Bergman’s Rule, which states that within a genus of animals, the smaller species will be in warmer tropical climates, and the larger species will be found in cooler climates. Data support this rule. But until recently, there was an argument among biologists about whether animals tended to be smaller in warm climates because

of changes in ecosystem productivity or because of heat stress and the need to dissipate heat overloads.

In a very clever study of horse evolution, where horses got smaller during a previous warming period, Secord and colleagues were able to distinguish between the ecosystem productivity and heat-stress hypothesis. The data were unequivocal — changes in horse body size were strongly correlated with the temperature and not at all with productivity. The time period for this change was 55.5 million to 54.5 million years ago, when sea surface temperature warmed by roughly 10 degrees Fahrenheit. The changes in body size were substantial — during the warming period, horses shrank by 30% and then, during the cooling period, grew in size by 75%.

Evolution and biology teach us a lot. First, species will respond to global warming through evolution. Second — climate change and warming can create real thermal stress in animals-including humans. You want to *lose* weight for the summer and *gain* weight during the winter — and you can actually feel the effect. With summer maximum temperatures being one of the most robust and striking effects of climate change, there is no question large-bodied humans will be increasingly at a physiological disadvantage.

SC

— Peter Kareiva, chief scientist, The Nature Conservancy

The Coda Files

Karen Wong

Think being or hosting a Coda Global Fellow is mysterious and unattainable? Think again! The Coda Global Fellows program enables staff to apply their talents beyond their regular job to forward the Conservancy's global priorities. Coda Fellows can be anyone. They can be anywhere. They could even be...you. So take a step with us into...The Coda Files.

Respect the qualitative. That was Karen Wong's life lesson working with senior social scientist Supin Wongbusarakum as a Coda Global Fellow.

"My academic background is chemistry and I was not aware of all that is included in social science and qualitative methodologies," says Wong of her fellowship experience. "I learned to revalue qualitative data as valid."

As part of her fellowship, Karen created a new web page of resources on the Conservation Gateway to guide conservation practitioners to consider the impact of their work on people. (The page is on the [Gateway's social science and conservation section](#).) This list includes the three recorded internet trainings Supin delivered on different aspects of integrating social science and conservation, which Karen help organize and support.

In addition, Karen assisted with and facilitated a field visit with Supin to a water fund site in an indigenous area of East Cauca, Columbia. "Without Karen, I would not be able to communicate effectively with anybody in the meeting and in the communities," says Supin.

And the trip also helped Karen, too, as she came through the experience to reassess her conservation values. "We like to think that conservation work always is good for

Coda Fellow: Karen Wong

Day Job: Mexico Mosaics Coordinator

Assignment: Social Science

Duration: March – December 2011

Task: Support capacity building to integrate social science into conservation planning and impact measurement.

Most Important Lesson Learned: "Conservation is not just biological, but is itself a social and political process."



human wellbeing,” she says. “We have to realize this is not always true, there are trade-offs that must be recognized in order to minimize negative impacts... I strongly believe that TNC is working in many aspects of human wellbeing including income, opportunity, empowerment, and security, even if we don’t use the term explicitly.”

Karen has now moved into her new position as Mexico Mosaics coordinator and is actively using what she learned in her fellowship in her new job. “I am including human wellbeing goals along with ecological and management goals in our conservation business plan and theory of change. Our next step is to define indicators and start measuring.” This puts into practice the cardinal rule of integrating social science into conservation: set socioeconomic objectives first. Only then can you measure a given project’s impact on people. [SC](#)

— [Jensen Montambault](#), applied conservation scientist, Central Science, The Nature Conservancy

The Coda Global Fellows program enables staff to apply their talents beyond their regular job to forward the Conservancy’s global priorities. Burning science needs? Want to share your skills with a global priority? Contact [Jolie Sibert](#), director of the Coda Global Fellows program!

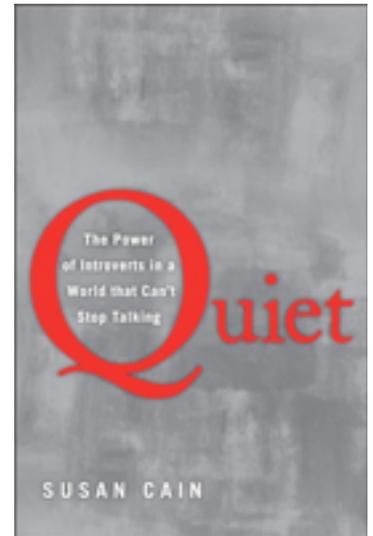
Books: Non-Fiction

The New Loud

Quiet: The Power of Introverts in a World That Can't Stop Talking. By Susan Cain. Crown, 2012. 333 pages.

Reviewed by [Bob Lalasz](#), director of science communications, The Nature Conservancy

If you're one of the one in every five whom Susan Cain says are introverts (and most scientists are), you will gulp down *Quiet* and then close it with a heavenly-choirs-singing-somewhere sense of *finally* being understood and validated — why you hate 1) most meetings, for instance; or 2) going out on Friday and Saturday nights (I mean, *isn't one plenty?*); or 3) public speaking, or 4) when people *touch your stuff*. You might even briefly want to lock arms with fellow introverts and storm the Harvard Business School and other bastions of extroversion, until you remember how many new people you'd have to meet to do that. Still, you've fulfilled the heart of Cain's project: To rehabilitate introversion and the measured, thoughtful, long-view qualities we bring to business, culture and life. *Quiet* is the singular sort of self-help book that doesn't see a single thing wrong with you.



Cain opens with history, tracing the shift in U.S. culture (coincident with labor-market mobility) from one that prized modesty and character to one that valued “personality,” a century-long ascendancy of outgoingness that’s made extroversion mandatory for leaders, corporate culture, even grade schoolers (and led to Tony Robbins and the latest financial meltdown, among other wince-inducers). Then she trots out lots of studies and countering facts. Like: Tons of top business leaders are introverts (Bill Gates, anyone?). The most successful business teams are intro/extro combos and should be built thus. Solitude and independent work are keys to innovation, not group brainstorming, which so many studies show significantly lowers creativity. (Peer pressure messes with your ability even to *perceive* problems clearly.) Our personalities are about 50% heritable, and can only be stretched so far (Lindsay Lohan can never be the Dalai Lama, and vice versa); we can pretend to be extroverts at work, but need substantial down time to recover. So let introverts work at home more. Etc.

There’s plenty more to the book, much of it science-based, but here’s the key: Figure out what level of arousal best works for you and your team and your children — trance club, meditation room, somewhere in between — and stick to that sweet spot as much as possible. When you deviate, do it for projects and reasons that mean something to you, not to somebody else. But summing up *Quiet* can’t begin to describe the liberating experience that reading it can be. Cain is right: If you’re an introvert, the world has likely been telling you all your life that something’s wrong with you. These 333 pages are a decoder ring for that world you can use to start to fight back. **SC**

Announcements

Working on Significant Research? Let Us Know NOW So It Can Get Some Attention When It's Published

TNC does a lot of scientific research, and sometimes those papers are sexy enough to offer the Conservancy rich opportunities for media outreach. When the science connects with people, particularly if the findings inspire them or impact their daily lives, it can make for a great media story. But media outreach isn't just a matter of issuing a press release and watching reporters flock like flies to honey (or, if you don't like reporters, flies to another, less attractive viscous substance). It takes a tremendous amount of foundational work to get the press to understand a why a particular piece of research might make a great story. To put it in a way a reporter might: We in Science Communications and Media Relations need a lot of lead time.

So if you're working on a piece of research that a) you think will be significant for conservation, either on a regional, national or international basis, and b) that you or a co-author will be submitting for publication to a peer-reviewed journal in the next six months, TNC Science Communications wants to know about it so that we can work with you and any partner institutions involved to prepare any potential media outreach. We'd especially like to know about it if you're the lead author, of course, but even if you're one of several and even if the lead author is at another institution, please

let us know. **Send your contact info, the name of the paper, and where you think you might be submitting it to me** at rlalasz@tnc.org and I'll coordinate with TNC-Media Relations, you and your co-authors and their institutions to build a strong media outreach plan for the paper. —*Bob Lalasz* SC

CDIS Team Needs Feedback: FREE STUFF is Your Reward!

Congratulations to **Erin Woodard** who won a \$50 Amazon.com gift card for taking part in a brief survey! Jealous? The CDIS team in Central Science still needs your feedback on their [public web site with conservation data](#), and is going to do two more prize drawings for people who take [a very short survey](#) about the site (one per month). If you already responded, you will automatically be entered in the next two drawings. SC

New Conservancy Publications

Conservancy-affiliated authors highlighted in bold.

Please send new citations and the PDF (when possible) to: pkareiva@tnc.org and rlalasz@tnc.org. Please include "Chronicles Citation" in your subject line so we don't miss it.

Some references also contain a link to the paper's abstract and/or a downloadable PDF of the paper. When open source or permitted by journal publisher, these PDFs are being stored on the Conservation Gateway, which also is keeping a running list of Conservancy authored science publications since 2009.

Ganz, D.J., D.S. Saah, **J. Blockhus**, and **C. Leisher**. 2012. [Ecology-poverty considerations for developing sustainable biomass energy options](#). *Integrating Ecology and Poverty Reduction* 279-298.

Green, S.J., **A.T. White**, P. Christie, S. Kilarski, A.B.T. Meneses et al. 2011. [Emerging marine protected area networks in the Coral Triangle: Lessons and way forward](#). *Conservation and Society* 9(3):173-88.

Hamilton R.J., Giningele M., Aswani S. and Ecohad J. 2012. Fishing in the dark — local knowledge, night spearfishing and spawning aggregations in the Western Solomon Islands. *Biological Conservation*. 145(1):246-257.

Johnston, P., G. Labrado, R-L Eisma-Osorio, P. Christie, and **A. White**. 2010. Marine protected area networking training handbook. Coastal Conservation and Education Foundation: Cebu City, Philippines.

Leisher, C., S. Hess, **T.M. Boucher**, P. van Beukering, and **M. Sanjayan**. 2012. [Measuring the Impacts of Community-based Grasslands Management in Mongolia's Gobi](#). *PLoS ONE* 7(2): e30991. doi:10.1371/journal.pone.0030991.

Leisher, C., **S.Mangubhai**, S. Hess, **H. Widodo**, **T. Soekirman**, **S. Tjoe**, **S. Wawiyai**, **S.N. Larsen**, **L. Rumetna**, **A. Halim**, and **M. Sanjayan**. 2012. [Measuring the benefits and costs of community education and outreach in marine protected areas](#). *Marine Policy* 36(5):1005-1011.

Walsh, S.M., S.L. Hamilton, B.I. Ruttenberg, M.K. Donovan, and S.A. Sandin. 2012. [Fishing top predators indirectly affects condition and reproduction in a reef-fish community](#). *Journal of Fish Biology* 80:519-37.