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Resilience

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Editor's Note

An interesting debate flared up in the blogosphere in late March between Nobel-prize winning economist and New York Times columnist Paul Krugman and data-guru and political prognosticator Nate Silver. The impetus was the launch of Silver's new website, fivethirtyeight.com, which he describes as a "data journalism organization" and vastly expands the scope of his work from politics to sports, health, entertainment, the environment and just about anything else you can imagine. Krugman found that Silver's reach exceeded his grasp, [at least in the early going](#), and the two had some testy back-and-forth, with various observers lining up on one side or the other.

I find it heartening that such media heavyweights are debating the proper role of data in public life. It is a testament to the growing interest in big data and its uses and abuses. But I am troubled as well.

Take a look at fivethirtyeight.com and note the fox logo. In the opening post, Silver explained the logo thus: "Our logo depicts a fox (we call him Fox No. 9) as an allusion to a phrase originally attributed to the Greek

poet Archilochus: "The fox knows many things, but the hedgehog knows one big thing." We take a pluralistic approach and we hope to contribute to your understanding of the news in a variety of ways."

The link from the quote takes you to an excerpt of an essay by the scholar Isaiah Berlin, by far the most thorough discussion of the hedgehog and the fox. The whole essay is worth reading. Berlin uses the metaphor as a way into understanding history, particularly as seen through the work of Leo Tolstoy. Tolstoy, says Berlin, was a fox who desperately wanted to be a hedgehog; he saw the world in its countless details but sought, and in his old age believed he had found, a way to integrate them in a kind of vast, spiritual calculus.

Silver obviously knows Berlin's argument, but what worries me is that he has not taken it seriously. I think he suffers from the same contradictions that Berlin explores in Tolstoy, but without acknowledging them. Silver clearly implies a value judgement; he picked the fox for his logo because that is preferable to being a hedgehog (though he did himself no favors when [the first post on climate change](#) misrepresented the data and required a [quick rebuttal](#)

from MIT's Kerry Emanuel.) What he misses, as Krugman points out, is that data never tell their own story. The accumulation of disparate facts explains little. They need a model or a narrative or some other explanatory context. It seems likely, in fact, that Silver, like Tolstoy, is at odds with himself. All of Tolstoy's heroes, writes Berlin, grope for some framework for understanding nature, but Tolstoy himself, "has not, do what he might, a vision of the whole; he is not, he is remote from being, a hedgehog; and what he sees is not the one, but always, with an ever growing minuteness, in all its teeming individuality, with an obsessive, inescapable, incorruptible, all penetrating lucidity which maddens him, the many."

"An ever growing minuteness" seems like a cogent warning to the pursuit of data for its own sake. Conservation science is not yet at that point, but it would be an ultimately self-defeating strategy. **SC**
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1. To bring you the latest and best thinking and debates in conservation and conservation science;
2. To keep you up to date on Conservancy science — announcements, publications, issues, arguments;
3. To have a bit of fun doing #1 and #2.

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Article

Learning from Bright Spots: The Complexity of Cross-Scale Dynamics in Island Management

By [Georgina Cullman](#) and [Eleanor Sterling](#), Center for Biodiversity and Conservation, American Museum of Natural History



False clown,
Solomon
Islands. Credit:
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Island systems face multiple threats and increasingly severe and frequent disturbances. Nevertheless, communities, conservation practitioners, and government agencies are responding creatively to these challenges. A focus on these relative bright spots can help conservationists understand the factors that contribute to positive outcomes and therefore inform conservation work elsewhere (Kareiva and Marvier 2012). As part of the Reefs Tomorrow Initiative — a collaboration among eight academic institutions and conservation organizations to advance coral reef science, management, and conservation through interdisciplinary study of reef resilience and its application — [we identified and explored a suite of case studies](#) that featured communities that had faced strong disturbances and responded positively. We looked for commonalities — facilitating conditions or creative strategies — that could be drawn out between the individual cases and lessons learned that could prove useful in other localities.

By resilience we mean the ability of a system to absorb, resist, or recover from stress, and adapt to change while maintaining existing functions and benefits. Given resilience science's acceptance of change and perturbation as normal, the approach holds promise for conservation in the current reality of a changing climate and increasingly large and intense anthropogenic impacts on island systems.

The resilience approach has broad and growing appeal for practical purposes, as evidenced by a recent congress that convened more than 850 researchers and

practitioners from over 65 countries for “[Resilience and Development: Mobilizing for Transformation](#).” Conference participants considered the concept of resilience in diverse contexts such as disaster relief, marine fisheries, urban planning, and community-based conservation.

One theme that emerged from the conference was the importance of cross-scale dynamics. In classic ecological resilience theory, temporal and spatial scales are coupled: ecological systems are composed of subsystems at different temporal and spatial scales, with the larger and slower scales constraining faster and smaller dynamics. Changes that happen more quickly at smaller spatial scales can then accrue to create larger scale shifts (Gunderson and Holling 2002, Davidson 2010). For example, in a forest ecosystem, larger and slower dynamics include soil and water conditions that facilitate or preclude the establishment and dispersal of individual tree species. Smaller and faster dynamics such as competition will shift the tree species composition of that forest over time, which can lead to large-scale changes in the ecosystem (for instance, the shift from a white pine-dominated canopy to a canopy dominated by broadleaf trees in the northeastern United States). Globalization has upended this assumption of coupled temporal and spatial scales due to the increasing movement of people, goods, and ideas around the world, engendering rapid changes at larger spatial scales with ramifications at smaller scales (Young et al. 2006, Liu et al. 2013).

The theme of cross-scale dynamics also arose in our research on cases of resilient responses to disturbance. We conducted a literature review and then semi-structured interviews on Skype with island managers, researchers, and community members, predominantly from the Pacific. We asked respondents to describe a particular disturbance, the social and ecological setting, the interventions they facilitated or observed, how this led to recovery, and recommendations for other managers. We let the respondents tell the story in their own words with minimal prompting. We then iteratively coded the interview notes to reveal emergent themes. In addition to cross-scale dynamics, we found that formal recognition of tenure, cultural traditions of exchange for mutual benefit (sometimes called reciprocity), and connectivity to high-quality habitat were shared characteristics of many of the cases we explored.

A cross-scale dynamic that came up in our research was that [resilience at one scale did not necessarily predict resilience at another scale](#). For instance, Matthew Lauer of San Diego State University reported on the response to the 2007 tsunami on the island of Simbo in the Western Province of the Solomon Islands (Lauer et al. 2013). Communal tenure enabled Simboans to respond successfully to the immediate demands of the community following the tsunami. While the whole island was not communally held, there were parts of the island that the community held in common, including groves of nutritious Ngali nuts (*Canarium* spp.). Community members were able to build temporary housing on these communally held lands and they could rely on Ngali nuts for food. Thus, communal tenure provided resilience to the shock of the tsunami in the short term. After attending to their immediate needs, however, the community needed

Globalization has upended the assumption of coupled temporal and spatial scales due to the increasing movement of people, goods, and ideas around the world.

to decide how to rebuild houses and schools that had been destroyed in the tsunami. Because of communal tenure, community members needed to agree on a new location for the school in a higher-elevation site. The community could not agree and the school was re-built on the original, exposed site. In this case, there was a tradeoff with respect to resilience at different time scales due to the same community characteristic — the communal land tenure system generated resilience in the short-term and vulnerabilities over the longer-term. Following the tsunami, Simbo's fishers also refrained from fishing for six months, so the reefs could begin to recover. This hiatus was enabled by the availability of the Ngali nuts, which provided a ready source of protein.

Multiple cases also entailed cross-scale dynamics in the disturbances themselves. For example, we spoke to Peter Nelson of [Collaborative Fisheries Research West](#)) about challenges relating to overfishing in Ulithi Atoll in Yap, Federated States of Micronesia. A number of larger-scale events, including impacts from World War II, climate change, and the establishment of a high school on one of Ulithi's islands, combined to undermine traditional management of the near-shore fisheries and depletion of prized marine resources. Towards the end of World War II, the US military used Ulithi's atoll and sheltered lagoon as a staging ground. When the war ended, the military left enough rations to cover an area the size of a football field and reach two stories in height. For a number of years, Ulithians relied almost exclusively on these army rations for their subsistence, disrupting previously effective traditional management of fishing as well as local ecological knowledge.

Resilience provides a lens for making sense of the dynamics around us and for identifying ways for managing natural resources and human behavior.

Climate change, through sea level rise, also places increased pressure on marine resources for two reasons. The first is that, due to Ulithi islands' low elevation (only 1.5 m above sea level) residents will have to relocate to the main islands of Yap. Because of this, Ulithi residents feel in a dependent position to the residents of the main islands of Yap (also the location of Yap state's government) and feel that supplying fish for Yap will ensure that they receive favorable treatment. The second reason is that saltwater intrusion (at least in part due to sea level rise) has destroyed Ulithi's taro grounds. The loss of agricultural resources means that Ulithians must rely more heavily on marine resources for their livelihoods. Finally the high school concentrates the population in one island while school is in session (family members travel with their children when they attend school). These seasonal residents were given traditional guest fishing privileges without the restrictions of regular residents, further exacerbating overfishing in Ulithi's waters.

In response to growing concerns about reduction in prized fish populations, the community worked with a team of researchers led by the [Oceanic Society](#) to survey Ulithi's reefs. With the information from the surveys and with a range of management options presented to them, community leaders were able to generate community support

to close half the reefs to fishing. Within a year, Ulithi residents had already observed positive results from the closure — larger fish inside the reserve and better fishing on the margins. [This case](#) shows the complex ramifications of large-scale social and environmental changes on smaller spatial scale dynamics.

Resilience provides a lens for making sense of the dynamics around us and for identifying ways for managing natural resources and human behavior. Lessons from cases where resilient communities have adapted in response to a disturbance can help us to find ways to manage for resilience elsewhere. The extraordinary pace and scale of change in our era means that we must look beyond traditional boundaries and across scales in order to find both the source and the solution for social and ecological challenges. **SC**

The extraordinary pace and scale of change in our era means that we must look beyond traditional boundaries and across scales in order to find both the source and the solution for social and ecological challenges.

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Article

Introducing CAML

By [Nick Salafsky](#), Foundations of Success



Credit: Flickr user [causalien](#) via Creative Commons.

In a recent blog post on the Stanford Social Innovation Review website, Jason Saul and Matt Groch announced the launch of the [Impact Genome Project](#), which they describe as:

A massive effort to systematically codify and quantify the factors that research has shown drive outcomes across the entire social sector. The fundamental idea behind the impact genome is that we can fully express the set of characteristics that describe any given social impact program. The systematic process we undertake to evaluate a program against the impact genome considers information based on a program's operation, its theory of change, its outcome potential, and other metrics and indicators. By mapping all of these factors and comparing success across programs, we can leverage predictive analytics to forecast a program's efficacy in producing a desired outcome.

Independently, members of the Conservation Measures Partnership recently launched an analogous effort within our own sector. The [Conservation Actions and](#)

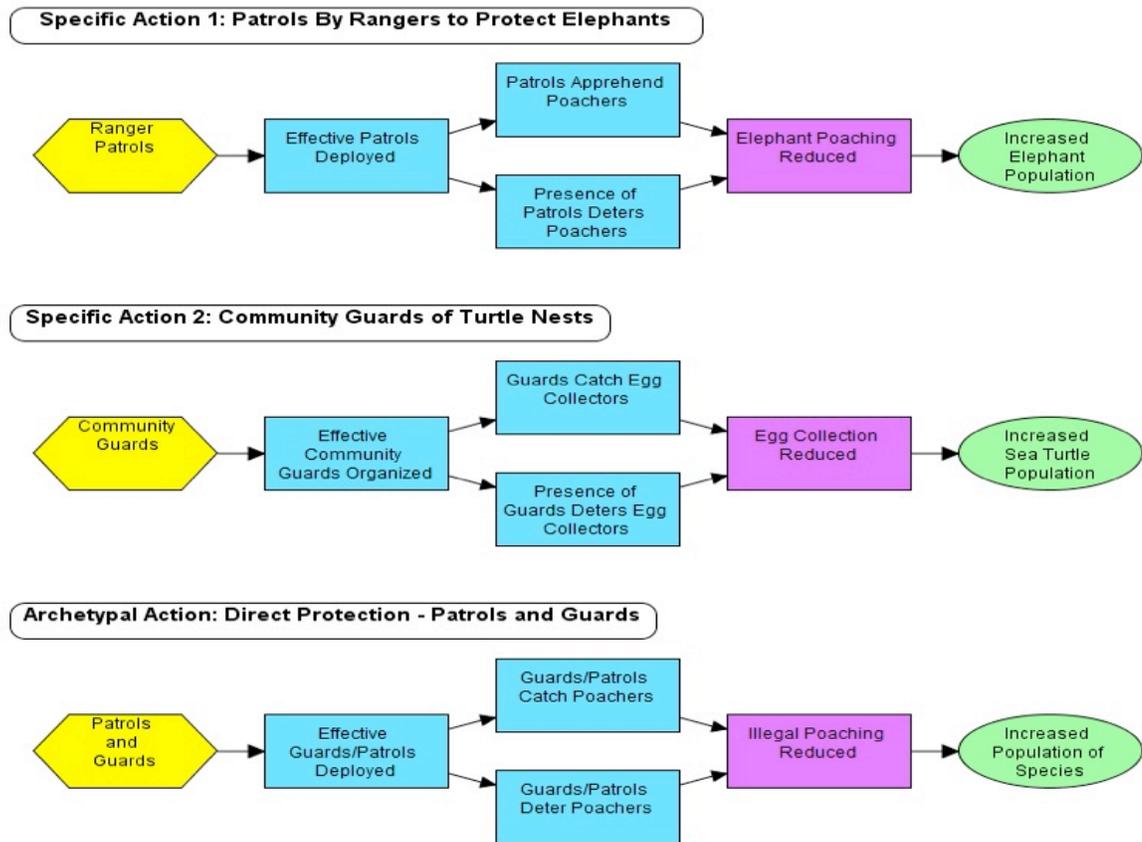
[Measures Library](#) (CAML) is an open-source reference collection of “archetypal” theories of change for conservation actions.

What is an Archetypal Conservation Action?

The specific action that needs to be taken in any given conservation situation depends on local conditions, including the type of conservation target, the nature of the threat being addressed, the capacity of the project team, and many other potential contributing factors. Ultimately, every specific conservation action is thus unique in its details, making it difficult to track, assess, and compare their performance.

Some conservation actions, however, have certain inherent similarities to one another. As a simple example in Figure 1, consider one project deploying armed rangers to deter elephant poaching in a forested national park, and a second project recruiting local

Figure 1. A Simple Illustration of Specific and Archetypal Conservation Actions



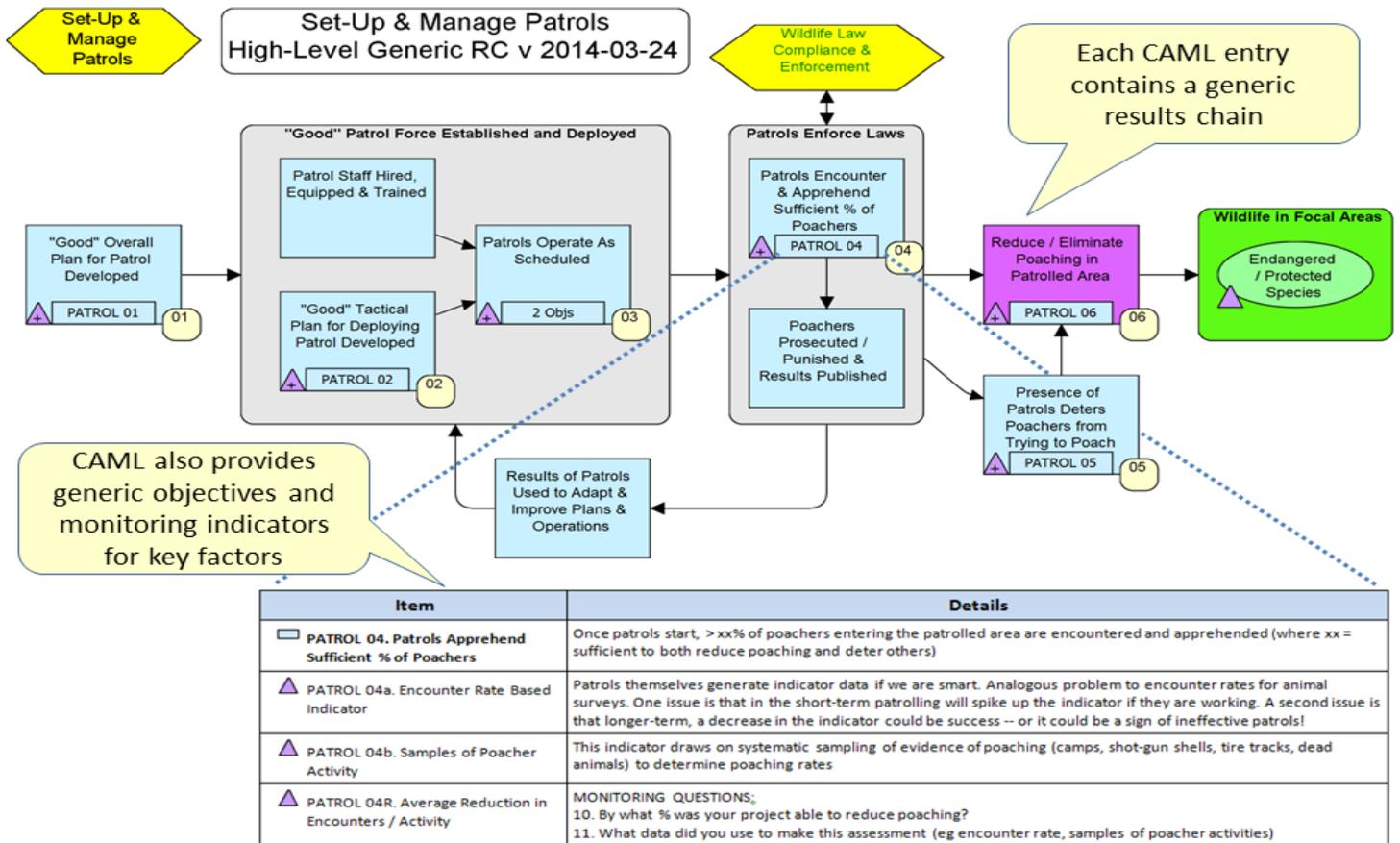
villagers to protect sea turtle nests from egg collection during the critical nesting season. Even though these two actions are taking place in different ecosystems and have different conservation targets, threats, implementation steps, and implementing teams, the underlying theory of change is basically the same – deploy trained patrols or guards to both apprehend and deter poachers from illegally harvesting wildlife. Furthermore, we

CAML is a publicly available, peer-reviewed reference collection of archetypal conservation actions.

could collect similar types of performance indicators to be able to roll up results across these projects and compare the effectiveness of the two actions to one another.

Put another way, we can create a standard or archetypal theory of change and set of performance measures for this “direct protection through patrols and guards” action. In a similar fashion, we could create archetypal actions and performance measures for removing invasive species, education and awareness efforts, payments for ecosystem services, or indeed any type of conservation action.

Figure 2. An Example of the Information Available in CAML for a Given Action



Introducing CAML

CAML is a publicly available, peer-reviewed reference collection of archetypal conservation actions. CAML is built on [Miradi Share](#), a new cloud-based service for sharing, aggregating, and analyzing Miradi conservation project files.

CAML entries are organized by the IUCN-CMP classification of conservation actions (Salafsky et al 2008). As shown in Figure 2, the entry for each action contains a generic results chain, as well as standard objectives and indicators. These materials can be used as starting points for developing specific results chains for your conservation project. They can also form the basis for selecting common indicators to assess action effectiveness, which is ultimately the foundation for true evidence-based conservation.

CAML currently contains entries for about two dozen common actions implemented by US State Wildlife Agencies and US Fish and Wildlife Service funded conservation work in Africa. Over the next couple of years, CMP plans to develop solid peer-reviewed chains for all known conservation actions. Check out CAML to see currently available chains -- or submit your own candidates for inclusion in this exciting new resource. [SC](#)

Reference

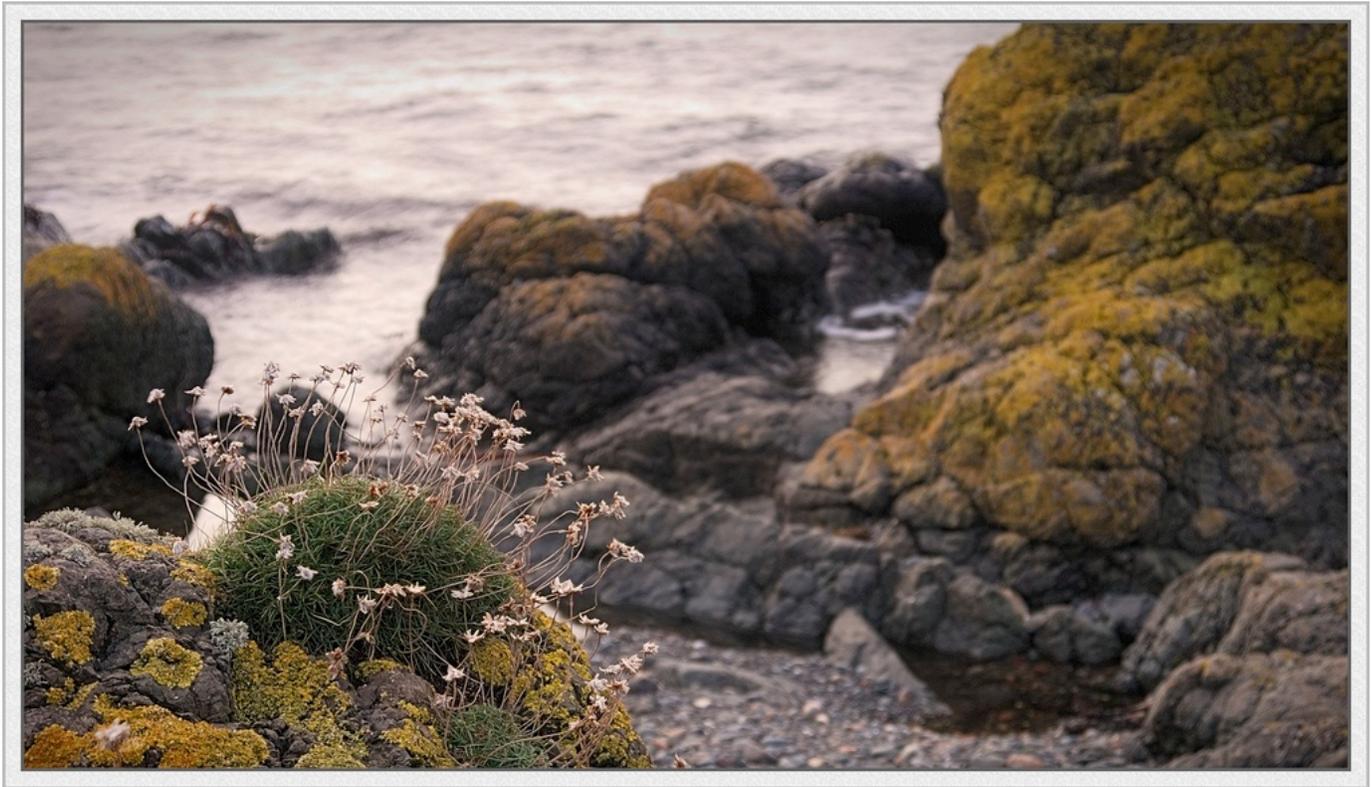
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Straight, No Chaser

How I Learned to Stop Worrying

By [Jonathan Higgins](#), Senior Freshwater Ecologist, The Nature Conservancy



Sea Thrift growing near Lendalfoot, Scotland, via Flickr user [spodzone](#) and Creative Commons.

With the continuous changes that TNC and other like-minded organizations go through every few years in defining guiding lights, structures, and approaches, one thing should endure: the focus on conservation. Many have questioned whether this remains a priority. There are loud rumblings about the extent conservation organizations should focus on people as part of their mission, the conservation benefits of partnerships with corporations, and global strategies to change the world when conservation remains a place-based endeavor.

I used to spend a lot of time worrying about these things, maybe too much time. I now focus on evaluating and deciding how to use new ideas and approaches to best get conservation done. How can these things help me and others have a larger conservation impact in the world?

People may be asking themselves whether I have lost my mind or my spirit or my commitment to the righteous way of doing conservation. I have not.

We have gone through similar phases in the past. We were once a land purchasing organization. We went well beyond that to address biodiversity in freshwater ecosystems and oceans, defining approaches to address threats at the sources – which are more complicated than dealing with local sources, working with agencies on managing lands and waters beyond what we own, and venturing into regional planning and partnerships which made many people uncomfortable. I think we are better for the changes we have made.

What we did not do is drop what we were doing, but instead looked for ways to bolster the approaches to address critical issues at scales that matter. We need to continue to make these changes to get better.

One of the major changes in our work in the past few decades has been working with governments on land and water resource planning and management. We have made great progress in this approach. But major corporations and international funders are making decisions that are change the word at scales that cannot be addressed through even working at one country at a time. We need to scale up and work through additional pathways as well.

For instance, we have been working with dam operators for years to evaluate the impacts of altered flow, design alternative management plans that take into account the needs of nature and the services ecosystems provide to people, and evaluate results and adaptively manage. However, we cannot keep up with the existing impacts of dams through single dam project engagements. We have been trying to ramp up this effort through engagement with the Army Corps of Engineers, but there are many other dam owners and operators in the world that need to engage in this type of work as well, and we need alternative strategies to make that happen.

We are also working with dam developers and agencies that license dam projects to assess alternative development scenarios at the basin scale to identify the least harmful placement of a suite of dams to achieve hydropower objectives, and maintain environmental patterns and processes that are critical to supporting nature and the services it provides to people. This approach is intended to get ahead of the curve, so the discussions are not always about limited mitigation or compensation, which by themselves lead to long-term loss.

We are working with the leading dam developers in the world, international development banks, hydropower industry associations, and other critical stakeholders, to develop pragmatic approaches and tools to change the way dams are being developed and managed globally. We are trying to change the way the \$500 billion annual

The inherent value of nature drives my work. However, I see the value of working to benefit people, working with corporations, and creating economic drivers for conservation to move global levers to influence things that may seem less tangible to existing place-based projects.

expenditures of water infrastructure are spent to get a greater proportion of that spent to sustain and restore natural components of ecosystems. Even if we only redirected 1% of that, it would be \$5 billion per year. Compare that to annual expenditures in any conservation organization.

The inherent value of nature drives my work. However, I see the value of working to benefit people, working with corporations, and creating economic drivers for conservation to move global levers to influence things that may seem less tangible to existing place-based projects. We can get more conservation done *if* some of these approaches we are testing actually work.

The annual budgets of the leading corporations are larger than many countries, and the impacts to nature are global in scope when taking into account their supply chains. That is not to say we should not continue our work with national policy, remember, this is about new things we are engaging in. To be a global organization, we need to make some changes from being an organization that works in many places around the globe, to making impacts at a global scale to more places than where we work directly.

We are working to change the way water infrastructure is managed and how it is funded. Making changes at individual dam projects and using data to illustrate how benefits to nature, people, hydropower generation and revenues, lower flood-risks and financial losses result, lower water resource operational costs and future infrastructure expenditure needs, will not only show how well we are doing in those places, it will help us make illustrate how change can happen globally. Not to beat my old drum too much, but that is why we need to get serious about monitoring, and stop only marketing our ideas of what is going on, or our successes before they happen.

What *does* seem problematic are the demands for complete change of what we do, now, and continuously. If we continue to call for conservation to be data driven and adaptively managed, we need to test out ideas before we throw everything we have behind them. I do, however, believe that many of the new ideas and pathways are good ones. I do not believe they solve all problems, but solve some that are in the way of making a global impact on critical issues that are ruining the planet. To suggest that land acquisition is an anachronistic approach to conservation may be appropriate in the true sense that it is an old-fashioned way of doing things, but without continuing to doing that, we would not be addressing all of the needs of nature and people, but we would however, be limiting ourselves in the impact we need to make for the future of the world. **SC**

If we continue to call for conservation to be data driven and adaptively managed, we need to test out ideas before we throw everything we have behind them.

Viewpoint

What's the Dirty Little Secret of Science Communications?

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

Credit: Flickr user [Sebastien Wiertz](#) via Creative Commons.



Sebastien Wiertz ©

Culture eats strategy for breakfast, in the immortal words of [Peter Drucker](#).

But there's one thing that trumps culture: Money.

Which brings us to a dirty little secret: The current crisis in public funding for science — and the tectonic shift to private philanthropy to bankroll same — will be the best thing ever to happen to the cause of improved science communications.

That might sound harsh. And it isn't an argument for public defunding of science — that funding is essential. But think about it. If you have to convince a donor to give you money, a well-written grant proposal isn't the answer. And you need more than just impeccable credentials and a track record of success.

You need a storyline, and an ability to sell it.

Two recent articles in major publications — one everyone in science is talking about, and one that went virtually unnoticed — reinforce this impression. They make an unmistakable case: to the better communicators will increasingly go the spoils. And that scientists' traditional indifference to communicating with non-specialists melts when opportunity calls.

Billionaires With Big Ideas — and the Stories that Move Them

First, the buzz piece: [William Broad's take out in last Sunday's New York Times on how private donors](#) — what the Times' headline termed “billionaires with big ideas” — [are increasingly funding U.S. science research](#).

As Broad reports, these philanthropists — household names like Bloomberg, Koch, Gates, Schmidt, Ellison — don't have just deep pockets. They have very specific agendas.

The trend has its critics. Many in the U.S. scientific establishment, Broad writes, see big problems in this shift from public to private sponsorship of American research. They feel private funders will concentrate resources in the hands of elite universities and on upper-class health issues (particularly toward cures) at the expense of basic research and the common good. (Private funding for science isn't currently monitored, unlike government grants.)

But other scientists and science-based institutions, Broad notes, aren't holding their noses. Instead, they're diving in to take advantage of big donors' growing appetite for science that's targeted and fast. These scientists are smartening up their communications skills accordingly, even hiring professional consultants to “help scientists bond quickly with potential benefactors.”

The article gently mocks this consulting trend. Which is strange, because the piece is also full of examples of scientists inspiring individual donors to support topical research — including the seed funding for the first automated DNA sequencer, which led to the [Human Genome Project](#).

Sustained, effective communications between scientists and donors were essential to catalyzing each of these projects. The idea that philanthropists are simply dictating terms and hiring teams of worker bee scientists to execute them is unrealistic. While they're looking at credentials and ability to deliver results, they're also looking for a narrative they can connect with.

The framing of Broad's article — private vs. public as a kind of high-level culture war for the soul of a public resource — also fits a overly familiar narrative that it might be time to discard.

Again, the decline of public investment in science is deeply disturbing. But look at impact investing, which sits between the worlds of pure philanthropy and pure investment. It's a great idea, but [one that still has yet to find the forms through which it will function most effectively](#), according to Sasha Dichter of the Acumen Fund. For private big-money science, there will undoubtedly be similar hybrid models that have yet to shake out. Creativity doesn't have to mean creative destruction. The present is not a snapshot of the future.

The idea that philanthropists are simply dictating terms and hiring teams of worker bee scientists to execute them is unrealistic. While they're looking at credentials and ability to deliver results, they're also looking for a narrative they can connect with.

Science is Increasingly Competitive at All Levels — and Demands Better Communications

Even more important: Framing the shift to privately funded science as a contest of big vs. big masks the increasing competitiveness going on at all levels of science, and the increasing pressure for scientists to be better communicators in order to break through. For an example, read researcher [Yoshimi Rii's piece "A powerful narrative"](#) in the March 6 issue of Nature.

At first, Rii's story seems like one we've read a hundred times before — a cautionary tale of PowerPoint gone bad. (It even has a subhead worthy of PowerPoint: "Scientists should find engaging ways to present information to their target audience.")

Rii writes about how easy it is to rely too much on graphs and bullet points in PowerPoint at the expense of constructing a narrative. After one of her presentations (to schoolteachers) gets a poor reception, she vows to give up canned presentations forever. (Poor PowerPoint — does anyone love it? Yes: The singer [David Byrne has done a love letter to it...in PowerPoint.](#))

All science communicators have had similar conversations with their scientists — and many scientists have had them with each other. Yet death by PowerPoint — a zillion words per slide + illegible font + indecipherable graphs + no narrative — continues. Without the "standard scientific format," as Rii puts it, many scientists would apparently feel naked talking to a room full of strangers.

Unless that room can give them money, or has. In Rii's last story, she and some colleagues present on new research at their university to an audience of donors. Rii is apprehensive — until one scientist "opened up a star-studded umbrella" to illustrate a talk on the history of calendars, and another "presented a beautiful slide show of mushroom pictures and riveted the audience with accounts of hunts in unusual places."

No graphs; no bullet points. Instead: Style points, beaucoup narrative and accessibility. The donors love it. And will presumably continue to do so.

What's worthy noting: while Rii changed her approach after a poor encounter with a non-philanthropic audience, her colleagues already knew they had to do better for a philanthropic one. Scientists are already internalizing the demands of a dynamic marketplace.

Framing the shift to privately funded science as a contest of big vs. big masks the increasing competitiveness going on at all levels of science, and the increasing pressure for scientists to be better communicators in order to break through.

Building an Alternative to the Anti-Communications Culture of Science

It might seem crass to play the funding card to a scientist as you try to convince her she should become a better communicator — it's just not part of the culture of science, after all.

Except that, as Rii illustrates, scientists are catching up to reality. Which is why their communications staff need to catch up as well.

Here again we confront culture. Scientists have traditionally positioned better communications of their work as a sort of add-on public service — the right thing to do, but necessarily the smart or lucrative thing. Science communicators have always seemed a little embarrassed to make a case for the full value of communicating well — and we seldom stress the penalties for ignoring it.

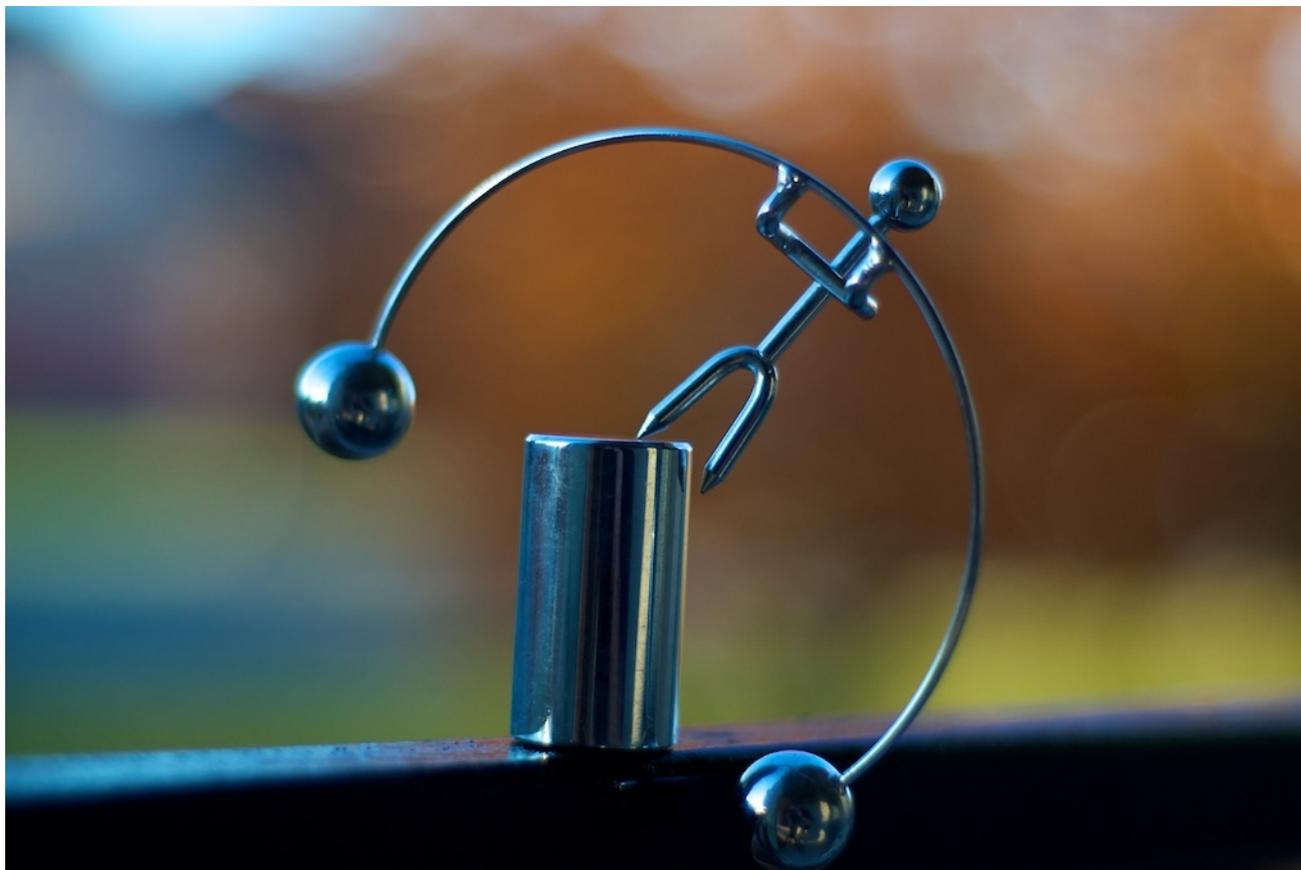
But now, it seems as if the marketplace and social trends are well ahead of us. Like it or not, the snobbery of scientists proud that they “don't communicate” with non-specialists will be eroded over the next few years by a new paradigm.

So maybe it's time for science communicators to make the dirty little secret our explicit *raison d'être*. There are a lot of breakfasts to take — and work to be funded. **SC**

Viewpoint

Life, Work, Reality Revealed

By [Randy Swaty](#), The Nature Conservancy



Credit: [Colin Harris](#)
via Flickr user and
Creative Commons.

I recently applied for The Nature Conservancy's Science Impact Project (SIP) and anxiously await word of whether I was accepted or not. Of course being selected for the SIP is my goal, but I discovered that the journey to get there may be just as illuminating. Applying for a competitive program, one that you really want to do, means holding a mirror up to yourself. I found that I've let some warts develop, and want to share four revelations with you.

The first thing I discovered was that my CV was not up to date — hardly headline news, since I haven't been looking for a job for 12 years. But it's more subtle than that. I'm talking about decisions. In the "work/life balance" terminology, I have mostly chosen "life" over "work." This means that my CV is not up to date in terms of freshness, i.e., I lack new certifications, am slow on writing journal articles, and haven't kept up with trainings. That's troublesome for a few reasons, among them the fact that job security is a thing of the past. As we know, even here at TNC, on any given day a person can arrive at work to find out that an entire division has been

eliminated. Keeping up with the science in my field and sharing knowledge and insight haven't balanced with the attention that I pay to my personal interests (explored in item four, below).

Which leads to the second thing that I realized: I am out of the loop on TNC science. I read Science Chronicles, peruse the main conservation and ecology journals monthly and am generally excited about TNC science. However, as I skim through what I think is relevant, believing I am in the know, through the SIP application process I found that I'm not. After Peter Kareiva and Jennifer Molnar reviewed a pre-proposal that I submitted, they told me that what I had proposed was already underway. Perplexed, I did two things. I went to the source, www.nature.org and found what they were talking about. Do I ever go to www.nature.org? No. Also, I was reminded of a recent visit to the University of Tennessee where I met Paul Armsworth, Associate Professor in the Department of Ecology and Evolutionary Biology. He has probably published more on the work of TNC than anyone else, and definitely knows more about TNC than I do, period. I hadn't heard of him before this visit. Between the Kareiva/Molnar revelation, and the reminder of what a true scholar/scientist looks like, I come up short, and am humbled. I have a lot of catching up to do.

Third, applying for the SIP made me reflect and think about what I want to do in the future. As I hit the "send" button, I was basically telling TNC, "I recognize that if I am selected, you will be investing in me. It is only ethical that I commit to do my best, both for this program and for the Conservancy in general." I was saying, "Yes, I want to freshen up my CV, stay relevant and possibly advance as a conservationist." This kind of commitment was a big leap.

The week I applied for the SIP, my wife was under more stress than usual with a local program she runs, and the extra time I worked to get the proposal submitted was felt by everyone in the family. If I am awarded the SIP will it mean extra hours? If I really want to advance my career at TNC, does it mean less time with the kids? Honestly, I felt a bit selfish as I watched my wife not only take up slack, but also kindly and thoughtfully review my letter of interest. Which leads me to the fourth challenge: finding an appropriate work/life balance.

I have consistently met or exceeded my performance objectives. I am ambitious and work hard to do my best, but when my boys want to read a story, I read. If my bike needs repair, I repair it instead of sending it to the shop. If my wife wants to go for a run together, I put on my running shoes. I would not change a thing, but applying for SIP highlighted the work consequences of my decisions. There are obviously people who figure this balance out, and some folks believe I am one of them — but it's a ruse. Again, I have been reminded I have a lot to learn.

So, I'm waiting for the SIP decision to be handed down.* Regardless of the outcome, the application process prompted self-evaluation that didn't necessarily make me feel good about myself. I know I have what it takes to be a strong contributor to this valuable program. I know, too, that I have work to do on myself, my priorities, my scholarship, and my career as a scientist. It is time to review those "Professional Development" objectives, improve my time management skills, and to listen and learn from you all.

*I have just learned that I was not accepted to the SIP this year, meaning I will try again next year! Best wishes to all the SIP participants-I am with you in spirit! **SC**

Ed Note: The complete list of SIP Participants for 2014 is on page 22.

Drinking from the Fire Hose

A quick and entirely subjective monthly roundup of interesting articles, websites and other experiences collected by your editor. Send your suggestions for future roundups to pangolin19@gmail.com.

1) Wither nukes? A trio of pieces with varying perspectives on nuclear power. First, from the New York Times, a historical view from [Three Mile Island](#). From the Economist, one possible future — [floating nukes](#). Finally, what [closing nuclear power](#) plants might mean for climate change.

2) More hedgehogs. The story the famous wager between Paul Ehrlich and Julian Simon has always been maddening to me. I could never understand how as brilliant a scientist as Ehrlich got snookered by someone like Simon. [This review](#) by Cass Sunstein sums up the story nicely and spins it as a battle between two hedgehogs. The new book, [The Bet: Paul Ehrlich, Julian Simon, and Our Gamble over Earth's Future](#) by Paul Sabin is worth a read as well.

3) The ever-thoughtful Jonathan Foley [dips his toe into the GMO debate](#): “In theory, GMOs sound very useful. They are supposed to [help us “feed the world”](#) because they will improve food security, dramatically boost crop yields, combat weeds and pests using fewer chemicals, make crops more nutritious, and have [tremendous benefits to society](#). But have they? No. Not really.”

4) For everyone who sees conservation and development as kin, if not twins exactly than cousins, this new book, [The Tyranny of Experts](#), by economist William Easterly, comes as a fierce cautionary tale. You can read an excerpt [here](#). He leans perhaps too heavily on conservative icons like Adam Smith and Friedrich Hayek, but an important argument nonetheless.

5) An ethical extinction? Of [smallpox](#), that is. But should we be sorry to see it go?

6) The intersection of art and marine conservation. Taking off from Sylvia Earle’s conception of marine protected areas as “hope spots,” artist and ocean advocate Courtney Mattison recreates [18 marine ecosystems](#) in porcelain.

7) [Hope](#), [Cope](#), and [Dash](#). That might sound like cheesy pop psychology, but it is actually far geekier (and more substantial) than that: three approaches to open-access publishing. There is a movement afoot among universities to join forces to help pay the fees required to publish in PLoS and other open-access journals. Makes you wonder if the conservation community could do the same.

8) The one thing digital libraries lack in comparison to their brick-and-mortar forebears is serendipity: browsing the stacks of a good library and stumbling upon the book shelved next to the one you were looking for that turns out to be exactly what you need. The Digital Library of America [has a new tool](#) that comes close.

9) And last, [baby Galapagos tortoises](#), because who can resist baby Galapagos tortoises, especially if they were born in Australia? **SC**

Announcement

SIP Participants 2014

I am excited to announce the selection of the third cohort of The Science Impact Project, from an outstanding pool of candidates. Beginning in June 2014, the selected scientists will participate in a series of workshops over 2½ years to build skills in science communication, collaboration, leadership and organizational effectiveness. Each will develop and implement a “Big Idea” project that changes conservation practice or expands the conservation conversation in significant ways. They will develop a TED-style talk on their project and receive individual mentoring from science and science communications staff and outside trainers.

For more information on the Science Impact Project, contact [Marty Downs](#).
Please join me in congratulating the 2014 SIP participants.

Marty Downs, Associate Director, Science Communication

Anisa Budiayu, Marine Program Coordinator, TNC Indonesia Program

Toward Sustainable Practice of Community-Based Sustainable Tourism in MPA

Chen Ai, Conservation and Climate Change Scientist, TNC China Program

Planning for Balanced Land Use Pattern for Agriculture and Ecosystem Services in the Face of Climate Change

Meredith Cornett, Director of Conservation Science, TNC in MN/ND/SD

Oh Deer: Deconstructing Bambi, a Wicked Problem for the Anthropocene

Ronnie Drever, Forest Ecologist, TNC Canada Program

Caribou and Carbon in Canada's Boreal: Bridging Science, Conservation and Finance in a Fire-Prone Landscape

Josh Goldstein, Economist and Ecosystem Services Scientist, TNC Central Science

Developing and Applying an Ecosystem Services Framework to Inform Green Economic Development Strategies

Sara Gottlieb, Conservation Planner, TNC Georgia Chapter

Communicating Monitoring Studies to Encourage Adoption of Better Agricultural Practices in the Conasauga River Watershed, Georgia, USA

Jin Tong, Conservation Scientist, TNC China Program

Evaluating the Effectiveness of the First Land-Trust Reserve in China

Fakhrizal Nashr, Program Development and Learning Specialist, TNC Indonesia Program

The Role of Culture in the Success Of REDD+

Sally Palmer, Director of Science, TNC-Tennessee

Advancing TNC's Conservation Agenda with Better Science Communications: A Case Study in Content Development and Delivery in Tennessee

Bryan Piazza, Director, Freshwater and Marine Science, TNC Louisiana

The Hybrid Scientist

Julie Robinson, Marine Specialist, TNC Belize Program

Developing a Global Conservation Team to support Debt for Adaptation Swaps

Steven Victor, Deputy Director for Conservation, TNC Micronesia Program

Fisheries Reform in Palau

Bayarjargal Yunden, Director of Science, TNC Mongolia Program

A Strategy for Reducing Negative Impacts of Mining and Infrastructure Development in Mongolia

Announcements

July 31 Science Science Spotlight Webinar: Conservation and Unconventional Energy Development

The North America Region is hosting a webinar series to highlight some of the most exciting new TNC science. You (Conservancy scientists) guest-host each webinar and pick 2-3 speakers on the topic or geography of your choice. We (NAR Staff) provide the venue and handle all the Webex stuff, scheduling, and advertising, so you can focus on content.

Anne Trainor, a TNC NatureNet Fellow, will host the next Science Spotlight on July 31 at 2PM ET. Anne and Sharon Baruch-Mordo, a Spatial Scientist with TNC's Development by Design team, will present their work on keeping landscapes functional while also meeting energy needs. [Register and get the call-in info here.](#)

Want to host a webinar or suggest a topic? Please contact Brad McRae and [visit our site](#) to learn about upcoming webinars.

ConPro Retirement

[ConPro](#), TNC's conservation project repository, will be retired on May 28, 2014, and as a result, the ConPro team is engaged in an effort to migrate project data to a new platform called [Miradi Share](#).

All ConPro project contacts who wish to have their project data transferred to Miradi Share will need to opt-in to this migration option; otherwise the data will be retired with ConPro.

The ConPro team has contacted by email all ConPro project contacts. The email contains detailed information and instructions for requesting data migration from ConPro to Miradi Share. If you are a ConPro project contact, please be on the lookout for this email and make your migration selection(s) by May 21, 2014. If you are a ConPro project contact and haven't received this email, please contact the ConPro team at ConPro@tnc.org.

If you have any questions about the ConPro retirement, or the process of transferring data to Miradi Share, please contact the ConPro team.

New Book from Bryan Piazza

Bryan Piazza, Director of Freshwater and Marine Science for TNC in Louisiana, has a new book: *The Atchafalaya River Basin: History and Ecology of an American Wetland*. E.O. Wilson calls it "an exciting and environmentally important account of one of America's most important aqueous ecosystems." Published by Texas A&M Press and available from [Amazon](#). **SC**

Letter to the Editor

To the Editor:

Excellent editorial in the latest Science Chronicles. The issues raised by you is a key one: in spite of the evidence, people have serious doubts about the scientific data. Some of this is communication, as you indicated. Some is about a lack of understanding of science and how it works. Another is the way that science has positioned itself. But finally, there have been systematic attacks on the science for a long time (at least 40 years) that has mostly gone unanswered. So this goes back to your point about communication. To me it seems there are two key elements:

1. Speak clearly about science and how it works.

Speak about the process that is seeking truth and makes systematic conclusions based on the existing evidence. Speak about how knowledge changes. And clearly teach this at an early age. We need more than being able to read and write coming out of our schools.

2. Bring science to the people. Not just the results but the actual participation. Have the people be participants in science rather than recipients of published studies from distant institutions. And have those participants be co-authors, helping to edit.

Of course the academic institution needs to continue in all of its strength and glory - even grow enormously. Change will come and the reputation return when people understand the relevance and when the communication and support of science comes from the recipients as well as the institution.

Thanks for the thought-provoking issue,

[Chris A. Pague](#)

Senior Conservation Ecologist

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 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.

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