

SPECIAL ISSUE: CITIES AND CONSERVATION, PART 1



Phil Stevens: *The Rules Are Different*

Carrie Denning & Jon Christensen: *The Hidden History of Cities & Conservation*

Rob McDonald: *Why TNC Should Be Working in Cities...and How*

*Also*

Big Announcement: *Plenary Science Meeting in October*

Separate is Never Equal: *Integrate Social and Ecological Science [Now](#)*

*What Development by Design Is...and Isn't*

*The Fire Learning Network Goes Under the Microscope*

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## Editor's Note

Peter Kareiva wrote a piece in *Chronicles* several months back on why The Nature Conservancy should be doing conservation in cities. To which the general response was two-fold: 1) That's crazy, or 2) Sure, but how do we even begin? The urban conservation pieces in this issue of *Chronicles* should start to answer the question of #2, and pieces in the April issue will further discussion on a topic that's quickly moved front and center at TNC. So if you're in either camp, dig in. (If you're in a third camp, the camp that says it's *Kareiva* that's crazy...for obvious reasons, I can't help you.) Thanks to Rob McDonald for brainstorming with me and soliciting Carrie Denning and Jon Christensen as authors, and thanks to Chrissy Schwinn for recommending Phil Stevens as a contributor.

—Bob Lalasz  
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## Conservation Gateway Top 5 Posts for February

1. Do you shy away from modeling? So did Randy Swaty. Read what caused him to reconsider in [Who, Me? A Modeler?](#)
2. How well do you use expert opinion to make decisions? Eddie Game has some dos and don'ts in [The Use of Expert Opinion in TNC](#).
3. Measuring progress will get you nowhere if you are not asking the right questions. Hear more from Jensen Montambault in [Don't Ask, Don't Know](#).
4. Do we really need more scientists...or do we just need more people who think like scientists? Jonathan Adams wonders aloud in [Professionalization and Its Discontents](#).
5. The debate continues on Jonah Lehrer's *New Yorker* piece on the credibility of the scientific method. Comment on the responses of five of TNC's top scientists in [Drinking from the Fire Hose: Is There Something Wrong with the Scientific Method?](#)

## Big Announcement: Gathering of the TNC Science Tribe, October 18-20, 2011



It has been almost five years since the Conservancy's science tribe gathered for an "all-science meeting." Since that gathering in Arizona, a lot has changed. Development by Design, water funds, ecosystem services, increasing attention to people, urban conservation, return on investment, and corporate engagement have arrived on the scene. The Nature Conservancy is in the midst of developing a new vision and goals statement. We are evolving our planning tools and focusing on measuring the performance of our interventions. Science in service of policy is an increasing demand. We have begun to hire social scientists and economists. TNC's executive team has been totally made over. We have a North America region that is beginning to flex its muscle.

**It is time to gather and exchange ideas** about how science can better serve the new Conservancy, to argue and learn, and to make plans for elevating science's contribution to conservation.

So we have scheduled a **gathering of science thinking (but NOT just scientists) aimed at these new conservation science endeavors**. The dates are **October 18-20, 2011** (arrive the night of the 17th).

We plan to hold six core plenary sessions that will cover

- Conservation by Design 2.0
- Science communications and broadening conservation's constituency
- Environmental justice and indigenous rights
- Science and corporate partnerships
- The new ecological stewardship
- "Big ideas — truth and consequences."

These core sessions will take up only half of each day. The remaining half-days will include training sessions, discussion panels, poster sessions, short talks, swap meets and social time. We intend to include External Affairs, Philanthropy and Marketing. We expect to host 300 TNC staff and 50 external conservation scientists or practitioners.

Registration will be \$200 and will cover all meals and four nights at the hotel. Attendees will be expected to cover their own travel, but grants will be available to support hardship cases.

The location is [Whispering Woods Hotel and Conference Center](#), located in Olive Branch, MS — selected for its affordability, setting and proximity to three cultural and social beacons: Graceland, the Martin Luther King Museum and Beale Street.

We will announce the official opening of registration in the July issue of *Science Chronicles*. But prior to that, if you have ideas for the morning and afternoon satellite sessions, please [e-mail Lynne Eder](#), who is the chair of the organizing committee.

We welcome suggestions on speakers, topics, social events, workshops and field trips. We will be reaching out to many of you to help — but feel free to volunteer help and offer ideas.

—Peter Kareiva, chief scientist, The Nature Conservancy  
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## The Lead

### Separate is Never Equal: Social and Ecological Science at TNC Must Be Integrated, Not Parallel

By Jensen Montambault, *Conservation Measures Specialist, The Nature Conservancy,*  
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You've heard rumors of mission drift, the kerfuffle over calling it "ecosystem services," "nature's benefits" or just plain "money grows on trees." Any way you look at it, the Nature Conservancy is moving to embrace people as part of conservation. What does that mean for our science?

**No stonewalling social science.** At a recent marine fisheries meeting organized by the Secretariat of Pacific Communities, one oceanographer proclaimed, "I do bathymetry — how could I possibly incorporate people into my work?!" Um....use your imagination! The Conservancy talks about sea-level rise in terms of how it's caused by people (think climate change policy) and affects people (think ecosystem-based adaptation). Social issues are integral causes and effects, even where nobody lives.

**Tread with care.** Most of the Conservancy's time and money still goes toward buying and placing human-use restrictions on land. Our experienced dealmakers will tell you that you can't just engage stakeholders such as politicians, communities and other non-profits and then change your mind without enduring major consequences. The same goes for science. When you enter a community to begin assessments, you set up expectations and begin a dialog that must be continued. This means that you have to think carefully and discuss your question and how the information will be used — before starting your research.

**Integrate socioeconomic and biophysical science questions from the get-go.** Why just have our biologists do their work and our social scientists do their work and then get together at the end and share results? It's inefficient. If the assessments are designed as one, you can address the relationship local communities have with the systems and species we are focusing on right from the start and make sure our conservation approach is locally appropriate. Biological and social scientists can fundraise together, approach governments and communities together, and coordinate logistics and costly data such as high-resolution satellite imagery.

Division hinders our ability to walk our talk. One of the Conservancy value statements reads: "Enduring conservation success depends on the active involvement of people and partners whose lives and livelihoods are linked to the natural systems we seek to conserve." Integrating socioeconomic and biophysical science gets to the whole point of monitoring and evaluation, which is to figure out what is actually going on. People affect nature. Nature affects people. The synergy extends to science. Let's recognize that synergy and act accordingly. **SC**

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**Discuss this article on the Conservation Gateway:**

<http://www.conservationgateway.org/news/separate-never-equal-social-and-ecological-science-tnc-must-be-integrated-not-parallel>

## **Related Announcement: Conservation Methods and Learning Fellowship**

[The Coda Global Fellows Program](#) is seeking candidates for a fellowship with the Conservation Methods and Learning team to increase capacity within the Conservancy to integrate social science and human wellbeing into conservation planning and impact monitoring. The Fellow will directly support capacity-building activities through integrated monitoring design, field data collection and analysis, developing online materials and resources, as well as developing virtual and in-person trainings. Read more about [the Monitoring Fellows program](#) — and then [learn about the fellowship itself](#).

## Cities and Conservation

### Why the Rules are Different in Cities

By Phil Stevens

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*Editor's note: Urban Creeks Council has been working to protect and restore urban streams in the San Francisco Bay area since 1982. Phil Stevens was a member of the Conservancy's philanthropy team — first in California, later Alaska — from 2000 to 2007.*

As more and more of the world's population lives in cities, the divide between people and nature is increasing — to the detriment of both (Louv 2008). Urban conservation may hold the key to bridging that divide. Many of us already working in cities have seen first-hand the astonishing biodiversity to be found in urban areas, and would be happy to see the Conservancy join us as we work to protect and restore it.

But in the city the rules are different, and the targets aren't the last great places. Urban conservation is about more than biodiversity — it's about re-integrating human and natural



communities into a fabric that can benefit both. No one really knows yet how to do it right, particularly given the uncertainties inherent in global change. But we who work in urban conservation have begun to understand a few of the rules so far:

**Put people first.** Since people are the dominant species in urban areas, conservationists have to be willing to engage deeply and sincerely with the problems and concerns of urban people. If you're working in a community where jobs are scarce, you need to find a way to make conservation create jobs if you want a seat at the table. The good news? While most urban dwellers may not be able to tell you what biodiversity is, a surprising number know there's something they want that they can't get from soccer fields and manicured city parks. And there are increasing opportunities for collaboration between environmental justice activists, public health advocates and conservationists to restore habitats in urban areas to provide urban-dwellers with opportunities to engage with nature (or something like it) first-hand (Fuller et al, 2007).

**Human impacts are extreme, pervasive and inevitable. Be okay with that.** Resist the urge to "museumify" your restoration sites (Gobster, 2007). People are going to beat them up. They'll trample your plants and even steal them. They'll harass wildlife and tag your beautiful new interpretive signs. If you let them, they'll also show up in droves to help replant, clean up trash or explain to a group of children how a lungless salamander can breathe. The net result is positive, for nature and for the community.

**Cities are artificial environments. Be okay with that, too.** Don't get hung up on what used to be here. Even leaving aside global change, there's no way we could bring back what has disappeared. This can be liberating rather than constraining. Cities are already manifesting a host of novel species assemblages, and we can experiment more freely with those in urban areas than we might be inclined to do in less disturbed environments (Harris et al, 2006).

**Restoration is an ongoing process.** Once you engage, plan to be there indefinitely. Because of the incessant human impacts, assume that you'll be continually replanting your sites to mitigate for losses. On the upside, your volunteers can become a force for long-term monitoring and adaptive management, so you can begin to accumulate substantial data on what's working and what's not, both for people and for other living things.

**Connectivity is a distant dream. Take what you can get.** While it's pleasant to imagine urban areas criss-crossed by green corridors, in most cases urban conservationists will have to be satisfied with an archipelago of parks, streams and vacant lots with which to begin. The theory of island biogeography tells us that such small patches can only support a relatively few species, and that the small populations they support are inherently more prone to extinction. If we can figure out how to stitch those places into functioning ecological networks, though, we might be getting somewhere.

**In cities, people are the ecosystem process.** In the case of revegetation projects or controlled burning of landscapes, conservationists are already substituting human effort for ecosystem processes that cannot be restored. In urban areas, other tactics are likely to be necessary as well. Planned species reintroduction may be able to substitute for natural dispersal, and help restore connectivity between islands of habitat (Hannon and Hafernik, 2007). In the absence of browsing elk, interns with loppers can keep willows in check to preserve sight lines. And many cavity-nesting birds are content with bird boxes on lamp poles.

How could the Conservancy begin to engage in urban areas? An obvious first step would be to identify local partners doing important work. Look for the ones who aren't the best funded, but who have the best ideas, strong partnerships with local governmental agencies, and deep roots in communities. Look for places where local capacity is weak, and find ways to bring the Conservancy's clout to bear. In my own world of urban stream and riparian restoration in the San Francisco Bay area, for example, the Conservancy's strengths in fundraising, conservation planning and public education could help transform a ragtag movement into a far more effective force for conservation. If the Conservancy wants to help build the urban conservation movement, consider devoting some internal resources to building the capacity of partners already doing that work.

True engagement in urban conservation might require that the Conservancy reexamine some of its most deeply held assumptions and priorities. It would require building partnerships with organizations whose missions place a far greater emphasis on human benefits than does the Conservancy's. But it may be the only way to assure the continued success of the Conservancy's work beyond the urban zone. **SC**

**Discuss this article:** <http://www.conservationgateway.org/news/why-rules-are-different-cities>

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## Cities and Conservation

### Remembering Nature and the City: A Hidden History

By Carrie Denning and Jon Christensen

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Today, great conservation success has often been associated with saving large tracts of rural land and wilderness devoid of human development — places with uninterrupted natural vistas and thriving wildlife. Yet in the United States there is a hidden history of conservation rooted in cities and towns, a history that has driven significant change over the past century for what “conservation” means in this country as a set of ideas and practices. As we contemplate the challenges of an increasingly urbanized world, understanding and shaping the city’s changing role in conservation will be crucial if we are to create and manage habitats that can sustain our growing population without destroying our planet’s biodiversity.

Our own research in the San Francisco Bay area has attempted to tease out the complicated interplay between urban development and open space conservation over time in order to understand the changing motivations and consequences of conservation in a metropolitan setting. Initially, conservationists in the Bay Area were concerned with protecting valuable drink-

ing water reservoirs and watersheds in the late 19th and early 20th centuries. But by the early 20th century, the “City Beautiful” movement was in full swing, championing parks as a way to preserve human vitality and bucolic peacefulness amidst urban chaos (Walker 2007). Golden Gate Park was a result of this “City Beautiful” outpouring, and it was inspired by Frederick Law Olmsted’s design for Central Park in New York City. Olmsted’s philosophical case for parks was based on three moral imperatives: improving public health by planting trees and creating clean spaces free of air and water pollution, providing a place of recreation for the urban poor, and democratizing open spaces for all. This mission is not far from countless conservancies today, though the method of “creating” the open space of Golden Gate Park — converting miles of sand dunes into manicured lawn, for instance — is alien to us today.

“Today’s environmental stewards cannot turn their backs on cities.”

Following World War II, development in the Bay Area boomed, spurring another wave of conservation efforts. Smaller cities like Oakland and San Jose rapidly grew, and small towns steadily sprawled into an interconnected suburban and urban matrix throughout the nine-county Bay Area (Dowall 1984). This development was spurred by a robust highway system and cheap land, enabling businesses and housing developments to leapfrog out from the area’s historical urban centers (Reilly et al. 2009). Urban and suburban parks became essential elements throughout this matrix, providing a natural respite from the expanding concrete maze.

Though much of this suburbanization was a reaction against crowded, “unhealthy cities,” its rapid growth shocked suburban residents. They lamented the loss of orchards, ranchlands, and mountain and bay vistas, and their complaints eventually sparked an “open space” movement in the Bay Area (Wheeler 1998). Like the City Beautiful activists decades earlier, these new crusaders’ arguments were couched in a basic human need for outdoor experiences and aesthetic beauty, as well as a revulsion against excessive, crowded development. It was during this time that many communities in the Bay Area enacted urban growth limits and zoning restrictions as a way to protect communities from additional development and exploding populations (Dowall 1984). By the 1980’s, the open space movement began incorporating new arguments about biodiversity and habitat preservation. And while this shift is often criticized as a move to separate humanity from nature for the sake of preserving nature, ultimately these policies are driven by people’s deep human need for a connection with the environment around them.

To be sure, the history of conservation in the Bay Area is very much a product of the region’s politics and environment. Yet, we do not believe this history is exceptional. While the histories of all cities and regions are contingent on many factors — including geography; their historical period of development; regional, national, and global forces; and culture — the urban

foundations of conservation and its changing meanings have been important throughout the United States.

Conservationists and policymakers around the world need to better understand the historical range of desires behind conservation — from protecting resources essential to human health, to valuing parks for recreation and fitness, to valuing open space for its aesthetic value and habitat for species (Denning et al. 2010). This variety of human needs for nature provides us with a toolkit to help shape rapidly developing cities of the 21st century into solutions for conservation rather than problems.

Today's environmental stewards cannot turn their backs on cities. The world's cities are gaining around 70 million people per year — more than a million a week (UNPFA 2007). This explosive growth threatens ecosystems, water supplies, and human health and prosperity. In 2007, for the first time in history, more people lived in cities than in the country, and in the United States,  $\frac{3}{4}$  of our population lives in metropolitan areas (Sanderson 2009). Cities are the biggest environmental challenge of this century, and we think it is helpful to pause a moment and remember that environmental policy and urban policy are not only one in the same, but they have been one in the same for quite some time (Seto and O'Mara 2008).

“Environmental policy and urban policy are not only one in the same, but they have been one in the same for quite some time.”

While the problems that these burgeoning cities and megalopolises pose for people and the planet are daunting, we have the resources and experience to confront these challenges. As the history of conservation in the Bay Area reveals, cities are hotbeds of innovation in conservation and environmental management. While conservation has change appearances several times since Olmsted designed Central Park, urbanites have played pivotal roles in shaping, developing and conserving environments for people and other living beings. The first campaigns for clean air, water, and parks arose in urban environments, ultimately spreading outwards to link distant nature preserves and wilderness areas to urban dwellers (Walker 2007).

There are new challenges, to be sure — rising sea levels, for example. But there are also new opportunities for urban conservation, like green roofs and urban farming. To meet these needs, conservationists must develop new partnerships and find new ways to engage urban dwellers to creatively shape urban environments and the surrounding landscape. Whether by “daylighting” hidden rivers (such as the Cheonggyecheon in Seoul) or by creating brand new parks where none existed before (such as the High Line in Manhattan) conservationists can foster partnerships to create successful urban renewal projects with environmental benefits — and, more importantly, remind urban dwellers of the natural world in which we live. By doing so,

conservationists can spark our imaginations about the possibilities of reconnecting with nature even in today's rapidly urbanizing world. **SC**

*Editor's note: Carrie Denning is currently a consultant in Washington, D.C and on the Advisory Council for the Bill Lane Center for the American West at Stanford University. She received her BA in History in 2008 and her MA in Sociology in 2009, both from Stanford University. Jon Christensen is Executive Director of the Bill Lane Center for the American West at Stanford University. With Rob McDonald of The Nature Conservancy, they are co-authors of "Did land protection in Silicon Valley reduce the housing stock?" *Biological Conservation* 143 (2010): 1087-1093.*

**Discuss this article on the Conservation Gateway:**

<http://www.conservationgateway.org/news/remembering-nature-and-city-hidden-history>

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## Cities and Conservation

### Why TNC Should Be Working in Cities...and How

By Rob McDonald

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Perhaps because of The Nature Conservancy's origins as a land trust, many of our staff members look skeptically at the prospect of the Conservancy doing urban conservation. After all, isn't urban land more expensive than rural land, more ecologically degraded and more difficult to conserve over time?

Yes to all three. Urban conservation is in many ways harder than conservation in a rural setting, and if the Conservancy could achieve its mission by working just out in the hinterland, a strictly short-term ROI analysis would argue for staying away from cities. But three global megatrends have convinced me that urban conservation, broadly construed, is not an option but a necessity for the Conservancy to achieve its mission:

**1. *Emerging Demographic Realities.*** For the first time in our species' history, the majority of us live in cities. In the next 25 years, this figure will increase up to 80 percent, as almost 2 billion new people move into cities. That's equivalent to building a new city the size of Seattle in a week. Within the United States, the Conservancy's home base, more than 80% of people already live in cities, and that figure is steadily climbing.

More and more, the demands of urban dwellers — for resources and for amenities — will shape the rest of the 96 percent of the world's terrestrial surface that isn't urbanized. The Conservancy has to think seriously about how we can appeal to this urban majority.

**2. *Declining Support for Conservation and the Conservancy.*** Next, consider the slow decline in interest in conservation generally — and in the Conservancy specifically. The majority of our donors are older than age 50, and most are white. The next generations, including my own, have shown less interest in conservation, and will be much more diverse ethnically and culturally than our traditional member base. Indeed, there's growing evidence that the next generations have had fewer experiences with wildlife or the natural world than our traditional audience, which means those people will have less affinity for what we do.

In my opinion, there's some hope that targeted urban conservation projects can spark interest in conservation among a broader group of people. This argument is often spurned by my fellow scientists as merely "marketing." But if the long-term success of conservation depends upon the support of a broad majority, we can't afford to dismiss urban conservation as superficial...lest we find ourselves out of work.

**3. Nature's Benefits to People.** For me, ecosystem services is the most compelling reason for the Conservancy to work on urban conservation. The Conservancy is increasingly committed to protecting critical lands and water not just for their own sake, but also for the benefit of people — good conservation as well as good marketing. But then we must ask: ecosystem services for whom? If most people are in cities, then don't we have to work towards securing the provision of services to these urbanites?

The work of our Latin American staff setting up water funds is perhaps the best example of this urban conservation, helping protect biodiversity in the upper reaches of a watershed while providing fresh water to urban residents in the lowlands. But prioritizing urban conservation doesn't mean we rush into every half-baked opportunity. The Conservancy needs to decide which ecosystem services we are skilled in maintaining or restoring, and then let scientific analysis guide us to where we have to work to be relevant to those services. Given that most people live in cities, and many ecosystem services have to be provided close to where people live, these decisions will inevitably lead us to work in metropolitan areas.

*“Quite frankly, the marketing side of urban conservation is relevant to our core mission — a long-term investment in building the next generation of conservationists.”*

So what does all this mean for TNC's science corps? Rather than seeing urban conservation as a stand-alone program, I am trying to convince folks to see it as fitting into the general trend toward multi-objective planning at the Conservancy. I certainly know multi-objective planning has been one of the central topics of Craig Groves' Planning Evolution Team. So let's view serving urban dwellers as not different from any other secondary objective in planning — a task to be accomplished as long as it does not conflict with our primary mission of biodiversity conservation.

Furthermore, as we evaluate the potential conservation return on investment of our actions, let's also consider any gains in broadening the base of popular support for conservation. While this way of thinking about ROI is new territory for many scientists (myself included), there's nothing scientifically wrong with tracking other social metrics (e.g., the number of new volunteers engaged with a project) as long as we also track metrics relevant to our core mission. Because, quite frankly, the marketing side of urban conservation is relevant to our core mission — a long-term investment in building the next generation of conservationists. Like all investments, one must monitor this one over time to make sure it is bringing rewards. **SC**

**Discuss this article on the Conservation Gateway:**

<http://www.conservationgateway.org/news/why-tnc-should-be-working-citiesand-how>



## Peer Review: What Development by Design Is...and Isn't

**Names:** Joe Kiesecker and Bruce McKenney

**Titles:** Lead Scientist, Conservation Lands Focal Area (Kiesecker) and Senior Economic Advisor, Conservation Lands Focal Area (McKenney)

**Location:** Fort Collins, CO (Kiesecker) and Charlottesville, VA (McKenney)

**What They Do at TNC:** Co-leads, Development by Design

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*First question: Explain Development by Design in a sentence or two.*

**McKENNEY:** It's a science-based strategy to improve the use of mitigation as a conservation tool and help balance the needs of conservation with those of future development.

*Nice! How many DbD projects are there right now?*

**KIESECKER:** About a dozen. There's six, seven or so in the United States focused on oil and gas and wind development, and then the work in Mongolia, Australia, and Latin America.

*Why did we start doing this work?*

**KIESECKER:** Necessity is definitely the mother of invention. The number one threat coming to biodiversity when I was working in the western U.S. was gas and wind development. Then BP invited us to help them design measures for the implementation of a mitigation plan for biodiversity offsets in Wyoming's Jonah Field. They didn't feel comfortable putting their money on the table unless there was a way to assess the progress.

We initially went into the scientific literature and looked at the deep criticisms of mitigation practice and then systematically tried to address each of those criticisms for that project. I had a little bit of experience working on mitigation, but it wasn't until we did a hard look at the scientific literature and the current global practices that we realized what we had developed could have significant impacts.

**McKENNEY:** The Conservancy did a review of biodiversity offset policies around the world, to see where mitigation was working and where there were gaps. We found broad agreement about the need to follow the mitigation hierarchy — avoid, reduce, offset — but not much guidance about how to do that. Mitigation remains a very piecemeal, arbitrary process. It's often applied at the wrong ecological scale and with no real clear goal in mind. So we wanted to develop a framework that would help address the "how to" issues for mitigation hierarchy. There is a big funding pool for mitigation, but those dollars are often wasted.

We distilled our understanding of the issues down to a few key questions — questions that the Conservancy is very well positioned to address, given our core strengths in conservation planning. When should we be avoiding the impacts of development, and when is it appropriate to offset them? How do you select offsets? And how do you know when you've done enough to meet your goal of no net impact or net gain in biodiversity? The DbD framework tries to address those questions and provide "how to" guidance.

*What's the biggest misimpression people you run into at the Conservancy about DbD?*

**McKENNEY:** Some people may look at it as another buzz term and wonder whether there's a "there" there. With more than a dozen projects and a raft of peer-reviewed papers talking about methods, there is definitely a "there" there. But beyond projects and methods, it is really a strategy for sustainable development, and there's a lot of opportunity around this strategy.

**KIESECKER:** We've kept our heads down and tried to avoid hyping what DbD is. We've really focused on delivering some good science and delivering some tangible, on-the-ground, good old-fashioned conservation. I don't think people quite understand that. We still have things we need to figure out, but our focus was really on trying to work out the concepts first before trying to go big.

*Do you have a home-run success to point to?*

**KIESECKER:** Our work with sage grouse in the West. We were initially involved with the science, which helped define the core areas that are being used as the blueprint of conservation across a good chunk of the western United States. We then looked at future oil and gas development scenarios and at how habitats — in particular, for the sage grouse — were being impacted as a result of that future development.

The U.S. Bureau of Land Management combined those two pieces of science in a very effective way. So, in Wyoming, for example, they have put out an instructional memorandum that frames up how oil and gas and wind development can happen. The memorandum restricts development in the core areas for the sage grouse, which in Wyoming alone is probably about 5 to 6 million acres. In addition, the NRCS is using the results of our analysis to direct funding from the farm bill to where it will have the greatest return. So far they've committed almost \$50 million and we hope they will continue this level of funding annually. So the link from idea and science to conservation is already happening. It's pretty powerful.

*"If impacts should have been avoided but we've supported offsets, then we'll have big problems. We need to be very careful about this. It would undermine DbD and TNC's credibility."*

*The “by design” term is getting applied to more and more of TNC’s work. Does that concern you? Are we diluting DbD as a framework by applying the “by design” label to projects that are outside of DBD’s scope?*

**KIESECKER:** I’m not concerned. I see that more as marketing.

We don’t really want to be prescriptive about how people do these kinds of projects. We want to promote the basic standards to adhere to as part of engaging in the mitigation projects. So, if you’re going to do an offset, for example, have you thought about this as an appropriate step in the mitigation hierarchy, or can we avoid or minimize that impact instead? Do you have a conservation plan? What’s the science behind supporting a certain decision? Those are sort of the basic sideboards that we want to set on the mitigation projects. And then we want to let the innovation develop. We share the approach we’ve used, but we’ve learned with our current projects that one size doesn’t fit all.

*“We share the approach we’ve used, but we’ve learned with our current projects that one size doesn’t fit all.”*

If it makes sense in a particular context to have hydropower by design, then so be it. But if the project is about mitigation, we want to make sure that, whether it’s hydropower by design or Development by Design, it adheres to those basic standards.

*So the Conservancy’s approach to the mitigation hierarchy — that doesn’t need to be centrally managed?*

**McKENNEY:** If we’re trying to take forward global strategies, then there does need to be some centralized role. We’re looking to build this out and support it. Leadership in different regions might drive this forward in different ways. We’re seeing that with current DbD work in the U.S., Colombia, Mongolia, and Australia. These regions have different goals, threats, risks, and capacities, so we need a strategy that is adaptive and managed to the context.

*Final question: What are the risks of not using this framework when we’re evaluating opportunities to work with corporations on mitigation projects?*

**KIESECKER:** One of the biggest criticisms that we may get around this work is that it green-washes industry actions. The kinds of companies that we work with or have worked with for these kinds of projects have a huge impact on the environment. It’s oil and gas development. It’s mining. So to mitigate the risk of greenwashing, it’s critical that we have some standards on how we engage in these kinds of projects. With Development by Design, the intention is to set those standards and set those sideboards and manage our risks.

One bad project could topple all the other really good projects. If we get bad press, companies will be less likely to want to move forward, and it may be harder for us to be able to convince some governments that it's worth doing this kind of work. We're talking about nontraditional kinds of partners that we're working with.

**McKENNEY:** A big danger here is if we race past the front end of the hierarchy, past avoid and minimization to offsets, just because offsets look like a win-win that can support development and some conservation goals. If we do that, we might get a project that looks okay until people look under the hood. If impacts should have been avoided but we've supported offsets, then we'll have big problems. We need to be very careful about this. It would undermine DbD and TNC's credibility. **SC**

## The Fire Learning Network Goes Under the Microscope



Raise your hands: **How many of you would you like your Conservancy project to be the subject of a five-year academic study on its effectiveness** — the results of which would be written up in five papers published in peer-reviewed journals and a proposed book? Without you being able to filter or spin the findings *at all*?

The Conservancy's **Lynn Decker**, director of the [U.S. Fire Learning Network](#) (FLN), took the plunge. And not only did she live to tell the tale, she says that the study and feedback from researchers [Will Butler](#) (assistant professor of urban and regional planning at Florida State University) and [Bruce Goldstein](#) (now associate professor of planning and design at the University of Colorado, Denver) made the FLN even more flexible and adaptable.

But Butler and Goldstein were already impressed with the FLN, which they say provides a paradigm for conservationists trying to change ineffective but entrenched, bureaucratic ways of working on natural resource issues. How scary was it to go under an external microscope? And what other kinds of issues could a learning network such as the FLN tackle? I rounded up Decker, Butler and Goldstein and asked them.

*For those who don't know — what is the Fire Learning Network, and why did it come about?*

**LYNN DECKER:** The FLN emerged in 2002 because TNC had identified altered fire regimes as a major threat to our ecoregional portfolio, which happened to have a high degree of overlap with the land administered by the federal agencies. So the TNC Fire organization engaged federal agencies in a roundtable discussion in 2001 and developed a partnership to address the threat.

The FLN came out of that partnership. It's a conservation learning network. FLN has practitioners that work collaboratively with partners to restore large landscapes across the U.S. and Caribbean — like other Conservancy folks, their landscape partners include federal agencies, state agencies, private land owners, and county representatives. By operating as a network, linked at multiple scales, we can leverage lessons learned between practitioners, their partners, and landscapes and accelerate effective conservation across the U.S. We can also accelerate learning and effect changes in management at multiple scales.

*Bruce and Will, why did you want to study the FLN? What questions were you trying to answer?*

**GOLDSTEIN:** Will and I were focusing on how collaboration can address the limits in normal governance and decision-making. Rather than focus on collaborative dispute resolution, we were thinking about how collaboration is a catalyst for institutional change.

The FLN caught my attention when I read Stephen Pyne's piece on how it was an effort to address the longstanding crisis caused by wildfire suppression. So, with Lynn's permission, I crashed the annual meeting of the FLN in New Bern, North Carolina, and Lynn and I sketched out an idea on a bar napkin for an evaluation that would focus on FLN how to engage in collaborative learning not only within a single landscape, but across a national network of landscapes.

*Lynn, how did you feel initially about opening up FLN to this kind of academic scrutiny?*

**DECKER:** I was a little amused by Bruce's persistence in wanting to study us, and he was very persistent. But after talking to him more, I got curious about the possibilities. I was very interested in understanding more about the answers to the questions he was originally posing. Only later did I start to think a little bit about the risk it would involve.

*You did tell me when we talked earlier that you were scared to death.*

[Laughter.]

**DECKER:** Well, that's what I meant by risk. I was afraid of publications that might embarrass the Conservancy. But I think that's sort of natural. And an outside evaluation would actually give me knowledge and perspective that I didn't have. We had been monitoring our progress to make sure our strategy wasn't defective, but I found the prospect of outside evaluation really compelling.

*"Since we're a science-based organization, I think it makes sense to subject what we do to science-based evaluation."*

*Bruce and Will, you concluded through your study that collaborative learning networks like FLN might be a way around the resistance to fundamental change in resource management agencies. What is it about these networks that breaks down that resistance?*

**WILL BUTLER:** Three things. At one level, it welcomes the agencies in as partners or collaborators in a common shared purpose. We want to solve our crisis, and we want to do with you, and we are going to bring some resources to the table and you're going to bring some resources to the table, and we can only do this if we do it together. So there's a high motivation to participate, and instead of emerging out of a dispute, like a lot of collaborative processes, this began without an antagonistic relationship as a starting point.

The second point is the network really promotes creativity by having people not just from TNC and the agencies involved, but also bringing in other folks who have different perspectives to bring to the challenges that they face in each landscape, so we can generate new ideas and new approaches to doing things on the ground.

And then it does all of that operating at multiple scales. It includes line officers. It includes forest-level staff. It includes regional players. It's got national-level administrators involved. It's this multi-scalar approach that gives the network its power. And those folks operate in their own professional organizational networks, so there is the potential for diffusion of these innovative and creative ideas at multiple levels simultaneously. That is the leverage point for opening up the resistance to change.

**GOLDSTEIN:** As Rahm Emanuel once said, you should never let a serious crisis go to waste. The wildfire crisis had gone on for decades, and ecological and resource impacts, fire risk to communities, and escalating costs had unsettled the status quo in wildfire management. But the crisis also was threatening to wildfire managers, who resisted external pressure to change.

We think one reason the the FLN has been so successful is that it has worked *with* wildfire managers, rather than trying to change them from outside. This partnership promotes trust and common purpose — reorienting funding and priorities from within rather than through external political channels.

*You write that networks like the FLN allow resource managers to be autonomous and creative within their individual landscapes but also be unified in their overall approach. That seems like a tall order.*

**GOLDSTEIN:** Lynn and her colleagues established and managed a network of collaborators and linked them at landscape, regional and national scales by providing them with information and technologies and developing effective ways to communicate. This enabled coordination across the network as a whole, without either having to centrally manage priorities and actions or cultivate close relationships among participants, which would have been impossible across such a dispersed network.

**BUTLER:** To me, it's about asking the right questions and providing a framework for engagement. FLN says: "We want you to think about these issues and these challenges in a structured and organized way, working through these kinds of tasks, but we are not going to presume that we know the analytical tools you are going to use. We are not going to presume we know all the data that you have. We are not going to presume to even know your ecological or social or political realities that you are working in. We are going to get the conversation started and provide a framework for that conversation."

So you get a lot of people across the country responding to similar kind of questions and structured exercises or focusing on particular kinds of problems, but that are applying their knowledge of the social and ecological systems where they are operating to answer those questions.

*Lynn, this was a five-year study. What did you and the network learn as the study progressed, and how did you apply that learning to the way FLN functioned?*

**DECKER:** I learned an incredible amount just by working with Bruce and Will. It gave me access to their insights on network theory and collaboration science, and I'd take those insights and immediately make small adjustments to improve the network's function and outcomes.

We also struck a deal in the beginning that I would get their early results, so that I could be aware of their findings without waiting for the papers to be published. So I was able to make some fine-scale adjustments and provide some opportunities that would improve the network process based on those findings, like getting some leadership skills training to the network leaders quickly. Having them there helped us incorporate the best social science into the management of our network faster.

*Fire is a thorny issue — but there are other natural resource challenges like climate change that are possibly even thornier. Bruce and Will, you've written that what FLN has done could apply to challenges like climate change. How?*



**BUTLER:** A lot of the resource challenges we face today are geographically large-scale, institutionally cross-sectoral, and scientifically complex. There's a lot of uncertainty involved with them, and so they necessitate ways to work across organizational, disciplinary and jurisdictional boundaries. What FLN demonstrates in the fire context is these kinds of problems can be addressed not only at specific locations or within specific institutions, but rather that this multi-scalar network can come at the problem in multiple levels on multiple fronts simultaneously, breaking down a lot of those barriers that keep us from being able to deal with some of these complex problems.

“One reason the the FLN has been so successful is that it has worked *with* wildfire managers, rather than trying to change them from outside.”

**GOLDSTEIN:** Yes, one thing we have begun is to look at how learning networks are emerging globally to address climate change, which has all the features Will notes, as well as the challenges of entrenched institutions and demands for social equity. We've been following Lynn's recent efforts to develop a climate learning network, and look forward to continuing our research partnership.

*Lynn, it sounds as if you recommend the experience of external academic evaluation and feedback. What other projects at TNC might benefit from this kind of study? And which might benefit from learning networks?*

**DECKER:** Learning networks are a tool important to making our overall strategy effective. The tool really makes sense in our context. For others such as ecosystem-based adaptation, I can't think of a way that you couldn't use the power of place-based collaboration to help make your case. You do have to factor how much energy and resources you're willing to put to it because, if you don't make it high-functioning, it doesn't necessarily help you.

About being evaluated, I would definitely say yes. Since we're a science-based organization, I think it makes sense to subject what we do to science-based evaluation, even in these operational things like how are we hypothesizing a network to function to meet the outcomes we are interested in.

**GOLDSTEIN:** I've been asked a similar question by colleagues about how was it to partner with TNC. My response has been that it's been different than just observing a collaborative process — its been more of a research partnership, because Lynn and her colleagues are not just applying an existing model, they are coming up with new collaborative approaches and trying to learn by doing and adapt all the while. So it's been more like a collaborative research project. Working with a learning organization like TNC is much more dynamic and exciting and offers more possibility for discoveries that can have wide application. **SC**

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*Want to go deeper? Below are links to some of the papers Will Butler and Bruce Goldstein published on the FLN as well as [a link to their proposed book on the network](#):*

Butler, W. H. and B. E. Goldstein. 2010. The US fire learning network: Springing a rigidity trap through multiscale collaborative networks. *Ecology and Society* 15(3): 21.

<http://www.ecologyandsociety.org/vol15/iss3/art21/>

Goldstein, B.E., & Butler, W.H. 2010. [Expanding the scope and impact of collaborative planning: Combining multi-stakeholder collaboration and communities of practice in a learning network](#). *Journal of the American Planning Association* 76(2): 238-249.

Goldstein, B.E., & Butler, W.H. (2010). [The U.S. Fire Learning Network: Providing a narrative framework for restoring ecosystems, professions, and institutions](#). *Society and Natural Resources* 23(10): 1-17.

Goldstein, B.E., Butler, W.H., & Hull, R. B. 2010. [The Fire Learning Network: A promising conservation strategy for forestry](#) 108(3): 120-125.

Goldstein, B.E., & Butler, W.H. 2009. The network imaginary: Coherence and creativity within a multiscale collaborative effort to reform U.S. fire management. *Journal of Environmental Planning and Management* 52(8): 1013-1033.

Goldstein, B.E. and Butler, W.H. (In review). Collaborating for transformative resilience: Shared identity in the U.S. Fire Learning Network. In B. E. Goldstein, ed. [Planning for the Unthinkable: Building Resilience through Collaboration](#). MIT Press: Cambridge, MA.

## New Conservancy-Sponsored Research

### Fire and Climate Change in TNC-China's 32 Priority Conservation Areas

Krawchuk, M.A. 2011. The use of climate analogues between the United States and China to propose potential fire regimes for China: Landscape models for integrated fire management. Beijing: The Nature Conservancy.

Climate change is expected to alter vegetation fire regimes across the globe — complex abiotic processes generated by gradients in key environmental variables. But little is known of how future climates might alter fire activity in the People's Republic of China. Accordingly, as part of its climate change assessment, The Nature Conservancy's China Program supported this study of fire and climate change in 32 priority areas (PAs) identified as important for conservation of biodiversity. The results of the study yield important evidence that the potential for changes in fire activity spurred by climate change need to be incorporated into conservation planning.

The study used a multivariable quantification of environmental drivers for the observed, recent historical global distribution of vegetation fires, using statistical models of the relationship between fire occurrence, resources to burn, and climate conditions at a coarse spatiotemporal resolution of 50km over 12 years. We used these models to project future changes in global fire patterns based on an ensemble of 16 Global Climate Models (GCMs). This type of statistical framework — akin to niche, or climate envelope models — is commonly used to assess alterations in species distributions with climate change; we refer to them here as fire-climate envelope models.

The current distribution and future projections of fire for both the 16 GCM ensemble and for a single GCM, the MIROC3.2 model, were analyzed for the 32 PAs, which cover roughly 24% of China's area. Information from the MIROC3.2 GCM was highlighted to complement a parallel research project supported by the Conservancy's climate change assessment group that focused on potential changes in vegetation using a dynamic global vegetation model driven by the MIROC3.2.

The fire-climate models predict substantial and rapid changes in fire activity across the 32 PAs due to the heterogeneous interplay of temperature- and precipitation-based variables over time. For example, in near-future projections made from the mid-high IPCC A2 emissions scenario, 27 of the PAs showed vulnerability to high levels of change from historical levels, either by increases or decreases in the probability of fire. The results highlight the need to explicitly consider potential changes in fire activity within plans for conservation management of PAs under climate change. In addition, further research is required to clearly identify whether fire

has played a long-term role in the development of these ecosystems or whether its occurrence is largely a recent human construct.

This research was made possible by The Nature Conservancy in China's Climate Change and Protected Areas program through research collaboration with the University of California, Berkeley's Center for Fire Research and Outreach. The University of California at Berkeley and The Nature Conservancy have a memorandum of understanding for fostering research collaborations of this kind. **SC**

—**Megan Krawchuk**, University of California, Berkeley,  
and **David Ganz**, director, forest carbon science, The Nature Conservancy  
[meg.krawchuk@gmail.com](mailto:meg.krawchuk@gmail.com) and [dganz@tnc.org](mailto:d ganz@tnc.org)

## Article

### The Connectivity Analysis Toolkit

By Carlos Carroll, *Klamath Center for Conservation Research*,  
and Brad McRae, *Spatial Ecologist, The Nature Conservancy in Washington*  
[carlos@klamathconservation.org](mailto:carlos@klamathconservation.org) and [bmcrae@tnc.org](mailto:bmcrae@tnc.org)



Conservation biologists have long recognized that protecting isolated natural areas can be ineffective for biodiversity conservation, and that linking areas into connected networks is often necessary for achieving conservation goals. Although connectivity conservation was formerly thought of in a static sense (e.g., as protecting conservation corridors) we now recognize that planning for connectivity requires incorporating *process* as well as *pattern* into conservation planning, and that connectivity can be conserved by means other than corridors.

However, existing corridor mapping tools — such as those included in commercial GIS software — might not be flexible enough to incorporate new knowledge on patterns of animal movement and ecological processes. Land-use planning for biodiversity conservation necessarily involves decisions that have large economic and social impacts, and thus merits use of the most rigorous and informative tools available. To fill this need, the **Connectivity Analysis Toolkit (CAT)** was developed by the authors with the assistance of Allen Brookes of the U.S. EPA.

The CAT is a software package that provides new tools for both linkage mapping and landscape-level “centrality analysis.” *Centrality analysis* ranks the importance of sites as “gatekeepers” for flow across a landscape network. Because centrality metrics can analyze potential linkages between all pairs of nodes (sites) in a network, they avoid the necessity for a priori identification of corridor endpoints. For example, *betweenness centrality* identifies the shortest paths connecting each pair of nodes, and counts the number of such shortest paths in which a node participates. The loss of an area that lies on a large proportion of the shortest paths in a network would result in a disproportionate loss of connectivity across the network. Computational advances now allow such metrics to be applied to landscapes of continuous habitat gradients rather than patches in a matrix of unsuitable habitat.

The CAT complements methods commonly available in GIS and allows planners to better evaluate alternate assumptions on how to represent wildlife movement and ecological processes. It allows users to develop and compare three contrasting centrality metrics (shortest path, circuit theory and network flow) based on input data representing habitat suitability or permeability — in order to determine the areas that would be priorities for conservation measures that might facilitate connectivity and dispersal across the landscape as a whole. The CAT also allows application of these approaches to the more common question of mapping the best habitat linkages between a source and a target patch. The newest version of the CAT adds methods for analyzing connectivity across time as habitat shifts under changing climates.

Due to the CAT’s recent development, there are few published examples of its use in planning. However, hundreds of conservation planners around the world have already begun applying the CAT to map habitat linkages and rank sites for their contribution to landscape connectivity. These methods can be applied to both conservation plans focusing on single species (such as recovery plans) and to multi-species planning efforts. The methods can be applied at a range of scales, from local watersheds to large regions.

In the western United States, for instance, planners are using centrality analysis of data on “landscape integrity” to map a multi-state network of multi-species linkages. (*Landscape integrity* is a metric of landscape naturalness derived from data on land use, roads and human population.) In northern British Columbia, planners are using centrality analysis in a regional land-use plan to evaluate connectivity for caribou and other focal species. In both these examples, the CAT allows planners to represent habitat quality as a gradient rather than mapping a landscape of suitable patches embedded within an inhospitable matrix.

Readers may also be interested in two recent connectivity analysis tools that complement the functionality of the CAT:

- **Circuitscape** ([www.circuitscape.org](http://www.circuitscape.org); see article in the January 2009 issue of *Science Chronicles*) applies circuit theory to applications in both connectivity analysis and landscape genetics, and can analyze connectivity on high-resolution raster surfaces (habitat maps) of millions of pixels.

- **Linkage Mapper** (due to be released in early 2011) was developed to automate least-cost corridor analyses for Washington's just-released statewide connectivity assessment (report available at [www.waconnected.org](http://www.waconnected.org)).

The Connectivity Analysis Toolkit and a manual with example applications are freely available at [www.connectivitytools.org](http://www.connectivitytools.org). If you have any questions on how to apply the software to your work, please don't hesitate to contact [Carlos Carroll](#) or [Brad McRae](#). **SC**

**Discuss this article on the Conservation Gateway:**

<http://www.conservationgateway.org/news/connectivity-analysis-toolkit>

## News, Announcements and Orgspeak

### Conservation Science Orientation Workshop for the North America Region Staff

Calling all relatively new science and conservation practitioner staff in the North America Region — learn about The Conservancy's tried and true conservation approach as well as the latest developments about how our methods are evolving to take on today's conservation challenges at the Conservation Science Orientation Workshop, April 19-21 in Boulder, Colorado. This workshop will be open to North America Region staff who spend most of their time on science and conservation and have been with the organization less than three years. Meals are provided for attendees. Lodging and travel are not included, but travel grants may be available under special circumstances. If interested, please email Joni Ward ([jward@tnc.org](mailto:jward@tnc.org)); include your name, what you do, and why you are interested in attending the workshop.

### Announcing Our New Senior Science Writer

I'm thrilled to announce that **Julia Kumari Drapkin**, a career multimedia journalist who has covered environment and science stories on three continents, has agreed to become the Conservancy's first senior science writer, dedicated to telling our best science stories in video and web text. She begins March 1.

Julia is a superb writer and videographer, a wonderfully creative content strategist, and a fearless storyteller — equally at home covering rabid bat attacks in the Peruvian Amazon, shark fining off Mexico's Yucatan peninsula, and soccer rivalries in Buenos Aires. Her presence at the Conservancy will open up a wealth of creative opportunities as we continue to expand our science content to key audiences.

A graduate of Columbia University's Graduate School of Journalism, where she earned a master's degree in documentary film and new media, Julia began her professional career as a photographer and reporter for the Associated Press in Sri Lanka, moved after graduation to become a multimedia reporter with the St. Petersburg Times, and then became science and environment reporter for the Public Radio International weekday show "The World," for whom she also led social media strategy during the 2008 U.S. elections.

In addition to her ongoing work for PRI, Julia has been since 2009 the Argentina correspondent and multimedia reporter for Global Post, an online-based international news agency. Fluent in Spanish, she has reported for Global Post on everything from penguin conservation in Patagonia to the spread of solar cook stoves in Bolivia. Here are links to some of her clips, which she shoots, scripts, narrates and edits herself:



<http://www.globalpost.com/video/americas/101217/perus-vampire-bats>  
<http://www.globalpost.com/video/general/091223/penguins-patagonia>  
<http://www.globalpost.com/dispatch/bolivia/100826/energy-entrepreneursbolivia>

What brings Julia to the Conservancy? A chance to return fully to her first love — science and environment reporting — and to promote conservation by telling stories about our great scientists and science work in exciting new ways. Please consider her a resource as you think about your program’s science content: Not only does she shoot beautiful video, but she narrates, edits and does on-camera standups.

Julia will be based at the Worldwide Office as part of the Central Science team, but will be at the field’s disposal to tell our best science stories — no matter where they are happening — to the world. I look forward to your suggestions on how she can work with your program.

—**Bob Lalasz**, director of science communications, The Nature Conservancy  
[rlalasz@tnc.org](mailto:rlalasz@tnc.org)

### **Monitoring Fellow Update: You Need to Listen to This!**

What do organic gardens high in the Andes have in common with coral reefs thronging with fish in Bali? Both were part of recent Coda Global Fellows monitoring fellowship experience. A half-hour recorded webinar will let you hear about Rebecca Goldman’s work helping create a monitoring template for Andean water funds and Jay Odell’s experience sifting through mounds of data to discover conservation gems with the Indonesia marine team:

<http://www.conservationgateway.org/link/bali-marine-nasca-water-fund-monitoring-fellows-webex-recording>

Current monitoring fellow assignments include:

- **Doug Shaw** (TNC-Florida) working with the Colorado River Program’s landscape-level measures.
- **George Schuler** (TNC-Eastern New York) helping the Caribbean challenge create a robust monitoring and measures plan for sustainable finance (OU-wide) and protected area strategies (Dominican Republic).
- **Steve Haase** (TNC-Arkansas, Great Rivers Partnership) conducting a baseline assessment and training Brazil’s Atlantic Forest and Central Savannahs water producers project.

Join the next monitoring fellows’ webinar live — stay tuned for an announcement in the *Science Chronicles*.

Tired of hearing these stories second-hand? Have a burning monitoring issue...or see one coming down the pipe and just don't have the time or capacity to deal with it? Conservancy staff can check out the [Coda Global Fellows program on the intranet](#) and send your completed fellowship questionnaire or fellow request to Jolie Sibert ([jsibert@tnc.org](mailto:jsibert@tnc.org)) today!

## **Wanted: Science Coordinator, Amazon Program**

JOB TITLE: Science Coordinator, Amazon Conservation Program (Job ID: 12891)

**Closing date:** March 4, 2011

To access full position announcement and to apply:

[https://careers.nature.org/psp/P89HTNC\\_APP/APPLICANT/HRMS/c/HRS\\_HRAM.HRS\\_C E.GBL](https://careers.nature.org/psp/P89HTNC_APP/APPLICANT/HRMS/c/HRS_HRAM.HRS_C E.GBL)

### ESSENTIAL FUNCTIONS

The Amazon Science Coordinator provides leadership, technical expertise and general guidance to advance conservation priority-setting, strategy development, and measuring conservation progress for the Conservancy's Amazon Conservation Program. Current strategies are conservation in private lands (sustainable harvest), conservation in indigenous lands and forests and climate (REDD and climate adaptation). The Conservancy's Amazon program includes the Amazon Basin portion of Bolivia, Brazil, Colombia, Ecuador, Peru and Venezuela.

Provides guidance and assists Amazon Conservation Program in implementation of the Conservancy's overarching conservation approach strategy "Conservation by Design." Helps to identify priority ecoregions where Conservancy programs should focus conservation efforts. Produces and analyzes conservation portfolios to guide strategic programmatic priorities. Uses standard Conservancy methodologies to help in the development of conservation strategies at multiple scales. Provides guidance and assists in conducting measuring progress and making suggestions for adaptive management of the program biodiversity conservation projects Provides ongoing tracking of biodiversity viability, management capacity and threats status across portfolios, participates in conservation actions where scientific expertise makes it appropriate, assists in working with government agencies on conservation planning issues. Builds partnerships with appropriate institutions to gather information as required, and to export methods and products to other institutions and agencies. Coordinates the development of threat assessments, threat forecasting, and approaches for understanding conservation at multiple scales. Collaborates with Conservancy scientists and other private and public sector scientists and scientific institutions to bring the best available science information and practices to enhance the conservation practices of the Conservancy. Provides technical input to fundraising proposals and may help in presentations as required.

## BASIC QUALIFICATIONS

- Master's degree in science-related field and 4 years experience or equivalent combination of education and experience.
- Experience manipulating, analyzing, and interpreting statistical data on natural communities or environmental data on ecological communities.
- Record of peer-reviewed publications relating to species, natural communities, ecosystems, or ecosystem processes or related topics.
- Experience fundraising and/or writing grants and research proposals.
- Experience managing complex or multiple projects, including managing finances and coordinating the work of other professionals and partners.
- Supervisory experience.
- Experience working with Microsoft Office Suite Software.
- Fluency in Portuguese, Spanish and English

## ADDITIONAL JOB INFORMATION

### KNOWLEDGE / SKILLS:

- Graduate degree ecology, environmental planning, conservation biology, landscape architecture, or related field and 3 to 5 years related experience. Work experience in developing land management, ecosystem, community-based conservation or biodiversity conservation plans.
- Knowledge of current trends in the specific field.
- Demonstrated experience in MS Office, Word, and Excel. Ability to use advanced computer functions including navigating the Internet. Ability to manipulate, analyze and interpret data.
- Experience with GIS systems such as ARCINFO or ARCVIEW, including Access, graphical, and database software packages.
- Experienced in participating on planning teams and in understanding conservation and participatory planning methods.
- Solid researching, writing, editing, oral communications skills. Demonstrated excellence in technical writing.
- Candidates that demonstrate knowledge of two or more countries of the Amazon Basin are preferred, particularly in the following topics: (a) protected areas, (b) indigenous lands, (c) environmental services and (d) agricultural development.

### OFFICE LOCATION:

This position is located in Belém, Pará, Brazil.

To access full position announcement and to apply:

[https://careers.nature.org/psp/P89HTNC\\_APP/APPLICANT/HRMS/c/HRS\\_HRAM.HRS\\_C E.GBL](https://careers.nature.org/psp/P89HTNC_APP/APPLICANT/HRMS/c/HRS_HRAM.HRS_C E.GBL)

## Wanted: Senior Scientist, Development by Design Team

Job Title: Senior Scientist (Job ID: 12943)

**Closing Date:** March 11, 2011

To access full position announcement and to apply:

[https://careers.nature.org/psp/P89HTNC\\_APP/APPLICANT/HRMS/c/HRS\\_HRAM.HRS\\_C E.GBL](https://careers.nature.org/psp/P89HTNC_APP/APPLICANT/HRMS/c/HRS_HRAM.HRS_C E.GBL)

### ESSENTIAL FUNCTIONS

The Nature Conservancy's Development by Design Team

(<http://www.nature.org/aboutus/development/>) seeks a broadly trained scientist with expertise in spatial modeling, understanding of the principles of landscape ecology, and a commitment to the application of the scientific method (i.e. peer review and data driven decision making). Our mission is to enable and enhance conservation of significant ecosystems. We accomplish this mission by combining scientific analyses to deliver the highest quality information for natural resource planning, protection, and management. The Development by Design Team has a strong focus on analysis to improve application of mitigation towards better conservation outcomes, encourages innovation, supports travel to conferences, and actively builds partnerships within TNC, academia, corporate partners and governmental agencies.

The Scientist participates as a team member on various projects (particularly those involving landscape-level mitigation planning, design of conservation action and measures of success) and serves as the primary scientist for one or more of these projects.

As a scientific leader and authority within the organization, s/he works with the Lead Scientist and other Team members to advise senior management and programs on complex issues. This encompasses one or more of the following functions:

- Applies diversified knowledge of scientific principles and practices to a variety of assignments
- Works across international and institutional boundaries to collaborate with other scientists and scientific institutions
- Functions as a bridge between scientists and non-scientist conservation practitioners and the public and serves as a spokesperson for TNC's Development by Design work

### BASIC QUALIFICATIONS

- Master's degree in biological sciences.
- Course work and field experience indicating knowledge of spatial modeling and/or landscape ecology, or comparable research experience is required

## REQUIRED KNOWLEDGE & SKILLS

- Graduate degree (Ph.D. preferred) in science-related field, post-doctoral experience and/or 5 years experience
- Expert knowledge of current and evolving trends in relevant discipline(s)
- Proven strategic thinker with sound technical skills, advanced analytical ability and good judgment
- Experience in international conservation or international science efforts
- Ability to apply the best principles of conservation science to the practical needs of TNC projects and programs
- Broad and comprehensive knowledge of relevant conservation issues and commitment to ensuring work results in on the ground conservation
- Exercising creativity, foresight, and mature judgment to plan, organize, and guide extensive scientific projects
- Knowledge of advanced techniques to modify practices in area of expertise
- Peer-reviewed publication record. Experience with peer reviewed publication process desirable.

## Conservancy Publications

Please send new citations and the PDF (when possible) to: [pkareiva@tnc.org](mailto:pkareiva@tnc.org) and [rlalasz@tnc.org](mailto:rlalasz@tnc.org).

NOTE: New additions since last month in *red*; Conservancy-affiliated authors highlighted in *bold*.

NOTE 2: *We will be moving the full Conservancy Publications list to the Conservation Gateway beginning with next month's Chronicles, and will begin then to list only new publications in each PDF edition. The Gateway will also be hosting copies of the PDFs of your papers, creating a library of all TNC peer-reviewed articles.*

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