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Hope

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Editor's Note

Has the tide turned?

If it has, are we swimming with it, or against it?

There seem to be unusually high levels of cognitive dissonance in the air as we reach the end of 2015.

The most recent news from Paris certainly suggests an important shift, at least in public perceptions of climate change and in government commitments to combating it. With all the necessary caveats in place — will the commitments be honored? Will there be enough subsequent commitments to actually keep warming to under the ambitious goal of 1.5° C? — the agreement reached in Paris is testimony to the continuing, profound importance of global environmental diplomacy, something that the failure in Copenhagen in 2009 did so much to weaken.

Almost as important as the agreement itself, for the first time governments and a group of billionaires led by Bill Gates announced plans to accelerate research and development on

clean energy — battery storage for solar power, safer nuclear plant designs and technologies to remove carbon dioxide from the atmosphere.

Perhaps most heartening, the Paris conference may, with any luck, mark the beginning of the end of the stranglehold that a particular strain of climate politics has on a significant portion of the US electorate. Just about the only voices in Paris still clamoring for a do-nothing approach were those of people like Senator James Inhofe of Oklahoma. And no one seemed to be paying any attention.

The success of COP21 also did much to lessen, though certainly not erase, memories of the tragedy that took place in Paris just weeks earlier, and the subsequent and all too familiar scene the played out in San Bernardino days after that.

Here is where things begin to get a bit dissonant. While COP21 shows us at our best and may be the starting point for a new era of global cooperation, here at home we face the prospect of an election season defined by our

worst. The xenophobia and know-nothingism of one leading candidate, whose name I cannot even bring myself to put here but whose closest historical analog appears to be Benito Mussolini, should long have disqualified him from any serious run at high office. Yet he remains on the front pages and dominates social media to a degree that demands a response from all political quarters. A quote widely but mistakenly attributed to Edmund Burke, who remains a touchstone for at least some conservatives, is as relevant now as ever: “The only thing necessary for the triumph of evil is for good men to do nothing.”

Paris has shown us both evil and the capacity of good people everywhere to act for our common good. That is reason enough for hope this holiday season.

Best wishes to all for a safe, festive, and kind New Year. **SC**
Jonathan Adams
 (pangolin19@gmail.com) is a science writer and editor based in Maryland. Visit PangolinWords.com or follow him on [Twitter](https://twitter.com).

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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.

Director of Science Communications: [Matt Miller](#)

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Article

Mining in the Solomons

By [Elizabeth Mcleod](#), Willie Atu, and Robyn James, The Nature Conservancy.



Seafront in Buma village, Malaita Province - Solomon Islands Credit: [Nick Hobgood](#) via Flickr and Creative

Mining has emerged as a critical threat for the Solomon Islands, but also provides potential opportunities for economic development. Lizzie Mcleod (Pacific Climate Scientist) reached out to Willie Atu (Solomon Islands Director) and Robyn James (Melanesia's Conservation Program Manager) to discuss this important issue and how TNC is tackling it.

Tell us about the history of mining in the Solomons.

Willie: Our nation is not new to mining exploration. From the arrival of the Spanish Explorer Alvaro de Mendana in 1568 to the 16 companies currently prospecting, our mineral wealth has long been of interest to those overseas. Since the 1950s, we have known the location of commercial deposits of gold, copper, nickel, and bauxite through the work of companies such as Conzinc Riotinto of Australia (CRA), Utah Mining, and Mitsui mining of Japan. One mine on the main island of Guadalcana was abandoned last April, and bauxite mining is occurring in Rennell in the Eastern Solomons. Rennell is the highest atoll in the world and is a World Heritage Site. Nickel mining is proposed for Isabel and Choiseul, and bauxite mining is proposed for Wagina, right next to the Arnavons, a critical turtle breeding ground. Prospecting for deep sea minerals is occurring as well across the Solomon Islands Exclusive Economic Zone.

We cannot stop mining – it is a big opportunity for the Solomon Islands. Countries survive through using their natural resources. Due to logging, forests are currently harvested beyond their sustainability. Logging typically only lasts a few years and then is over, but mining can last decades. After the mine is closed, the environmental impacts will last. Many people in the Solomons do not know about the impacts of mining. People in villages and communities depend on their natural

Mining has emerged as a critical threat for the Solomon Islands, but also provides potential opportunities for economic development.

resources for daily sustenance and mining would have detrimental effects on their sources of food and livelihoods.

Can you tell us about some of the major threats of mining?

Robyn: Mining results in social, economic, and environmental impacts. In the Solomons, most lands are tribally owned. If a mining company goes ahead based on agreements made with the government, but without full consent of the traditional landowners, it can create massive social conflicts and inequity.

The Solomons is largely a subsistence-based economy, but is increasingly moving to a cash economy. Mining provides a huge source of revenue. However, as demonstrated in other developing countries, moving quickly from a subsistence to cash economy may create inequalities due to a widening income gap. With Gold Ridge mine, one of the only mines in the Solomons, economic benefits have not always flowed to landowners. Logging is an example where there have been promises of great benefits to communities, but in reality, relatively few have received money and there are few examples of other benefits such as schools and hospitals.

Environmental impacts can be massive in a place like the Solomons because it is made up of a relatively small area — small islands with unique biodiversity and virtually all land owned by local tribes/communities groups. By contrast, in Australia where I am from, we have a huge country with a small population, so mines are often located outside population centers. There is often a much greater proportional impact in islands where a mine can take up most of an island. Additionally, the Solomons are located in an area of high seismic activity and tectonic movements which can result in greater potential for environmental impacts and disasters, such as tailings/waste holding dams cracking and leaking which can cause river contamination and damage to everything and everyone downstream.

What makes the Solomon Islands unique in terms of mining impacts/opportunities?

Willie: Eighty percent of land in the Solomons is owned by customary land tenure, so it takes a long time for the government and mining company to acquire land. This is one way of delaying the process. But in places where land is owned by the government, agreements are likely to be made more quickly and the whole process happens a lot faster. The government is pro-mining, as mining is the next best source of revenue for the country, as forestry is in decline. The government's mineral policy is still in draft and must be finalized and implemented. Mining industry involves three Ministries: Ministry of Mines and Minerals, Ministry of Lands, and Ministry of the Environment. These ministries need to work together to ensure harmonization in the implementation of policies and regulations of the mineral industry. Environmental Impact Assessments, as a requirement of the mining process, are coordinated through the Ministry of Environment but often these are not completed with the proper procedure. Global companies, like Sumimoto Solomon Metal, a subsidiary of

Sumitomo Japan, are concerned with maintaining their reputation so they try to follow these procedures while other companies are here just to make money.

What steps have local communities taken to address mining?

Willie: We have implemented awareness raising programs on the mining process which have empowered the local communities so they can look at the consequences of mining — what might they lose, what might they gain? They have more to lose than gain. They have been speaking out against mining. It is interesting that Women’s Religious Groups, like the Mothers Union from Isabel, are taking the lead in this. Isabel is matrilineal (although some islands are patrilineal), so the women have strong connections to land and passing it on to the next generation. The women travelled around holding the meetings in communities, it empowers them — when you couple that with their first-hand experiences on their visits to mining sites in other countries, it is powerful.

What steps has the government taken to address mining?

Willie: The government has formed the Extractive Industries Transparency Initiative (EITI) since 2012. The Solomon Islands is one of the first countries in the Pacific that is going through the EITI compliance process with the anticipation of the country becoming an EITI compliant country. I am a member of the EITI National Stakeholder Group, which consists of industries, community, government and civil society representatives. In some places, communities do not accept EITI as they associate EITI with government, which they don’t trust. The people in the community don’t understand the importance and the role of EITI. That is why our work is so important. We have to explain the whole mining process and their roles and responsibilities as trustees of their traditional land.

Robyn: The government is really keen to build mining as part of the economy. Interestingly, the new PM elected last year, Manasseh Sogavare, has publicly announced that the government is moving too fast and they should consider diversifying the economy. He wants to slow it down because he feels that more information is needed and they are not ready. In October 2015, TNC and the national government held a [national forum on mining](#) and as a result there will be a stronger push to revise legislation and policy around mining to improve the long-term benefits of this industry (*see the Mining Resolution from the Forum on Page 8*).

What steps has TNC taken to help build the capacity of government and communities, particularly women, to address mining? Why should TNC be involved?

Willie: TNC is helping women’s groups build their capacity to understand mining and legal processes, and how they can be involved, which has been instrumental in raising community awareness. We are working with government and industry to come up with a sound policy for a better pathway for this industry. Public events like the October forum are key to spreading awareness throughout the region and requests are coming in from other provinces to share this information. We are also looking at long-term financing from mining

We have implemented awareness raising programs on the mining process which have empowered the local communities so they can look at the consequences of mining — what might they lose, what might they gain?

for environment and social development. However, mining is non-renewable, so we need to be thinking beyond the lifetime of what benefits are received now. TNC plays a really important role. The government put out the Environmental Impact Assessment for public comments and only TNC commented. The backing and support we have as a global organization, where we draw lessons from other parts of the world, helps us to stand up and speak out on mining issues. It also helps give the mining companies trust in TNC as a global organization that really wants to help.

Robyn: We have been working in the Solomons for over 20 years helping communities with natural resource management, and particularly their protected area network. Areas of highest mineral wealth are also usually areas of highest cultural and natural resource wealth, so there is often direct overlap between mining tenements (areas with a mining interest) and areas that communities have identified as priorities for protecting natural resources. So TNC needs to be involved. We also have strong relationships with people who will be directly impacted — local partners and our staff. TNC is one of the only international NGOs tackling mining in the Solomons. We have supported a number of local tribal and women's' groups to develop and deliver a community awareness package on mining designed to give people at all levels, but especially in remote rural areas, more information to make better decisions about mining. This has been delivered to over 15,000 people, with other provinces requesting assistance. This work is spreading across the region; community facilitators are building networks across the Solomons and Papua New Guinea to address deep sea minerals.

What role do women play in community awareness of mining and negotiating agreements with mining companies?

Robyn: Women should be 50% of decision makers, because they make up 50% of population. In some provinces like Isabel, women are landowners because it is matrilineal. Despite this, women are often excluded from decision making. At a 2013 mining forum in Isabel, female landowners reinforced that they want women to have a 50% role in decision making. This was again reinforced at the national mining forum in October, where it was great to see the growing confidence of women to stand up for their rights around natural resources.

Willie: At the moment, women are not negotiating agreements, they are spreading awareness. They talk to their provincial reps and national parliament members and that is how the messages get out. The outcome of the October forum stipulates that women must also have a say in the mining discussions in the communities and the nation as a whole.

What is innovative about our approach to addressing mining in the Solomon Islands?

Willie: No other NGO is addressing mining in the Solomons. We are working with women's groups and building a community network to better understanding mining, and this is a new area for us. Just last month, I met with the Australian High Commission and the other NGOs working in the country and I talked about our mining work and they wanted to know more about our approach. Mining, if done right, has huge potential to improve the standard of living and for nation building; alternatively, it will cause many people to suffer

Areas of highest mineral wealth are also usually areas of highest cultural and natural resource wealth, so there is often direct overlap between areas with a mining interest and areas that communities have identified as priorities for protecting natural resources.

from its environmental and social effects. Thus, it can either be a blessing or a curse, so we have to do it right.

What can other communities facing threats from mining learn from the experience in the Solomon Islands?

Willie: A major lesson is the importance of personal stories. Video is very powerful. We have been using participatory video with communities to capture their stories. We had people telling stories about what happened to their sacred sites, what happened to their gardens. Damage is not only happening at mine sites, it is happening to the entire ecosystem. Shared personal stories have an impact on other communities, they are key to influencing decision making. It makes someone in the village speak to someone in Honiara as they are personal life experiences — it makes them stop and think, it makes it real.

Robyn: Don't sign anything until you understand what it means. Take your time, be prepared, go slow, get advice from people you trust and involve women in all decisions. The resources underground are like money in the bank. When you give away some types of resources, you don't get them back and once you sign away your land, it is very hard to turn back. **SC**



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WORLD BANK GROUP

SOLOMON ISLANDS
EITI Extractive
Industries
Transparency
Initiative

National Forum on Mining

Pathways to a better mining industry in Solomon Islands

27-29th October 2015, Heritage Park Hotel, Honiara, Solomon Islands
Resolutions

The Solomon Islands National Government and The Nature Conservancy with support from World Bank hosted the Solomon Islands National Mining Forum from 27th to 29th October 2015 at the Heritage Park Hotel, Honiara.

Like many countries around the world, Solomon Islands is looking to mining as a pathway for economic development. Whilst there are potential benefits of mining, such as a strengthened economy and improved overall living standards, there are very real concerns that without well informed, inclusive and effective management there will be serious social, environmental and economic challenges for Solomon Islands.

This National Mining Forum provided a landmark opportunity for over 200 participants from national and provincial government, industry, technical experts, the civil society sector, landowners and communities to come together and through a combination of presentations, panel discussions, breakout groups and open question and answer sessions to identify major opportunities and challenges around this industry.

The key outcome of the forum was the development of a set of endorsed resolutions and next steps for action required if mining is to go ahead in a better way. These resolutions were developed from written feedback and six stakeholder group discussions representing:

- National Government
- Provincial Government
- Industry
- Community/Landowner
- Women
- Non-government/civil society organisations

This information was collated by a core team and then finalised with the entire forum during an open discussion on the last day. As a result the forum:

1. Finalised and endorsed the set of resolutions below (over 80% of the group endorsed these resolutions in the final open plenary session)

Next steps were also endorsed by over 80% of forum in the final plenary session:

1. Right Reverend James Mason as Master of Ceremonies would formally endorse the resolutions on behalf of the forum.
2. TNC would organise to publish in the National newspaper, circulate to participants.
3. The resolutions will be presented to Government/Parliament
4. A small working group would be developed to progress the resolutions, initially facilitated by The Nature Conservancy and Solomon Islands Government with representation from all the stakeholder groups identified below.

Resolutions

Our vision is for a sustainable nation that values and protects its culture and customs, its natural environment and the strength and unity of its communities. Our men, women and youth, our landowners and communities, our provincial and national governments and our investors all need time, information and inclusion to be a well-informed voice in any decision to mine. We recognise that the mineral resources of our country are finite. We acknowledge that deciding whether mining is suitable requires a long term vision for our nations development that takes into account our unique culture and environment. The pathways to a better mining industry lie in awareness, transparency, inclusiveness, partnership, strong laws and good governance.

Therefore, we resolve to:

1. Finalize and adopt a National Minerals Policy as soon as possible taking into account these resolutions
2. Determine a national policy or position on deep sea mining as soon as possible taking into account these resolutions
3. Review the *Mines and Minerals Act* and relevant regulations taking into account:
 - a. That landowner consent is vital to successful development projects. Processes for landowner identification need to occur before negotiations for prospecting or mining commence. Customary methods and councils of chiefs should be used to determine real and genuine owners and women are included in all steps of these processes.
 - b. A clear and expanded role for Provincial Government in the mining process from the beginning
 - c. The fair allocation of revenues between Provincial Government, National Government and landowners and broader community
 - d. Safeguards for surface access negotiations to ensure free prior and informed consent is given
 - e. The need for fair, inclusive and transparent benefit sharing mechanisms
4. Provide a comprehensive awareness and education program to communities before any mining and prospecting activities using lessons learned from home and our neighbours
5. Improve the financial literacy of communities involved in mining through training and access to expert advice
6. Establish an independent body or resource unit which allows people access to free expert legal, environmental, social and commercial advice and assists communities and landowners to negotiate for long-term benefits beyond cash
7. Resource the Landowners Advocacy and Legal Support Unit (LALSU) to provide more accessible legal advice for landowners
8. Educate companies on the importance and complexity of culture, society and landownership in Solomon Islands
9. Request companies operating in Solomon Islands to make formal public written commitments specifying how they promise to deal with communities
10. Stakeholders need time to form strong partnerships, Allow more time for the negotiation of surface access agreements and the review of environmental impact assessments.
11. Require that all Environmental Impact Assessments for mining are reviewed by an independent expert.

12. Ensure surface access agreement negotiations involve men, women and youth in each landowner group
13. Negotiate community agreements with both affected communities and downstream groups
14. Ensure women have a voice in all negotiations, decisions and in the management of benefits
15. Improve community governance to make unified decisions, negotiate long term community developments, and distribute benefits fairly and equitably
16. Create a training program for provincial government and community based environmental monitoring, as part of environmental management plans
17. Make rehabilitation and post mining sustainable development objectives clear at the start of the project and ensure sufficient bonds are available to cover all rehabilitation costs
18. Prioritize social impact assessment and mitigation before, during and after mining, with a focus on women, youth and people with special needs
19. Create greater transparency in all aspects of the mining process
20. Acknowledge the importance of the SI-EITI for financial transparency of the industry
21. Create a more effective and inclusive Minerals Board
22. Improve the capacity of the Ministry of Mines, Energy and Rural Electrification to manage the mining industry
23. Conduct a due diligence assessment of the experience and reputation of all prospective mining companies
24. Recognise that these resources are finite: Use the benefits from mining to transition towards sustainable developments
25. Form a working group to monitor the progress of the forum resolutions and undertake a regular review
26. Continue independent forums on mining

On behalf of the forum these resolutions are endorsed by:

ENDORSED:



Rt Reverend Thaba James Mason

Paramount Chief Isabel

Master of Ceremonies, Solomon Islands National Mining Forum



Article

A Day in the Life of a Field Scientist: Papua New Guinea Edition

By [Justine Hausheer](#), Science Writer, The Nature Conservancy.



Photo © Timothy Boucher

Tropical field science is not for the faint of heart.

And neither is Papua New Guinea.

In July I joined Nature Conservancy scientists [Eddie Game](#) and [Tim Boucher](#) for 10 hard days of fieldwork in Papua New Guinea's [Adelbert Mountain range](#). Together with Princeton University tropical forest ecologist [Zuzana Burivalova](#), we trekked up, down, and through some seriously rugged rainforest terrain to deploy acoustic sampling recorders. The soundscape data we recorded will help the Conservancy guide conservation land use planning with local communities.

For the one non-scientist in the group (me) the expedition was a deep-dive into the challenges, thrills, and adventures of fieldwork in the tropics. Or anywhere, really.

So what did I learn? There's a lot more behind the data than you think there is. Nothing ever works the way it's supposed to in the field. And things get weird in the jungle.

Here's what a typical day is like for a field scientist in the Papua New Guinea rainforest:

5:53 a.m. The village wakes up. Burrowed in our sleeping bags (yes, it gets cool in the tropics) we do our best to ignore the incessant roosters, banging pots, and Tok Ples chatter seeping through the woven grass walls of our hut.

7:04 a.m. Daylight forces us awake, there's no fighting it. As we struggle out from beneath our bedding and mosquito nets, I realize that the 13-kilometer hike we did yesterday has left my legs so tight and sore that I nearly fall over while trying to get up.

We all need coffee. Immediately. This one morning ritual is holding our sanity together. Eddie lights the tiny propane stove and fills the espresso pot, while everyone else stumbles around on the hut's rickety palm-bark planks, trying to put in contact lenses and find our bowls.

We drink quickly and munch granola bars. Tim hears a bird and wanders off across the village to find it, binoculars in hand and barefoot. He returns for the toilet paper, appropriately wary of the toilet's rather curious resident tarantula.

8:22 a.m. It's time to do some science. All of our field equipment has to be checked daily — batteries replaced, fresh SD cards programmed and installed, screws tightened — and stowed into our daypacks along with the other essentials: map, GPS, rope, tape, straps, screwdriver, Hi-Way beef-flavored crackers, water, bananas, and notebooks.

Those of us that have been avoiding sliding back into our still-damp clothes — myself included — finally have to suck it up and get dressed. Tim and I slap some band-aids onto our blisters and gingerly lace up our sodden, fetid shoes. Our guides are already waiting.

11:13 a.m. We're an hour into our hike and it's not going well.

Still recovering from colds (thank you, germ-ridden international flight) Tim and I have a wicked post-nasal drip and are not quite acclimatized to the rigors of fieldwork. Meanwhile, Zuzana is zipping up the trails, full of energy despite carrying the heaviest pack, while Eddie jogs along behind her like a mountain goat on steroids.

Tim and I collapse onto a log, ignoring the ants. Our guides inform us that we're still a full 7 kilometers away from the conservation area where we want to deploy the first set of recorders. Eddie makes the wise suggestion that Tim and I work our way back to the village, birding as we go.

We don't argue.

1:40 p.m. We're still hiking. We've seen a few [Blyth's Hornbills](#) and a [Sulphur-crested Cockatoo](#), but our bird list is pathetically short. I'm not surprised. The trail is steep and slippery, and I need every ounce of concentration in me to avoid tumbling down the mountainside.

So what did I learn? There's a lot more behind the data than you think there is. Nothing ever works the way it's supposed to in the field. And things get weird in the jungle.

Despite my focus, I slip on a patch of rotten rock and fall on my butt. Hard. Mere seconds after I right myself, Tim comes careening down the trail behind me, crashing into my legs and sending me sprawling back into the leaf litter.

Our guides stare at the trail in genuine confusion, wondering what we slipped on, as [Lesser Birds-of-Paradise](#) call from the canopy, taunting us. There's nothing to do but laugh.

3:35 p.m. Tim and I arrive back at camp, trudging wearily but still happier here than in the office. Eddie and Zuzana return moments later, still inexplicably chipper despite having walked through a patch of salat — the local equivalent of stinging nettles.

Sprawling on the wooden floor of the hut, Eddie and Tim grab bush knives and attempt to hack open up some coconuts. Three locals immediately run over to assist, and we drink coconut water and eat bananas until we're about to burst.

Tim and I peel off our socks and check for any new blisters, while Eddie inspects his boots: the soles are slowly rotting off. Zuzana remains entirely unaffected by the conditions, a super-human ability only partly explained by her [extensive fieldwork in Madagascar](#) and superb rock-climbing fitness.

Damage assessed, we all head down to the river for a swim and a wash, hoping that the sun will hold long enough to half-dry our sweaty clothes. Sitting in the river is the cleanest and the coldest we will feel all day.

5:10 p.m. It's dinner time, kindly cooked by the local women. Bowls of food arrive, protected from the flies by a banana leaf, and we play the guessing game: Will it be yams with jungle plants and boiled meat? Or the house special: white rice, Magi noodles, canned corned beef, mackerel, and jungle plants?

Hint: There is no third option.

When the food arrives, Tim begins frantic search through his pile of detritus — which bears an eerie resemblance to a megapode nest — for the hot sauce. We shovel everything down as fast as possible and move on to desert: papaya and sugarcane. Both are excellent, although we're all inexplicably craving mangos.

6:58 p.m. It's business time. The recorders we deployed two days ago are back — retrieved by local conservation rangers who can move through the forest infinitely faster than we can — and it's time to download the audio data. If it's not stored in three places it doesn't exist.

Eddie and Zuzana disassemble all of the recorders and back up the SD cards one by one. As the data come in, we take a moment to rock out to the sounds of the rainforest; there's something pretty special about being able to jam to your data.

3:35 p.m. Tim and I arrive back at camp, trudging wearily but still happier here than in the office. Eddie and Zuzana return moments later, still inexplicably chipper despite having walked through a patch of salat — the local equivalent of stinging nettles.

Mid-way through the process, Zuzana discovers that a tree rat has gnawed the foam off of one of the microphones. She proceeds to give us all an education in cursing in Italian. As dusk falls, the rest of the village gathers to watch us work.

Tim heads to the stream to fetch water, and is hailed with joyous cries of “Muruk” — the local word for cassowary — by the villagers. His towering height and gangly walk prompted the nickname, which was so apt and beloved that it actually preceded us from village to village.

When he returns, we start sterilizing several liters of water with our steri-pens via a complicated system of wide-mouth and disposable plastic water bottles. Treated water to Tim’s left, untreated water to my right. The consequences of confusion could be serious, but thankfully we’ve all avoided any major digestive troubles. Fingers crossed.

8:15 p.m. Work done, it’s time to unwind over some music and cards. Eddie attempts to teach us all 500, and Tim deflects any attempts at strategy with his erratic plays and inscrutable pokerface.

The Southern Cross glitters overhead, silhouetted by a faint strip of the Milky Way. Tim spots a lone circumpolar satellite gliding across the sky — the rest of the world feels as far away as that satellite, and it’s actually a wonderful feeling.

9:02 p.m. Bed time, but without the beds. After brushing our teeth and taking our malaria pills, we all scoot into our bedding and shove our mosquito nets into place. Wiggling around, trying to get comfortable, Eddie and I laugh at the sibling-like banter coming from the next room. I drift off to the sounds of pigs snuffling in the dirt underneath the hut.

11:44 p.m. The local dogs sneak into the hut and steal our bananas. Eddie’s attempts to frighten them off with a stout stick of sugarcane are unsuccessful.

1:21 a.m. I wake up to find Tim leaning precariously over the edge of our hut’s porch, recorder held high. He heard a weird bird noise, and naturally he needed to record it.

3:31 a.m. The accursed roosters start up. Again. The good news is that we’re just hours away from another epic day of field science in the rainforest. **SC**

This is the first in a three-part series that originally appeared on [Cool Green Science](#). Read [Part II](#) and [Part III](#).

3:31 a.m. The accursed roosters start up. Again. The good news is that we’re just hours away from another epic day of field science in the rainforest.

Essay

Tomorrowland

By [Charles Bedford](#), Regional Managing Director, Asia Pacific, The Nature Conservancy.



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

Dystopia sells more movie tickets than Utopia. The movie *Tomorrowland*, inspired by Walt Disney's 1950's optimistic vision of technology that can save the world, brought in far less at the box office than films that depict the end of the world and range from the highbrow — i.e., *The Road* — to the cartoon *Wall-E*.

This, of course, is a trend that runs through all art, and through all time. Proof points include Dante's *Inferno*, and the very idea of hell itself, Picasso's *Guernica*, war movies, apocalyptic video games, etc. The 19th Century painter Thomas Cole's and the hyper-natural landscapes of his Hudson River School notwithstanding, humans seem to respond more viscerally to threats, to the end of the world, and to survival scenarios. And this theme of threat and adaptation surely must have a basis in evolutionary psychology as well. For what better evidence can you use to support the success of the human species than our ability to anticipate threats and avoid them?

So what does this baked-in psychology mean to a modern day conservationist? How should we be leading and motivating people? Through a positive vision of a sustainable future? Through clearer articulations of the hell that awaits our grandchildren? Perhaps a next SNAP project can be born from an examination of what actually motivates people to take action. We have lots of evidence within the conservation world to plumb and analyze,

but this has mostly been the purview of a small subset of TNC that has been extraordinarily successful at motivating Americans to vote to allocate tax revenues toward conservation (Kudos to Carol Baudler and Hazel Wong and their team). But how do we systematically bring the right kind of evidence and science to decision makers, the media and people around the world to achieve the vision that we have? Most of our environmental colleagues have used fear of the future or of loss to drive action. We've tried to lead with a geographic vision (ecoregional planning promised that if we would just preserve and manage those hexagons well, then everything would be all right), and are now proposing solutions to some of societies big problems-pushing the positive vision while letting our allies in the environmental community, and the harsh facts, speak for themselves.

As a former political operative, my old boss used to quote Robert Heinlein, "politics is the art of the possible." We have to get better at making our solutions possible for politicians and corporate leaders to embrace and carry forward. This is really the final filter of strategy-not what should we do, but what can we do. And it seems to me that we should bring more science to this basic communications problem across the platforms of TNC. **SC**

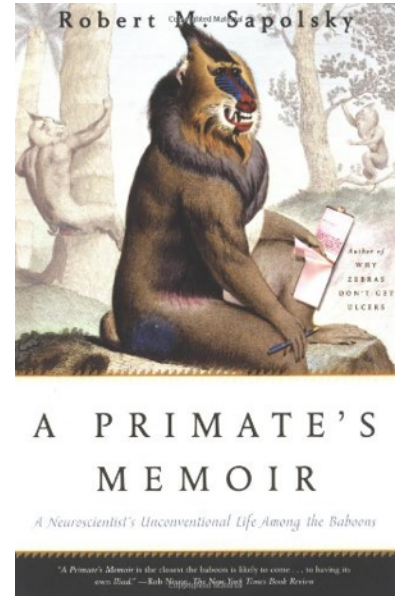
Books: Memoir

A Career Among the Baboons

A Primate's Memoir. By Robert Sapolsky. Scribner, 2002. 531 pages.

Reviewed by [Charlotte Reemts](#), Research and Monitoring Ecologist, The Nature Conservancy.

"I had never planned to become a savanna baboon when I grew up," writes Robert Sapolsky in the opening to his memoir. "Instead, I had always assumed I would become a mountain gorilla." I only recently discovered this delightful book (first published in 2002), which describes how Sapolsky established his career among the baboons. The book begins when he is a new graduate student, isolated in a game park in Kenya. So isolated, in fact, that his professor forgets to send him his stipend. Sapolsky describes how he chose baboons (instead of gorillas) as a study system and how he gradually comes to know all the baboons in "his" troop. In alternating chapters, he also relates encounters with the local Masai tribes, hustlers in town, and the park's game wardens. During his summers in Kenya, Sapolsky traveled extensively around the region. His travelogues are a fascinating and often humorous window into the regional cultures, as seen through the eyes of a somewhat naïve Westerner. For me, however, the real delights were the descriptions of baboon behavior. Sapolsky writes lovingly about the daily soap opera that is baboon life. Because baboons are fairly long-lived animals, many of the same individuals are encountered repeatedly throughout the book and are characters in their own right.



As time passes and Sapolsky grows in his career, the book becomes more contemplative. Now an experienced professor, Sapolsky puts his work in Kenya into a larger perspective of both neuroscience and conservation. He shares experiences of hyena and elephant researchers in the area and faces a troubling disease outbreak in the park's baboons. Married and with his own children, he spends less time in Kenya doing behavioral observations and more time in the lab, studying brain function. Still, his connection with the baboons continues, and so will yours. **SC**

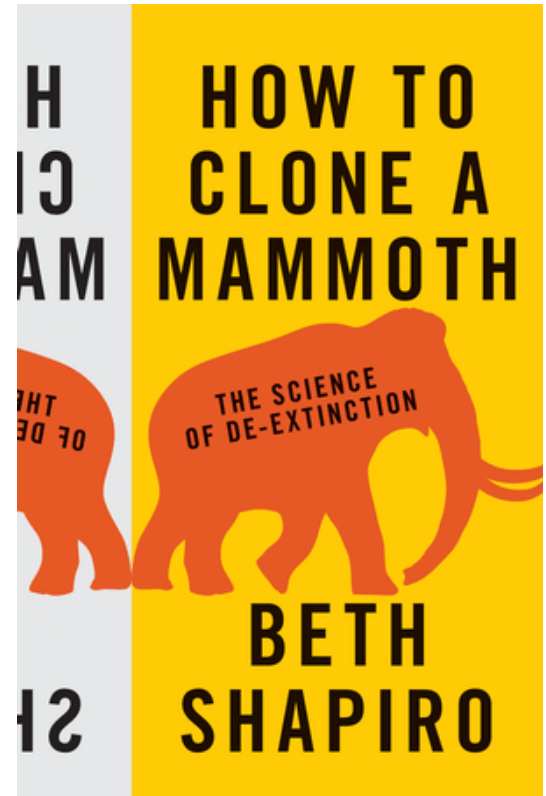
Books: Science

Neither Utopia Nor Dystopia

How to Clone a Mammoth. By Beth Shapiro. Princeton University Press, 2015. 240 pages.

Reviewed by [Matt Miller](#), Director of Science Communications, The Nature Conservancy.

What does it *really* take to clone a mammoth or other extinct species? I read everything I can on de-extinction and rewilding, and let's face it: hype abounds. Not here. This is the best book I've read on the subject: clear-headed, skeptical, grounded in science. Shapiro is an evolutionary biologist and a pioneer in the field of ancient DNA; she's also involved in the effort to clone the passenger pigeon. She's also an excellent writer. Much writing about cloning tends towards to be either utopian or dystopian. Shapiro looks at the issue as a scientist: she walks the reader through the steps involved, from collecting and extracting DNA to replicating an extinct species. She also explains the very real conservation and ethical dilemmas presented. Few books present complicated issues so well: science writing at its best. **SC**

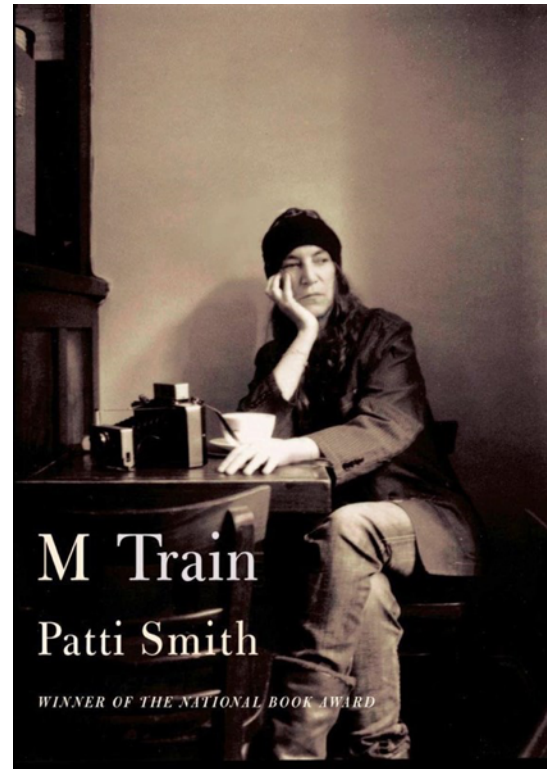


Books: Music Fully Caffeinated

M Train. By Patti Smith. Knopf, 2015. 272 pages.

Reviewed by [Jonathan Higgins](#), Senior Water Analyst, The Nature Conservancy.

In *M Train*, Patti Smith expresses the joys of life and love, sadness, and remembrance, and continues to take a path forward. She describes her deep feelings about her life with her husband Fred Sonic Smith, brother, parents, and numerous artists, writers, and philosophers whom she adored. From dream-states, half-wakefulness, and memory, she portrays her pain and happiness in a travel log. Graves, homes, and other important places of poets and artists such as Brecht, Plath, Rimbaud, Genet, Diego Rivera, among others, are visited in her constant process of dealing with loss and finding peace, in beautiful prose accompanied by her stark yet beautiful black and white Polaroids. All this occurs with a backdrop of a constant pursuit for a cup of black coffee. Throughout, she illustrates a tremendous devotion to the souls of her family, friends, and the arts. Patti Smith truly knows tenderness. Life is painful, beautiful, and it goes on....fully caffeinated. **SC**



Books: Economics

The Disruption of Economics

***Misbehaving: The Making of Behavioral Economics.* By Richard H. Thaler. Norton, 2015. 432 pages.**

Reviewed by [Sheila Walsh Reddy](#), Behavioral Economist, The Nature Conservancy.

There is no doubt that humans are not exactly rational. Yet, by assuming away our irrationalities — our humanness — economics acquired a status akin to physics. “Economics has a unified, core theory” based on people making optimal decisions. This status has given economics “a virtual monopoly on giving policy advice.”

Misbehaving: The Making of Behavioral Economics is Richard Thaler’s history, memoir, and tell-all of the disruption of economics. If you don’t subscribe to economic theory, you might be saying, “who cares?” Here are two reasons. First, this book is about the quirky and surprising ways we humans behave and why it matters. Second, behavioral economics is shaping the way that 51 countries — and many businesses and organizations — pursue better outcomes for health, wealth, happiness, and even conservation.

The misbehaving all began with a list. When Thaler was a graduate student, he started jotting down notes on behaviors that didn’t fit the standard economic theory he was learning in class. Among the items:

- Giving up the opportunity to sell basketball tickets you got for free at a price of \$700 does not hurt nearly as much as shelling over \$700 to buy the tickets yourself. This is now known as the “endowment effect.” We value things more simply because they are ours.
- After overindulging in cashews, people at a dinner party are much happier if the cashews are moved to another room out of reach. This is ascribed to limited self-control. Rather than more choices always being better, we sometimes prefer help limiting our choices.

Thaler’s explanations of these and other anomalies built on the work of the psychologists, Amos Tversky and Daniel Kahneman, who would receive the 2002 Nobel Memorial Prize in Economics. Their seminal paper in *Science* showing common and systematic errors in intuitive assessments had just come out in 1974. Thaler recounts finagling his way into a summer at Stanford when he learned that Tversky and Kahneman would be there.



As the book turns from a chapter entitled “California Dreamin’” to “The Gauntlet,” Thaler chronicles the less-than-welcoming reception his ideas, and those of a small number of compatriots, got from their economics colleagues. The debates verge on the absurd with “teams” scrimmaging and slinging mud.

The questions from the “home team” (rationalists), however, help illuminate some of the questions that a reader may have after reading about decisions related to cashews. Does this stuff matter when the stakes are high or when experts are making decisions?

Evidence indicates yes. Thaler describes how finding evidence of anomalies in financial markets—a place that was assumed to be the epitome of rationality — was key for addressing these questions. Now behavioral finance is a leading area of behavioral research.

Behavioral economics made an important step beyond the academic debates and into policy when Thaler teamed up with law professor Cass Sunstein. In 2008 they wrote a best seller, *Nudge*. Given that people make errors against their self-interest, they posit that policies could be designed to nudge people toward choices that reduce those errors.

One of the most notable successes is automatic enrollment for retirement savings. Although not mentioned by Thaler, “defaults” have also been used to encourage renewable energy use and natural infrastructure investment. Similarly, social comparisons have successfully encouraged energy and water savings.

Just as a reader may begin to wonder if nudge-advocates are as dogmatic as the rational-advocates, Thaler concludes with arguments for “evidence-based economics.” Behavioral economics is a sort of a return to studying how real people make decisions before we stripped away the humanness. It also expands the economic toolkit beyond price-based interventions to include nudges. **SC**

Books: Food

A Mouthwatering Compendium

With Our Own Hands: A celebration of food and life in the Pamir mountains of Afghanistan and Tajikistan. By Frederik van Outenhoven and Jamila Haider. LM Publishers, 2015. 688 pages.

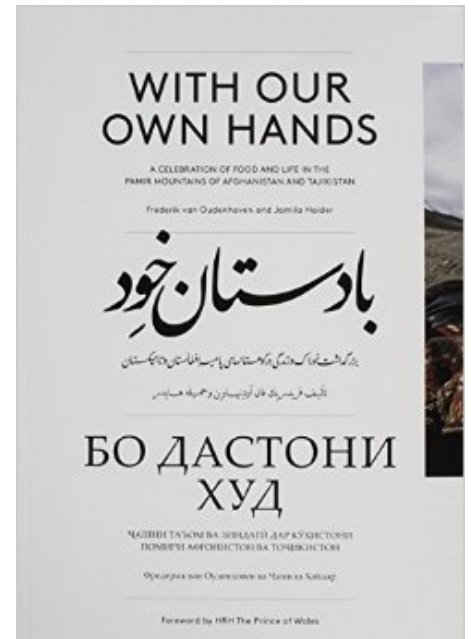
Reviewed by [Eleanor Sterling](#), American Museum of Natural History.

How many of us, when traveling to other countries, dream of eating the perfect meal that embodies the foods, traditions, and customs of a people — a meal that allows you to immerse yourself in a place? Yet frequently as outsiders we are restricted to restaurants that serve a pale comparison to what is eaten in local homes and for celebrations. We return home with a jaundiced view of the food customs of a country.

Such was the case for Frederik van Outenhoven, an expert on the conservation of ancient fruit varieties, whose work took him to the Pamir Mountains of Afghanistan and Tajikistan, home to one of the world's least known and most isolated civilizations. In discussions with Pamir communities in rural areas he lamented the lack of diversity in food customs and found himself proven wrong with a deluge of meals and recipes featuring local montane foods and preparation techniques.

Jamila Haider was simultaneously working on cross-border development between Tajikistan and Afghanistan, as the Pamir region is one of the “poorest” of Central Asia. She noticed that development investment focused on external framing of and solutions to problems, thus overlooking existing “assets” such as local knowledge and environmental resources such as local foods. She was troubled by the fact the development strategies were distancing people from the knowledge and foods that are a source of biocultural wealth.

Jamila and Frederik met at a workshop about agricultural biodiversity in the Pamirs in 2009 and the next day found themselves sitting around a fire in the Ghund valley of the Tajik Pamir Mountains. They were listening to Dursulton Muborakshoeva, an elderly grandmother in the village of Mun, as she recounted stories about the foods of her past to them and a gathering crowd of community members. When she finished, she asked the researchers to assemble her recipes into a



book, saying “I want to share them with my children and grandchildren while I still remember what I know.”

The result is *With Our Own Hands: A Celebration of Food and Life in the Pamir Mountains of Afghanistan and Tajikistan*, a mouthwatering compendium of stories and legends recounting cultural and agricultural history in a place renowned as a cradle of diversity for so many foods we eat today at Western tables (among them apples, walnuts, and pears). Frederik and Jamila bring together the places, the people, and the ideas in Pamir food culture, shining light on the importance of traditional knowledge and practice in maintaining diversity as well as the resilience of these communities and their food system to ongoing and future social and environmental challenges. They bring to life this stark, “barren-looking” landscape, introducing us to the crops and customs able to withstand the extreme environmental conditions and in the process building greater pride on the part of Pamir communities in the amazing local dishes and species used for food and medicine. These include 300 varieties of apricots alone (!).

The book is clearly a labor of love. The authors have overseen translation into three languages with three scripts -- English, Dari, and Tajik -- the latter two forms of Persian spoken in Afghanistan and Tajikistan respectively, and illustrate the text with evocative photos from three award-winning photographers, family recipes (100 in total), and even songs, poems, and children’s rhymes. **SC**

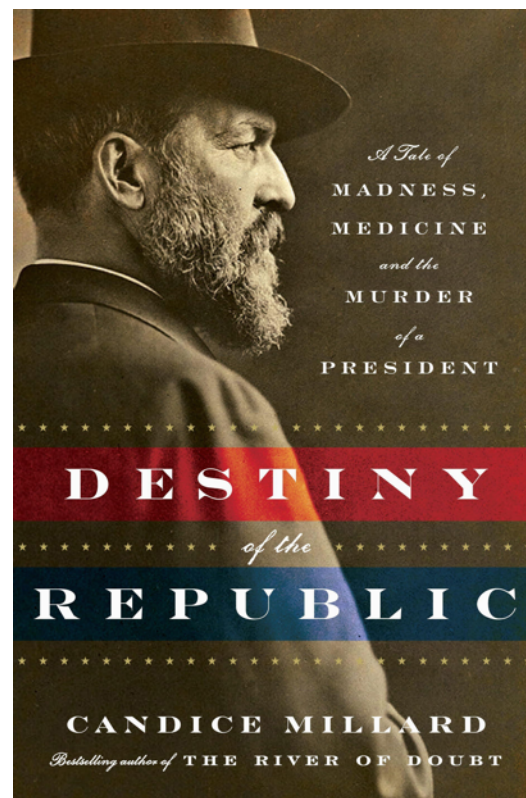
Books: History

History that Reads Like a Novel

Destiny of the Republic. By Candice Millard. Anchor, 2012. 432 pages.

Reviewed by [Matt Miller](#), Director of Science Communications, The Nature Conservancy.

The three-ring circus of the presidential campaign have you down? This book is the perfect antidote for all that ails you. As the cliché goes, there's nothing new under the sun, and perhaps nowhere is this more true than presidential politics. The primary caucus leading to the election of James Garfield seems like something out of a movie: he sincerely didn't want the job, and he wasn't even a candidate. In post-Civil War America, party politics were heavily corrupt and corruptible, but Garfield somehow rose above it all. But his presidency only last a few months, due to a crazed assassin. Millard is a wonderful writer. Like the best histories, this one captures the time and puts a man who seems a "minor" president in proper context. There's political intrigue aplenty. But this is also a history of science: many in the U.S. rejected emerging science (sound familiar?) leading to tragic consequences. *Destiny of the Republic* reads like a novel. You won't be able to put it down, and you'll wish we could clone Garfield so he could run in the current primary. **SC**



Books: Science

Traveler in the Cosmos

The Invention of Nature. By Andrea Wulf. Knopf, 2015. 496 pages.

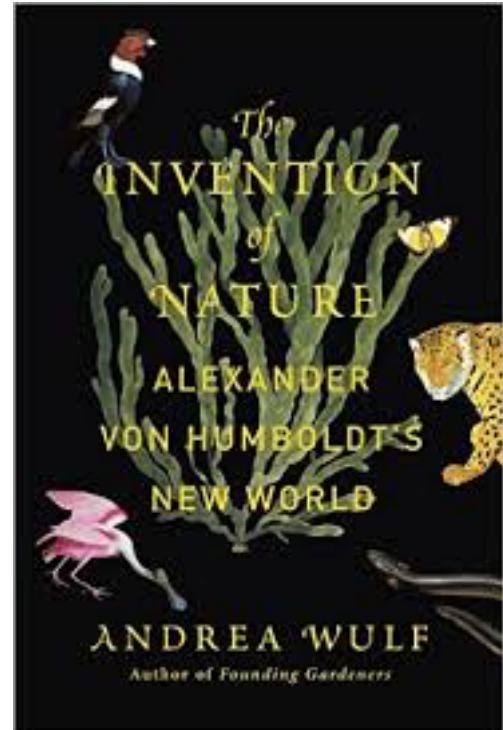
Reviewed by [Jonathan Adams](#).

Alexander von Humboldt's name is everywhere: on towns and rivers, mountain ranges, bays, waterfalls, hundreds of plants and animals, a glacier, a current, even an asteroid and an area on the moon. Darwin read and re-read his work and called him the "greatest scientific traveler who ever lived." Humboldt's voluminous writings influenced people as different as Whitman, Poe, the South American liberator Simón Bolívar, John Muir and even, unfortunately, Aryan supremacists.

So why have so few people heard of him?

In *The Invention of Nature: Alexander von Humboldt's New World*, Andrea Wulf has a suggestion: "it is almost as though his ideas have become so manifest that the man behind them has disappeared."

This book, the first formal biography of Humboldt in many years, will go a long way to bring Humboldt back from the shadows. In thorough and readable fashion Wulf makes Humboldt relevant to today, particularly in his epiphany from the summit of Mount Chimborazo that the world is a single, interconnected organism. After reading this excellent book it is hard to imagine Humboldt will be lost to history again. **SC**



Peter Kareiva

Four Passions

by [Mary Ruckleshaus](#), Managing Director, The Natural Capital Project.

Peter Kareiva has three main passions that have remain unchanged in the 25 years I have known and worked with him: (1) biodiversity, (2) data, and (3) finding fallacies in how we think about conservation by analyzing #1 with #2. Throughout the relatively short history of conservation science, the pace at which new research insights from the field, lab and modeling feed into changes in management for imperiled species and ecosystems has been slow and idiosyncratic. These lags between science and practice have led to conservation lore driving strategies instead of facts. And too often, such strategies fail because of important details that simple, lore-based guidance can't capture. Peter's data-driven, 'healthy skeptic' approach to conservation science has changed that. He has elevated my own work, that of TNC's scientists, and the field. The world's biodiversity and conservation science are the better for his influence.

Take marine protected areas (MPAs). As science demonstrating their effectiveness at conserving biodiversity began to enter the public consciousness in the early 2000s, a cottage industry of scientists and practitioners sprang up to push MPA implementation around the world's oceans. As more MPAs were implemented, flags emerged. Strong opposition from local communities who valued livelihood and cultural benefits from fishing limited enforcement, and stymied establishment of new reserves. Even where local support was high, monitoring and modeling have shown that MPA effects on biodiversity are nuanced — positive for some species, in some places, for some threats. TNC and other science-based NGOs now know that MPAs are not a panacea, and are working with local communities to help meet their joint human development and biodiversity objectives. In this new way of thinking, MPAs can be viewed as a human development tool — part of a broader strategy for providing reliable marine resources that sustain local cultures and communities. This integrated development-biodiversity framing also helps bolster MPA effectiveness as a biodiversity conservation tool, since local communities are incentivized to protect their assets and keep illegal fishing at bay.

Peter's 4th passion is people. His passion for people plays out in two ways. In his science, he loves to learn from people who are negatively affected by conservation practices and incorporate their views into our strategies to make them more effective. Sometimes that just involves making tradeoffs more explicit, like showing how household revenues can decline for local fishing communities near MPAs. That's important to know if we want to reduce incentives for illegal poaching in reserves. And sometimes incorporating the new viewpoints leads to better solutions, like siting MPAs so that they jointly meet objectives for both biodiversity and people.

The second way Peter shows he cares about people is through mentoring young scientists. His faith in the intelligence, optimism, creativity and openness of younger people to solving new problems runs deep. He has brought a culture of science

PK Out-of-Office messages:

“Off to Harvard the week of May 14th breathing in deeply the atmosphere of profound thought. This could be life-changing, so be patient about e-mail responses. I might turn into a scholar who can spell, with no need for the daily tawdriness of e-mail. In case i do emerge doing e-mail -- i will be your ever-so responsive TNC scientist starting again on May 20th.”

excellence to TNC through his writing and statistics workshops, tireless poking and prodding to make your arguments stronger, and by championing your work with external colleagues and the press. I can personally attest that Peter's loyalty to his TNC colleagues will be life-long. I recommend that we all watch closely to see what new ripples he creates through his new perch at UCLA. La La Land has no idea what a seismic conservation force is now in their midst! **SC**

Peter Kareiva

PK as a Professional Development Counselor – Who Knew?

by [Craig Groves](#), Executive Director, SNAP.

I don't remember when I first met Peter Kareiva, but I remember well an early exchange that had a profound and lasting impact on my career. It occurred at an Annual Meeting of the Trustees of The Nature Conservancy, somewhere in the Colorado Rockies in the late 1990s during John Sawhill's tenure as President of TNC, and during a time when TNC was implementing Conservation by Design and ecoregional planning. Dr. Jeff McNeely — the Chief Scientist of IUCN at the time — was the featured guest speaker at this particular meeting. Jeff had a reputation as a prolific writer of science and conservation books, and he took this opportunity to observe that while the Conservancy published some very good internal reports, the rest of the world was largely unaware of their work. Jeff's poster child example for making that point was a new guidebook on ecoregional planning that I had helped write, *Designing a Geography of Hope*. "Great work" he noted, but why don't you turn it into a book so that others outside TNC can learn from it?

Immediately after Jeff's presentation, John Sawhill turned to me and said – "Craig, why don't you write a book." And that is when Peter Kareiva, who was a scientist on TNC's Board of Directors at the time, offered to help. He suggested I apply for a Guggenheim Fellowship to support myself on a sabbatical to write a book on conservation planning.

I did some quick research on a Guggenheim Fellowship only to be a bit deflated on two counts — no one from a conservation organization had ever received such a fellowship, and the last scientist to be awarded a Guggenheim was Jared Diamond for *Guns, Germs, and Steel*! Slightly intimidated, I prepared my application with PK's urging and editing. (Full disclosure, PK was on the review board for these fellowships). Months later to my surprise and delight, I was awarded a Guggenheim Fellowship and a one-year sabbatical from TNC to write a book on conservation planning. Off I went to the National Center for Ecological Analysis and Synthesis in Santa Barbara to research and write the book. PK's support continued during my sabbatical as he reviewed and edited each and every chapter of the book. Some occasional mutterings about me not having a clue about how to write to different audiences notwithstanding, I clearly benefited from what could only be described as my personal writing workshop.

"In Alaska, where there are wolves, grizzlies, polar bears, the Sitka burnet and e-mail. Unfortunately I will be slow to answer e-mail until I return to the lower 48 on April 21st. At that point i will return to my lightning fast replies – complete with mystery spellings."

Two years later, *Drafting a Conservation Blueprint: A Practitioner's Guide to Planning for Biodiversity* was published by Island Press. The book was well received in natural resource agencies and nature-based conservation organizations. It was a major professional milestone and accomplishment for me, and one which I remain proud of today. Thirteen years later, I'm on the brink of publishing a second book, this time with fellow TNC scientist Eddie Game as a co-author ([*Conservation Planning: Informed Decisions for a Healthier Planet*](#), Roberts and Co.) It is safe to say that we would never be in a position to write this book had PK not first supported my efforts over 15 years ago.

The support that PK has lent to my professional development didn't stop with book writing. Less than a year ago I stepped into a new position as Executive Director of the Science for Nature and People (SNAP) Partnership. For this position, I've had to climb a steep learning curve on ecosystem service literature and a variety of science and conservation topics, learn to manage a Board with two CEOs (of TNC and WCS), manage a partnership across three very different organizations, and take on some major fundraising obligations. Although I was well qualified for this position in some regards, PK's coaching and support has been essential to not only getting the job, but some early successes as well. We have not always agreed about conservation philosophy, strategic approaches, or dress code (I've yet to adopt the basketball shorts attire to my work wardrobe), but that has never gotten in the way of a productive professional relationship. I owe PK a huge debt of thanks for helping make me a more effective scientist and conservationist, and for demonstrating that lifelong learning and improvement is possible for anyone. **SC**

Peter Kareiva

Economy of Ideas

by [Bob Lalasz](#), Founder, [Science+Story](#)

Every organization has its own economy of ideas — a working theory of its intellectual capital, if you will. Not just about which ideas drive it — but about where and from whom those ideas can arise, who can validate them, who gets to build on them and the ways (narrow or creative) in which they can be implemented.

In some companies, the economy of ideas is explicit, discussed and understood, and sometimes subject to revision. In others, it's implicit. Either can work — but in either case, knowing how the ideas economy works is one of the most important things to understand about its culture. Confusion on this point is corrosive for both individual employees and the organization as a whole.

PK, of course, is prominently associated with the concept of natural capital. I think his theory of intellectual capital at TNC is just as important — as a case history of communication failure, as well as for the organization's future.

What I'm about to say will shock probably hundreds of staffers: For Kareiva, intellectual prowess and innovation at TNC came almost entirely from the field, not in Central Science or the Worldwide Office.

He understood that it isn't theory or methodology that spurs innovation, but collision with real problems — which most often happens in the field, and which is overwhelmingly the place those approaches can be tested, refined, validated or discarded.

His annual State of Science reports to the Global Board of Directors always spotlighted exceptional creative problem-solving work from across the org, from the work of Marci Bortman's shop on Long Island with engineers and CAT scans to bring back healthy eelgrass to the just-in-time migratory bird reverse auctions in California. These were biodiversity conservation projects, but supremely adaptive ones. They didn't require everyone to adopt one set of values to work. They embraced the interdisciplinarity needed to be effective in dealing with many contemporary challenges.

PK is a scientist — and in science, the best ideas can come from anywhere, often the young, often overturning shibboleths. If he could have better communicated this theory of TNC intellectual capital to TNC — that revolution is best led by the field -- it could have helped bridge the WO/field cultural chasm that still plagues the organization.

But he didn't. He was never going to get hosannas from the sector for daring to frame conservation as just another expression of human values, and one that should

“I am in physical therapy from spending 235.32 hours in airplane seats over the last month. My hands are bound as they try to stretch out my body to its natural length, and hence i cannot answer e-mail. When i am finished unfolding, I will be sure to answer your e-mail. Anticipated recovery date is May 7th.”

be weighed against other such expressions. But his often brutalist style meant that too many people -- not just his foes, but also his allies -- assumed that PK's theory of intellectual capital began and ended with PK.

When he announced he was leaving, I lost count of how many people told me they were afraid TNC was losing its intellectual core and energy with him. It would be sad if his legacy meant they couldn't see what he saw: the energy of new ideas all around them. **SC**

Peter Kareiva

Challenging Dogma

by [Mark Tercek](#), President and CEO, The Nature Conservancy

Shortly after I joined the Nature Conservancy, Peter Kareiva approached me and said he didn't want to be rude, but he sensed that there were certain gaps in my knowledge of conservation science.

Of course after 24 years on Wall Street, I knew there were enormous gaps. Peter graciously gave me a pre-publication manuscript of his conservation science textbook and assured me that if I read the book, not only would I fill in those gaps, but I would also likely know more about conservation science than the CEO of any other conservation organization. I followed his advice, and while I'm no candidate for the National Academy of Sciences, I like to think that Peter's predictions were born out.

From there, Peter quickly became one of my closest advisors. So it was surprising to me that he wasn't on the Executive Team. As a science-driven organization, I thought, shouldn't our lead scientist be weighing in on big organizational decisions?

So I asked Peter to join the Executive Team. His response: "Thanks, but no thanks." My reply: "Tough. Welcome to the Executive Team."

Peter claimed that I didn't really need him on the ET. He claimed he was a poor manager and wouldn't play nicely with others on the team.

It turns out he was wrong. Notwithstanding his persistent efforts to portray himself as a maverick, behind all the bravado is in fact an exemplary manager and an invaluable team member. Peter is fiercely smart, unafraid of making tough decisions, and deeply cares about his people.

One thing Peter doesn't seem to care about is his sartorial choices. I'm not sure how, but those choices always work for him. He and I would head, for example, to a board meeting. I might be dressed casually, but I'd make a point to wear long pants and generally clean and unwrinkled garments. Peter, on the other hand, looked good in basketball shorts, knee braces and reading glasses borrowed from his daughter. He seemed to shave about once a week.

Kidding aside, Peter's intellect, drive and relentless focus on achieving TNC's mission made him an extraordinary colleague and leader for TNC. Although our work has always been rooted in science, Peter has taken that science to a whole new level for TNC-and for the entire environmental field.

“At Stanford doing Stanfordy things until Tuesday April 17th. Naturally, I cannot be bothered with e-mail when doing Stanfordy things. However, if you are trying to contact me to give me funds for path-breaking SCIENCE, please contact my secretary. He will deposit funds into my bank account and send you a personal thank-you note.”

He has consistently pushed for greater investments in science. He has fostered greater collaboration both within TNC and with our partners. He put together a world-class team of scientists, pushed them to publish in peer-reviewed journals, and encouraged them to focus on how we can best communicate about our work. Most recently, he was the brains behind Science for Nature and People (SNAP) and the NatureNet Science Fellows program, both of which allow us to partner with some of the best academic thinkers in the field in new and important ways.

Sure, Peter has his critics, but I think they are mostly wrong and missing the whole point. Peter never claims to always be right. But he does insist on challenging dogma, asking tough questions, and working hard to determine best way for forward for conservation.

More importantly, Peter is a great colleague-fun to work with, always eager to help, always kind and respectful to colleagues.

TNC is a stronger and more effective organization because of Peter. He has made enormous contributions to our conservation mission, and I know he will continue to do so through his new position at UCLA. And I'm thrilled Peter will remain part of TNC's leadership. Indeed I think he will be even better positioned now to help drive our work forward in the smartest way.

Thanks to Peter for his huge contributions to TNC and the conservation movement. I look forward to the next chapters. **SC**

“When you work in the conservation business, it is important to get in touch with what you are working for. So...I will be off the grid, in the cascades from 8/28 until 8/31. I may have to come down from the mountain and buy beer—in which case I will check my e-mail. Well maybe not — maybe i will just buy the beer.”

Peter Kareiva

Dive Bar

by [Rebecca Benner](#), New York State Science Director, The Nature Conservancy

What do PK, a dive bar, and beer have in common? If you answered “a perfect meeting opportunity,” then you are right. Or so it was for my first in-person meeting with PK.

Given I was a lowly graduate student intimidated and nervous about meeting PK when he wrote me and said “let’s meet at the Nuthouse” – i.e. a dive bar that serves a lot of beer – admittedly my response was more like “huh?” than “oh of course – the Nuthouse.” I quickly learned that having beer around when meeting with PK is never a bad idea. Despite PK’s “disdain” for my Stanford degree and a similar disdain for my generally peppy glass half-full view of the world, he has been so kind to look beyond these faults and be a loyal and helpful friend and mentor to me. He offered me opportunities and experiences that have shaped my passions and my understanding of what I hope my life’s work will accomplish.

PK is one of the smartest people I know, and I have been the beneficiary of his advice, his support, and his thoughtfulness, and I am very grateful for it. **SC**

“At the ballpark – or running, reading, writing, and draining 3-pointers. In other words, taking a low-key and low-emissions vacation until June 27th. I will respond to your e-mail ASAP after June 27th.”

Conservancy Publications – 2015 Summary

Conservancy-affiliated authors highlighted in bold.

Please send new citations and the PDF (when possible) to: science_pubs@tnc.org.

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.

Addington, R.N., T.A. Greene, **W.C. Harrison**, **G.G. Sorrell**, **M.L. Elmore**, and S.M. Herman. 2015 Restoring Longleaf Pine: Effects of Seasonal Prescribed Fire and Overstory Density on Vegetation Structure of a Young Longleaf Pine Plantation. *Forest Science* 61(1):135-143. <http://dx.doi.org/10.5849/forsci.13-618>

Addington, R.N., Knapp, B.O., **Sorrell, G.G.**, **Elmore, M.L.**, Wang, G.G., and Walker, J.L. 2015. Factors affecting broadleaf woody vegetation in upland pine forests managed for longleaf pine restoration. *Forest Ecology and Management* 354, 130-138. [doi:10.1016/j.foreco.2015.06.028](https://doi.org/10.1016/j.foreco.2015.06.028)

Aldous, A.R., Gannett, M.W., Keith, M., and O'Connor, J. 2015. Geologic and Geomorphic Controls on the Occurrence of Fens in the Oregon Cascades and Implications for Vulnerability and Conservation. *Wetlands* DOI 10.1007/s13157-015-0667-x.

Baustian JJ and IA Mendelssohn. 2015. Hurricane-induced sedimentation improves marsh resilience and vegetation vigor under high rates of relative sea level rise. *Wetlands* 35:795-802 https://www.researchgate.net/publication/279805168_Hurricane-Induced_Sedimentation_Improves_Marsh_Resilience_and_Vegetation_Vigor_under_High_Rates_of_Relative_Sea_Level_Rise

Beger, m., J. McGowan, E. A. Treml, **A. L. Green**, **A. T. White**, N. H. Wolff, C. J. Klein, P. J. Mumby and H. P. Possingham. 2015. Integrating regional conservation priorities for multiple objectives into national policy. *Nature Communications* September 14, 2015. <http://www.nature.com/ncomms/2015/150914/ncomms9208/full/ncomms9208.html> DOI: 10.1038/ncomms9208.

Calil, J., M. W. Beck, M. Gleason, M. Merrifield, K. Klausmeyer, and S. Newkirk. 2015. Aligning Natural Resource Conservation and Flood Hazard Mitigation in California. *PLoS ONE*. 10(7): e0132651. <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0132651>

Chaplin-Kramer, R., R.P. Sharp, L. Mandle, S. Sim, J. Johnson, I. Butnar, Llorenç Milà i Canals, B. A. Eichelberger, I. Ramler, C. Mueller, N. McLachlan, A. Yousefi, H. King, and **P. M. Kareiva**. 2015. Spatial patterns of agricultural expansion determine impacts on biodiversity and carbon storage. *Proceedings of the National Academy of Sciences* 112: 7402–7407, doi: 10.1073/pnas.1406485112. <http://www.pnas.org/content/112/24/7402.full>.

Cross, M. D., K. V. Root, C. J. Mehne, J. McGowan-Stinski, and **D. R. Pearsall**. Multi-scale responses of eastern Massasauga rattlesnakes (*Sistrurus catenatus*) to prescribed fire. *Am. Midl. Nat.* (2015) 173:346-362.

Dillon, K.S., M.S. Peterson, and **C.A. May**. 2015. Functional equivalence of constructed and natural intertidal eastern oyster reef habitats in a northern Gulf of Mexico estuary. *Marine Ecology Progress Series* 528: 187-203.

Ekstrom, J. Waldbusser, J. Cinner, C. Langdon; D. Gledhill, J., K. Wellman, L. Brander, M. W. Beck, R. Portela, R. van Hooedonk, L. Suatoni, L. Pendleton, S. Cooley, C. Doherty, P. Edwards. 2015. Vulnerability and adaptation of US shellfisheries to ocean acidification. *Nature Climate Change* 5:207-214.

<http://www.nature.com/nclimate/journal/v5/n3/abs/nclimate2508.html>

Figgis, P., Mackey, B., Fitzsimons, J., Irving, J., Clarke, P. (eds) (2015). *Valuing Nature: Protected Areas and Ecosystem Services*. Australian Committee for IUCN, Sydney. <http://aciucn.org.au/index.php/publications-valuing-nature/>

Fitzsimons, J.A. 2015. Private protected areas in Australia: current status and future directions. *Nature Conservation* 10: 1-23. doi: 10.3897/natureconservation.10.8739. <http://natureconservation.pensoft.net/articles.php?id=4635>.

Fitzsimons, J. F., L. Hale, B. Hancock, M. W. Beck. 2015. Developing a marine conservation program in temperate Australia: Determining priorities for action. *Australian Journal of Maritime and Ocean Affairs* 7:85–93.

Gantz, C.A., **D.R. Gordon**, C.L. Jerde, R.P. Keller, **W.L. Chadderton**, P. Champion, and D.M. Lodge. 2015. Managing the introduction and spread of aquatic invasive plants in the Laurentian Great Lakes: a regional risk assessment approach. *Management of Biological Invasions*. 6: http://www.reabic.net/journals/mbi/2015/Accepted/MBI_2015_Gantz_etal_correctedproof.pdf.

Geselbracht LL, Freeman K, Birch AP, Brenner J, Gordon DR (2015) Modeled Sea Level Rise Impacts on Coastal Ecosystems at Six Major Estuaries on Florida's Gulf Coast: Implications for Adaptation Planning. *PLoS ONE* 10(7): e0132079. doi: 10.1371/journal.pone.0132079. <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0132079>

González-Abraham, C., Ezcurra E., P.P. Garcillán, A. Ortega-Rubio, M. Kolb, and **J.E. Bezaury Creel**. 2015. The Human Footprint in Mexico: Physical Geography and Historical Legacies. *PLoS ONE* 10(3): e0121203. doi:10.1371/journal.pone.0121203.

Guerry, A.D., S. Polasky, J. Lubchenco, R. Chaplin-Kramer, G.C. Daily, R. Griffin, M. Ruckelshaus, I.J. Bateman, A. Duraiappah, T. Elmqvist, M.W. Feldman, C. Folke, J. Hoesekstra, **P. M. Kareiva**, B. L. Keeler, S. Li, E. McKenzie, Z. Ouyang, B. Reyers, T. H. Ricketts, J. Rockström, **H. Tallis**, and B. Vira. 2015. Natural capital and ecosystem services informing decisions: From promise to practice. *Proceedings of the National Academy of Sciences* 112: 7348–7355, doi: 10.1073/pnas.1503751112. <http://www.pnas.org/content/112/24/7348.full>.

Hise, C.M. 2014. Point counts surveys of land birds at the Four Canyon Preserve, Ellis County, Oklahoma, 2014. *Publications of the Oklahoma Biological Survey, 2nd Series*. 13:1-6.

Hughes, B.B., M.D. Levey, M.C. Fountain, A.B. Carlisle, F.P. Chavez, and **M.G. Gleason**. 2015. Climate mediates hypoxic stress on fish diversity and nursery function at the land-sea interface. *Proceedings of the National Academy of Science* 112:8025-8030. (www.pnas.org/cgi/doi/10.1073/pnas.1505815112<<http://www.pnas.org/cgi/doi/10.1073/pnas.1505815112>>)

Jacoby, David M.P., John M. Casselman, Vicki Crook, Mari-Beth DeLucia, Hyojin Ahn, Kenzo Kaifu, Tagried Kurwie, et al. 2015. "Synergistic Patterns of Threat and the Challenges Facing Global Anguillid Eel Conservation." *Global Ecology and Conservation* 4 (July): 321–33. doi:10.1016/j.gecco.2015.07.009. <http://www.sciencedirect.com/science/article/pii/S2351989415000827>

Lindholm, J., **M. Gleason**, D. Kline, L. Clary, S. Rienecke, A. Cramer, M. Los Huertos. 2015. Ecological effects of bottom trawling on the structural attributes of fish habitat in unconsolidated sediments along the central California outer continental shelf. *Fishery Bulletin* 113:82-96.

Lipsev, M.K., K.E. Doherty, D.E. Naugle, S. Fields, J.S. Evans, S.K. Davis and N. Koper (2015) One step ahead of the plow: Using cropland conversion risk to guide grassland songbird conservation. *Biological Conservation*. 191:739-749 <http://www.sciencedirect.com/science/article/pii/S000632071530080X>

Kareiva, P.M., B. W. McNally, S. McCormick, T. Miller, M. Ruckelshaus. 2015. Improving global environmental management with standard corporate reporting. *Proceedings of the National Academy of Sciences* 112: 7375–7382, doi: 10.1073/pnas.1408120111. <http://www.pnas.org/content/112/24/7375.full>.

Lorber, Jean H.; Rose, Anita K. 2015. Status of bottomland forests in the Albemarle Sound of North Carolina and Virginia, 1984-2012. e-Res. Pap. SRS-54. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 12 p.

Mackey, B., Figgis, P., Fitzsimons, J., Irving, J., Clarke, P. (2015) Introduction. In: *Valuing Nature: Protected Areas and Ecosystem Services* (eds Figgis, P., Mackey, B., Fitzsimons, J., Irving, J., Clarke, P.) pp. 4-5. Australian Committee for IUCN, Sydney. <http://aciucn.org.au/wp-content/uploads/2015/07/1-Introduction-Brendan-Mackey-Penelope-Figgis-James-Fitzsimons-Jason-Irving-and-Pepe-Clarke.pdf>

Mackey, B., Figgis, P., Fitzsimons, J., Irving, J., Clarke, P. (2015) Key directions for valuing ecosystem services and protected areas in Australia. In: *Valuing Nature: Protected Areas and Ecosystem Services* (eds Figgis, P., Mackey, B., Fitzsimons, J., Irving, J., Clarke, P.) pp 130-137. Australian Committee for IUCN, Sydney. <http://aciucn.org.au/wp-content/uploads/2015/07/25-Key-directions-for-valuing-ecosystem-services.pdf>

Reguero, B.G., I. Losada, P. Diaz Simal, I. Mendez, F. Javier, M. W. Beck. 2015. Effects of climate change on exposure to coastal flooding in Latin America and the Caribbean. *PLoS ONE* 10(7): e0133409. <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0133409>

Scyphers, S. B., T. C. Gouhier, J. H. Grabowski, M. W. Beck, J. Mareska, S. P. Powers. 2015. Natural shorelines promote the stability of fish communities in an urbanized coastal system. *PLoS ONE*. <http://www.plosone.org/article/related/info:doi/10.1371/journal.pone.0118580>

Walton, N. & Fitzsimons, J. (2015). Payment for ecosystem services in practice – savanna burning and carbon abatement at Fish River, northern Australia. In: *Valuing Nature: Protected Areas and Ecosystem Services* (eds Figgis, P., Mackey, B., Fitzsimons, J., Irving, J., Clarke, P.), pp. 78-83. Australian Committee