

Recommended reading from the desk of Mary Ruckelshaus



War of the Whales by Joshua Horwitz is a fantastic 'small world' whodunit story about how a whale scientist (Ken Balcomb from San Juan Island Whale Museum), NOAA Fisheries leaders and Joel Reynolds from NRDC extract the truth about Navy sonar testing and its impacts on dolphins and whales. The story centers around secret sonar testing in The Bahamas, including a navy base on Andros Island where NatCap's new project with IDB is starting.

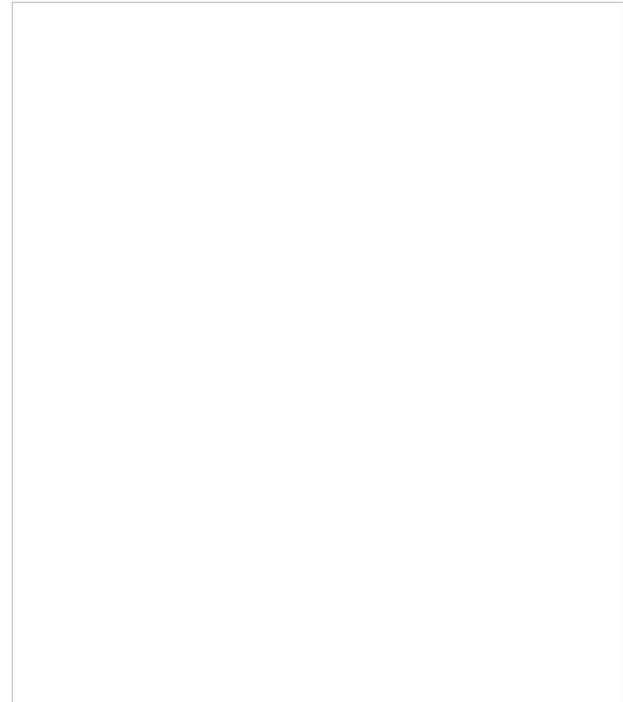
The Wild and Haunting World of Dolphins by Susan Casey, an excellent story teller who also wrote "The Wave" and "Devil's Teeth," which, like "Dolphins" are a great mix of science, inspiring personal stories of people and history. The story of the pod of dolphins off of Catalina Island who save a suicidal woman three miles out to sea is a fantastic story for your kids, grandma, and the person you're stuck with on an elevator. She can teach us a thing or two about how to spin a yarn

NatCap Goes to the City
A Q&A WITH BONNIE KEELER

You've been working on developing The Natural Capital Project's urban program. What's the vision for this program?

Our vision is to take the same science-based approach NatCap has developed for agricultural, forested, and coastal landscapes and use this knowledge to inform conservation and development decisions in urban areas. Cities are where the connections between people and nature have real and immediate consequences for health and wellbeing, so there's a great opportunity for NatCap to expand our impact.

We also see two parallel paths for our cities program. First, we have a set of well-developed tools and proven approaches for services like water security and coastal protection. We hope to scale these approaches through a global network of city leaders while identifying the places where nature-based solutions are most likely to improve resiliency and reduce environmental risks. Second, we envision a new suite of tools that will capture and integrate benefits for urban services such as mental health and recreation.



Bonnie Keeler: Lead Scientist, The Natural Capital Project, at the University of Minnesota's Institute on the Environment

For a long time, conservation has focused on remote and rural areas. Where is this urgency in paying attention to cities coming from?

Over half of the global population now lives in cities and that percentage will only increase in the decades ahead. Urban nature - whether it is yards, parks, or street trees - may be most people's only contact with the natural world. Of course, those remote and rural areas are also important to urban residents. These rural areas provide valuable services like food and clean water. We need to highlight the links between conservation outside of cities in areas where services are originating as well as nature within cities.

Are there policy or strategic advantages of working in cities?

Certainly. Cities are laboratories for experimentation and centers of innovation. Cities can be nimble and responsive - city leaders and planners don't necessarily need to wait for state or federal government regulation or decision-making in order to act. New

from geeky stuff.

The Weight of the World
by Elizabeth Kolbert
Another favorite writer and topic: In this New Yorker article, Kolbert talks about the power of a single leader in transforming the world. She profiles Christiana Figueres, who leads the UN's Framework Convention on Climate Change, and who is preparing for the next COP (Conference of the Parties) coming up in Paris this fall. Figueres is 5 feet tall, 59 years old, and is passionate and personal in how she engages world leaders in a 'bottom up' effort to enlist support for reducing carbon emissions. If she can do it, why can't we?

NatCap Senior Hydrology Adviser Drew Guswa to become Smith's Engineering Program Chair in 2016



A civil and environmental engineer, Drew Guswa is on sabbatical at Stanford, and among many projects, he is helping NatCap scientists analyze how changes to the landscape affect seasonal water flow, also known as "the sponge effect." He has already transformed the way we incorporate hydrological principles into our models. Guswa also features prominently in the current issue of [Smith College's Quarterly Alumnae](#) magazine for his role in building their engineering program, bringing women into a field that's 86% male. Guswa also keeps

York City is setting up task forces to explore nature-based solutions to the urban heat island effect. Leaders in Durban, South Africa are ... ([Click here](#) for the rest of the story).

Peter Kareiva Goes to the City

KAREIVA TO LEAD UCLA'S INSTITUTE ON THE ENVIRONMENT

NatCap co-founder Peter Kareiva stepped down from his full-time position as chief scientist at [The Nature Conservancy](#) to lead the University of California - Los Angeles' Institute on the Environment and Sustainability. Though he will continue to play a leadership role at TNC as a Senior Science Adviser, the news sparked a shower of retrospectives on Kareiva's contributions to environmental science, including being credited with helping to change the trajectory of conservation, putting humanity in center focus.



Peter Kareiva. Image credit: poptech/Flickr via a Creative Commons license

"Peter consistently made conservation about people," [said Sanjayan](#), executive vice president and senior scientist at Conservation International, "and with that simple innovation, he gave us a new paradigm by which we could protect the places and creatures we love. Everything from water funds to community-based fisheries to Development by Design is rooted in and supported by this simple premise: that people need nature, and saving natural capital is an investment in our future."

Kareiva will continue to guide NatCap from his new urban hub, and maintains his role as a member of our Governing Committee. He outlines some of his vision for this new endeavor in an interview with the [LA Times](#). "We probably know enough biology to solve most of the problems," Kareiva said. "It's not biology that's eluding us, it's social science, economics, psychology, human behavior, how to reach people."

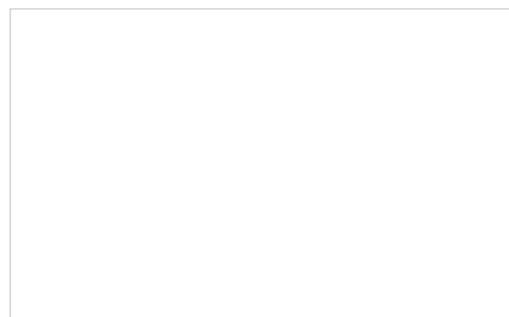
"People's values are at the forefront of conservation psychology. I think we should start with what I call the endgame: What do we want the world to look like in 2050? Have that constrained by real information: There are going to be 9 billion people in the world. You have to work with that. And there's going to be climate change, and that's part of your palette. You paint the picture of what you want the world to be like in 2050. Then you say, "What are the ways of getting there?"

Recent Press and Publications

WITH NEW RESEARCH, CAN BIG AGRICULTURE LEAVE ITS FOOD SAFETY SALAD DAYS BEHIND?

New research by NatureNet fellow Daniel Karp and collaborators shows that a massive effort to cut trees and clear shrubs from California farms did not have the intended effect of making food safer for people, but may have even made contamination more likely.

After a particularly virulent strain of *Escherichia coli* killed three people in 2006, and put nearly 200 others in the



a [blog](#), where he uses storytelling to show how the science he does is relevant to his audience. A recent entry: "The real story of the Panama Canal is one of hydrology. 52 million gallons of water are required for each ship to make the trip through the canal. That's 15% more water than Smith College uses in a year."

Software Tools



[InVEST](#) is a free and open-source software suite developed by the Natural Capital Project. You can download the latest version of InVEST [here](#).



[OPAL](#) is NatCap's latest free and open-source software for mitigating development impacts. You can download the latest version of OPAL [here](#).



[RIOS](#) is a software tool that helps design cost-effective investments in watershed services. You

hospital, including 30 with kidney failure, investigators traced the bacteria back to lettuce grown on the California Central Coast, an area known as the nation's "salad bowl," producing two out of three of all salad greens consumed in the U.S.

It was known that cow dung can harbor the bacteria. Since the Central Coast is a patchwork of ranches and vegetable farms a perception emerged that wildlife were the culprits, spreading the pathogen from ranchlands to crops. Acting without data, food retailers, packers and buyers requested that farmers try to eliminate feral pigs, birds, foxes, rodents and other animals that live on farm peripheries. Farmers complied by setting poison traps, erecting fences, taking out trees and shrubs, and dumping chemicals into reservoirs. ([Click here](#) to read the rest of the story)

Comanaging fresh produce for nature conservation and food safety

Karp, Daniel S.; Sasha Gennet; Christopher Kilonzo; Melissa Partyka; Nicolas Chaumont; Edward R. Atwill; Claire Kremen.
PNAS. August 10, 2015. doi:10.1073/pnas.1508435112

Other Press and Publications:

Who loses? Tracking ecosystem service redistribution from road development and mitigation in the Peruvian Amazon

Mandle, Lisa; Heather Tallis; Leonardo Sotomayor; Adrian L. Vogl.
Front Ecol Environ. August 2015, Vol.13(6), pp 309-315. doi:10.1890/140337

The deforestation created by a proposed road project linking two cities in Peru and Brazil would harm water quality for nearby streams and rivers - an impact that could be compensated for through mitigation activities such as planting trees. But a new study looks for the first time at whether the benefits of mitigation (i.e. cleaner water) would actually reach the people most impacted by the proposed project.

"It doesn't seem like it's possible to completely offset the ecosystem service losses that would be expected from this particular road project for all people in the area just through restoration or protection of natural ecosystems," said lead author Lisa Mandle. "By accounting for which parts of the landscape are providing benefits to which people, with the same amount of area used as mitigation, you can get a lot closer to off-setting those losses than would be possible just by using total area and ecosystem function, which is how most permitting mitigation programs currently work."

Mitigation for one & all: An integrated framework for mitigation of development impacts on biodiversity and ecosystem services

Tallis, Heather; Christina M. Kennedy; Mary Ruckelshaus; Joshua Goldstein; Joseph M. Kiesecker.
Environmental Impact Assessment Review. November 2015, Vol. 55, pp 21-34. doi: 10.1016/j.eiar.2015.06.005

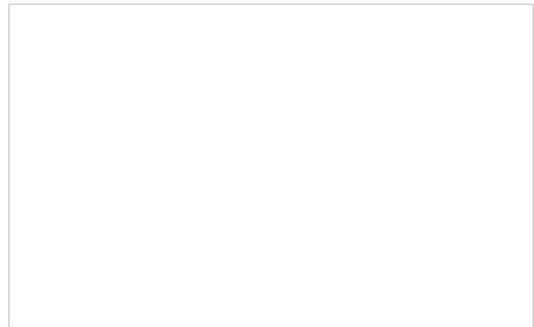
Towards integrated social-ecological sustainability indicators: Exploring the contribution and gaps in existing global data

Selomane, Odirilwe; Belinda Reyers; Reinette Biggs; Heather Tallis; Stephen Polasky.
Ecological Economics. October 2015, Vol. 118, pp 140-146. doi:10.1016/j.ecolecon.2015.07.024

Forage species in predator diets: synthesis of data from the California Current

Szoboszlai, Amber I.; Julie A. Thayer; Spencer A. Wood; William J. Sydeman; Laura E Koehn.
Ecological Informatics. September 2015, Vol. 29, pp 45-56. doi:10.1016/j.ecoinf.2015.07.003

Above, trees line a stream adjacent to farmland.
Photo credit: Wild Farm Alliance



After the 2006 E. coli outbreak.
Photo credit: Wild Farm Allian

can download the latest version of RIOS [here](#).



[PyGeoProcessing](#) was developed at the Natural Capital Project to create a programmable, open source, and free GIS processing library to support the ecosystem service software InVEST. The latest version 0.2.1 fixes several bugs. Users can pip install pygeoprocessing, upgrade or download the package [here](#).

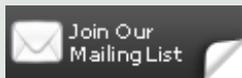
NatCap Forums

For help using InVEST, OPAL and RIOS, visit the [NatCap Forums](#), our online user community.

Newsletter Archive

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Pollinator Power: Nutrition Security Benefits of an Ecosystem Service

by Wendee Nicole, *Environmental Health Perspectives*, August 2015

Ecological Society of America Showcases Notable Papers

by Kristen Weiss and Sara Worden, *Stanford Woods Institute for the Environment*, August 12, 2015

Who loses? Tracking ecosystem service redistribution from road development and mitigation in the Peruvian Amazon

Mandle, Lisa; Heather Tallis; Leonardo Sotomayor; Adrian L. Vogl. *Front Ecol Environ*. August 2015, Vol. 13(6), pp 309-315. doi:10.1890/140337

Researchers find walking in nature provides mental health benefits

by Alina Abidi, *The Stanford Daily*, July 26, 2015

Natural Capital in Decisions: From Lagoons to Coastlines to Entire Countries

by Emily McKenzie, *WWF Science Driven Blog*, July 21, 2015

Microsoft and The Natural Capital Project join forces to transform the way we evaluate the services that nature provides

by Rob Bernard, *Microsoft on the Issues*, July 9, 2015

Best Practices for Integrating Ecosystem Services into Federal Decision Making

Olander, L.; R.J. Johnston; H. Tallis; J Kagan; L. Maquire; J. Boyd, S. Polasky; L. Wainger. *Technical Report*. 2015. doi:10.13016/M2CH07

A Better Road to Dawei: Protecting Wildlife, Sustaining Nature, Benefiting People

Helsingen, Hanna; Sai Nay Won Myint; Nirmal Bhagabati; Adam Dixon; Nasser Olwero; Ashley Scott Kelly; Dorothy Tang. *WWF Myanmar*. June 2015.

A full list of [news stories](#) and [publications](#) are available on our website. Access to full articles may require library access.

Thank you for your continued interest in the Natural Capital Project. If you have any questions, please feel free to contact us at invest@naturalcapitalproject.org.

