

# Conservation: Myth-busting scientist pushes greens past reliance on 'horror stories' -- 04/03/2012 -- www.eenews.net

Paul Voosen, E&E reporter

ARLINGTON, Va. -- Peter Kareiva had come to answer for his truths.

Settling at the head of a long table ringed by young researchers new to the policy world, Kareiva, chief scientist of the Nature Conservancy, the world's largest environmental organization, cracked open a beer. After a long day mentoring at the group's headquarters, an eight-story box nestled in the Washington, D.C., suburbs, he was ready for some sparring.

The scientists had read Kareiva's recent [essay](#), which takes environmentalists to task. The data couldn't bear out their piety, he wrote. Nature is often resilient, not fragile. There is no wilderness unspoiled by man. Thoreau was a townie. Conservation, by many measures, is failing. If it is to survive, it has to change.

Many around the table were unconvinced. Some were disturbed.

How could this be coming from the *Nature Conservancy*?

"We love the horror story," Kareiva said. He was dressed in New Balance running shoes, a purple sweater and rumpled tan trousers. "We just love it. The environmental movement has loved it. That, I think, is ... [a] strategy failure. And it's actually not supported by science."

This is not some vague hypothesis, he added to murmurs. He's seen it in the data.

"The message [has been that] humans degrade and destroy and really crucify the natural environment, and woe is me," he said. "The reality is humans degrade and destroy and crucify the natural environment -- and 80 percent of the time it recovers pretty well, and 20 percent of the time it doesn't."

One of the visitors, Lisa Hayward, an ecologist working on invasive-species policy at the U.S. Geological Survey, spoke up. How can that be so? "I feel that does not represent the consensus of the ecological community," she said.



Inducted last year into the National Academy of Sciences, Kareiva continues to teach part-time at Santa Clara University. Photo by Dave Lauridsen. Courtesy of the Nature Conservancy (TNC).

"I'm *certain* that it doesn't represent the consensus of the ecological community," Kareiva shot back, with a smile and flash in his eyes. A circle of nervous laughter swayed around the room. "I'm absolutely certain of that! Wait two years."

Kareiva has never feared following the data, or dragging others with him. Already a respected ecologist, for the past decade he has shoved the Nature Conservancy toward a new environmentalism. The old ways aren't working. Inch by inch, for better or worse, conservation must, he says, enter the Anthropocene Epoch -- the Age of Man.

For most of the conservancy's history, the old way meant one thing: buying and protecting land from human development, through any means necessary. "Saving the Last Great Places on Earth," the old Nature Conservancy motto went. And it worked. Backed by wealthy donors and corporate deals, the conservancy has long been one of the largest landowners in the United States. Worldwide, it has

protected more than 119 million acres.

But not all of its trends point up.

The average age of a conservancy member is 65. The average age of a new member is 62. Each year, those numbers creep upward. Only 5 percent of the group's 1 million members are younger than 40. Among the "conservation minded" -- basically, Americans who have tried recycling -- only 8 percent recognize the group. Inspiration doesn't cut it anymore. Love of nature is receding. The '60s aren't coming back.

It's a problem confronting all large conservation groups, including the World Wildlife Fund, Conservation International and the Wildlife Conservation Society. Quietly, these massive funds -- nicknamed the BINGOs, for "big nongovernmental organizations" -- have utterly revamped their missions, trumpeting conservation for the good it does people, rather than the other way around. "Biodiversity" is out; "clean air" is in.

"In fact, if anything, this is becoming the new orthodoxy," said Steve McCormick, the Nature Conservancy's former president. "It's widespread. Conservation International changed its mission, and it's one that Peter Kareiva could have crafted."

For these groups, it's a matter of survival. But for ecologists like Kareiva, it's science.

The conservation ethic that has driven these groups -- the protection of pristine wild lands and charismatic species into perpetuity -- has unraveled at both ends. American Indians dramatically altered the environment for thousands of years, paleontologists have found; even before then, climate shifts followed the planet's wobbles. And in the future, no land will be spared man's touch, thanks to human-induced global warming.

The desire to return to a steady-state baseline, before European settlement or human influence, will never work, these scientists say. Many species won't be saved; some that are saved will not thrive, lingering in a managed existence like the California condor. There is no return to Eden. Population will rise. Triage is coming.

"Conservation is at a crossroads," said John Wiens, who served with Kareiva as a lead scientist at the conservancy for several years before joining the nonprofit PRBO Conservation Science. "That's where we are. And we're likely to be there for some time."

Kareiva was not the first to see the crossroads. But unlike those of many writers and scientists, his message has come from the inside. And there is every reason to suspect the movement will push back, said Stewart Brand, the environmentalist best known as the editor of *Whole Earth Catalog*.

"To be the first going somewhat public with this kind of critique from [inside] an organization framework, it's not only pioneering and important, but brave," Brand said. "He's a guy who's risking his job."

## 'Bomb thrower'

From his earliest academic days, Kareiva hasn't been shy about cutting his own path.

"Peter is, first of all, a bomb thrower," said Dan Simberloff, an ecologist at the University of Tennessee, Knoxville, who has known Kareiva for decades. "He's pretty impatient with old ideas that he thinks aren't any good. He likes to bring people together and start them talking with some preposterous proposition."

He began bringing scientists together even before his doctoral work. Simon Levin, the renowned Princeton University biologist, still remembers the letter he received from a young zoologist conducting environmental assessments out in California.

"I'm sitting on a hilltop here watching ants swarming," Kareiva wrote, "and I've also been reading your theoretical work, along with Dick Root." Levin and Root were then at Cornell University and loomed large in the field. But they had never collaborated. One was a theoretician, the other an experimentalist. That divide needed to end, Kareiva wrote.

How? Naturally, the two would serve as his Ph.D. advisers, he said. And so they did.

Kareiva was at home in partial differential equations and fieldwork, a rarity in the 1970s. He was struck by how ecology had built up 40 years of theory on how animals and plants spread, while rarely bothering to test it. His experiments, limited to two dimensions by plant rows, were among the first to ever test these theories.

"His papers are still classic today," Levin said.

Kareiva ended up at the University of Washington, an ecology powerhouse. There were experiments with pea plants and ladybugs, and deep dives into modeling. He befriended Bob Paine, the legendary ecologist who first described the apex predator theory. (They remain close, meeting for dinner -- "bourbon and blood" -- several times a year.) For 15



Though a gifted cartoonist, Kareiva rarely saves his scribbles. Here, he depicts his longtime friend -- and "blood and bourbon" partner -- Bob Paine giving a talk on whales. Photo courtesy of Michelle Marvier.

years, the two taught a grueling course for undergraduates.

"About 10 percent of the students loved it," Paine said. "Fifty percent tolerated it. And the remainder were pissed off the entire time because we tried to make them think."

As he's cut an ever-larger wake in conservation, Kareiva has garnered a similar reaction. But his provocation has never been about vanity, or gaining stature, his admirers say. It's about debate.

"He is never vulnerable to orthodoxy, even his own orthodoxy," said McCormick, the conservancy's former president. "He's constantly challenging himself, and therefore it gives him legitimacy in challenging those he works for."

Nearly all of Kareiva's peers say he never seems to sleep; he used to get by on doughnuts and Jolt, an energy drink. He's shy at first but will tease friends mercilessly. (Posing as Paine, he once proposed to University of Washington leaders that the school adopt a brown alga for its fundraising logo.) He's a gifted cartoonist and writer, with his email away messages passed around like samizdat. He's widely agreed to possess one of the finest minds in ecology.

No other scientist has crossed into the nonprofit world while retaining so much credibility, Levin said. Last year, Kareiva joined the National Academy of Sciences, a rare accolade for a scientist at an environmental group. And he's used his academic ties to pull top-flight scientists into conservation work.

Some of these luminaries would have rarely engaged so directly with nonprofit groups in the past, fearing a loss of credibility or reluctance to engage with more extreme groups. It's a tension that's not entirely dissolved. Levin, for one, remains doubtful whether Kareiva can ever win over some environmentalists.

"He's chosen to try and influence people who I think are hopeless," he said.

## 'Conservation hero'

Kareiva was not always an environmental apostate. Once, he was a rock star.

While at Washington, Kareiva was one of the lead witnesses in the spotted owl trial, an iconic battle between industry and environmentalists. He had only recently come to conservation then, working before as an agricultural and theoretical ecologist, studying the dispersal of insects and the spread of biotech crops. One of his students began studying the owls' habitat, developing models, and encouraged Kareiva to teach a course on the subject.

He was hooked. He later testified at the spotted owl trial in Seattle, his adopted hometown, eviscerating

the government and corporate studies, which he found bogus.

"I thought I was a conservation hero," he said.

While testifying, though, Kareiva noticed loggers planted in the federal court's back row. They had children, the same age as his own, on their shoulders. The loggers never said a word, never violated protocol. But the children could not help their mewls or shuffles.

It was a devastating protest.

The men harked back to his father, a landscaper who chased jobs up and down the East Coast. He had been to these loggers' taverns, driving back from fieldwork at Mount St. Helens. The menus often listed "spotted owl" as a dish.

"Those were the bars that my father used to go to," he said. "I felt aligned with it."

That working-class background has never left Kareiva; he has clung to it. It's in the accent never abandoned, the deep love of sports, the dishevelment of his day-to-day clothing. (A student once complained about his dress. Kareiva stuck the note on his file cabinet.) He came from the fields of agricultural ecology to the wealthy man's world of conservation, and he would not pay fealty. Not without looking at the data.

This underdog mind-set and scientific adherence have often left Kareiva disappointed, especially with environmentalists, whom he sees drowning in credibility problems.

"We all know corporations lie to us and distort things, but so do environmentalists," Kareiva told his visitors, policy fellows from the American Association for the Advancement of Science, earlier this year. "And conservationists. Just as much."

Take the salmon incident, he said. By the late 1990s, Kareiva had joined the National Marine Fisheries Service as a senior ecologist. The Pacific Northwest was then embroiled in a controversy over salmon and dams. The service needed Kareiva's modeling talents to save its analysis, which he did in short order, according to Mary Ruckelshaus, Kareiva's former postdoc, who had lured him to the service.

Most environmental groups ignored his work, though, which found that dams weren't the problem for a number of runs. Instead, they published a full-page ad in the *New York Times* claiming that, by 2017, chinook salmon would be extinct in the Snake River.

"I knew that was garbage, scientific garbage," Kareiva said. "I knew the data. I knew market-capture stuff. They made that statement up. And I knew it wasn't true."

Just like the owl, it had come to down to conservation versus



While working at the National Marine Fisheries Service, Kareiva was outraged when a consortium of environmental groups ignored his work, publishing this full-page warning of a salmon extinction in *The New York Times*. Photo courtesy of Kareiva.

people. Desperate to win, environmentalists had pushed science way past its bounds. And while these battles were waged by elites, it was often his people -- his father's people -- who found themselves pitted against nature. Did it have to be this way?

"Don't respect authority or institutions," his dad had taught him. "Be loyal to people."

When Kareiva joined the Nature Conservancy in 2002, he was determined to find a better way.

## Shifting targets



including the land already set aside by conservation, will change under the influence of man-made global warming.

Human influence has become so pervasive that it's now trendy for scientists to call nature "domesticated," and to see the planet entering a new geological epoch, an Age of Man. They call it the



At home in differential equations and fieldwork, Kareiva illustrates his more theoretical side during a talk on the population dynamics of turtles at Santa Clara. Photo courtesy of Lauridsen/TNC.

Anthropocene.

Given these realities, conservation "has had to do a double take," Robinson said.

## New slogans

Before Kareiva could influence conservation, he had to start with the Nature Conservancy.

In 2002, the conservancy's former CEO, McCormick, recruited Kareiva as a lead scientist, working alongside Wiens and M. Sanjayan. The trio's first task was an upgrade of scientific ambition. At the time, the conservancy's work was mostly stewardship, essentially counting species, often on already purchased land, to justify its ecological value, said Knoxville's Simberloff, a longtime adviser to the group.

"I wouldn't say TNC at that time was a hotbed of scientists sitting around," he said.

It's easy for conservation managers to go out of date. For example, in conservation science there was once a rule of thumb called the 50/500 rule, which said that 500 members of a species are needed to prevent its extinction.

"That's from the 1980s, and NGOs are still using that rule of thumb," said Ruckelshaus, Kareiva's former postdoc. "He's getting the academic scientists much more connected immediately with scientists on the ground."

As he burnished his scientists' resumes and practices, Kareiva also began talking with McCormick about the shortcomings of site-based conservation. By even optimistic projections, only something like 5 percent of the world's species would be captured in protected areas, he told him. In McCormick, he found an eager collaborator.

"His foresight and early advocacy shaped my thinking," said McCormick, who now leads the Gordon and Betty Moore Foundation, the charity of the famed Intel founder. "I still regard him as a go-to adviser, and a wise person on what the future looks like."

Kareiva needed the support, as he would start annoying just about everyone.

With a former postdoc, Michelle Marvier, he published a piece questioning the primacy of "hot spots," regions like the Amazon, flush in diverse forms of life, to conservationists. What about the "cold spots," areas like vast boreal forests or the empty zones of the ocean? There are a lot of underdogs in the ecological world, they said, and they all provide important ecological services for humanity.

The article outraged Conservation International (CI), and many others. One of the group's executives called up McCormick and asked him to reprimand Kareiva. Never let him publish a piece like that again, he demanded. McCormick demurred; he knew the essay was coming. And Kareiva was right, he added.

"Today, CI has abandoned hot spots," McCormick said. "Check out their website."

With the backing of McCormick and Mark Tercek, the Nature Conservancy's current CEO and a former Goldman Sachs executive, Kareiva and his peers have pushed out conservation in multiple ways. For the conservancy, that means promoting sustainable farming, even if that may include biotech crops; setting up protected areas internationally that allow active use by locals; getting corporations to adopt more sustainable practices; or even working in the urban jungle of cities.

The Nature Conservancy is no longer in the business of "saving the last great places on Earth." Its new slogan? "Protecting nature. Preserving life." It's a mind-boggling and welcome shift, said Brand, the environmentalist and author.

"The idea that the world's largest and most successful and most trusted environmental organization would move its mission from protecting wild lands from people to protecting wild lands for people," he said, pausing for a moment. "Every word and concept in there is different, except 'protecting.'"

All of the major conservation groups have charted a similar path, McCormick said. He would be hard-pressed to tell their mission statements apart. Humans are here to stay.

"There is a realization in the conservation community that conservation is really about people," said Robinson, of the Wildlife Conservation Society. "The actual implementation is about working with people."

## 'The perfect world -- gone'

With the conservancy evolving, Kareiva is bringing his message to the broader public. But to build up a new environmentalism, he first has to tear down its myths.

"There's a certain amount of going after standard images and shibboleths and sentimental notions that people have built a lot of personal philosophy and behavior and policy on," said Brand, who had Kareiva speak recently at his [Long Now Foundation](#).

It's something he's done with glee. In recent [talks](#) and essays, he has chided some heroes of environmentalism: While Henry David Thoreau was living on Walden Pond, his mother lived close enough to do his laundry. John Muir evicted the Miwok Indians from Yosemite. A more recent icon, Edward Abbey, was periodically visited by his wife and newborn during his wilderness exile, a fact never mentioned in his books.

These figures propagated a false sense of wilderness, he says. "The wilderness so beloved by conservationists -- places 'untrammelled by man' -- never existed, at least not in the last thousand years, and arguably even longer," he wrote in one recent essay.

Reading declarative statements like this, it'd be easy to cast Kareiva in caricature. He's the agitator, the rumbler, swaggering once more into the ring to start a fight.

That would be selling Kareiva short, though, McCormick said.

"We often joke about Peter being an iconoclast and a provocateur," he said. "It implies he likes slings and arrows. I'm not sure about that. I think the criticism stings. It's an underestimation of Peter. I think he feels a compulsion to do it."

Most recently, that compulsion has pushed Kareiva to take on the myth of fragility. He's seen how the plant life around Mount St. Helens has rebounded. He's talked to the conservancy scientists on the Gulf Coast, in awe of its recovery from the Deepwater Horizon oil spill. And as an ecologist, he knows the demise of individual species, even abundant species, can be inconsequential to the overall function of an ecosystem.

Not content with anecdote, though, Kareiva is spending his free time assembling an index of several hundred case studies to compare the permanence of human insult. His first analyses were on coral reefs and oil spills; results varied widely. This points toward the likely conclusion of his study: There will be no simple answer, no universal truth. It will always depend. But it will not always be disaster.

"The reason that's significant, when the conclusion is 'It depends,' is that the policy question is then, 'Let's understand how it depends,'" he said. "Let's understand which are the fragile places, and which are the tolerant places."

As often happens, poke a provocative Kareiva statement, like his resilience spiel, and nuance will pop out. At times, in public, Kareiva can sound overly optimistic, like Voltaire's Dr. Pangloss reincarnated, said Robinson of the Wildlife Conservation Society. Deep down, however, his scientific peers know that's not the case.

"He's a very good thinker," Robinson said. "He's pushing these ideas forward. He's pushing certain ideas hard because the arguments need to be made. ... Is his argument outside the mainstream of conservation? Yeah, a little bit. But it's a logical extension of where the conservation movement is going."

The Washington ecologist Paine, for one, has been wholly swayed.

"This is totally realistic," Paine said. "The perfect world -- gone. Gone forever."

## Outraged TNC members

For scientists and conservation leaders, the new orthodoxy seems set.

But the conservancy's own members have not been so easily sold. Last year, the group's in-house magazine published a long feature about Kareiva and his views. Soon, outraged letters were pouring into the Arlington headquarters.

Kareiva's ideas were "better suited to the Chamber of Commerce, Exxon or General Electric," one member wrote. "Dr. Kareiva is part of the problem, not its solution," said another. "The conservancy is compromising its core values and betraying its membership," lamented a 20-year member. Referring to Kareiva's early education, another warned: "Beware of Jesuit-educated know-it-alls."

Some of the conservancy's staff have also bucked at Kareiva's advocacy. "There was and there still is, I'd say, an antibody resistance to some of his ideas," McCormick said.

Earlier this year in Memphis, at an internal meeting, Ruckelshaus sat on a panel with Emma Marris, author of "Rambunctious Garden," a book documenting the "post-wild" world; both are disciples of the anthropocene, and echoed Kareiva's call for human-centered conservation.

Afterward, Ruckelshaus was surprised to hear that there had been a Twitter hashtag tied to their panel: #OccupyTNC. Some of the conservancy's scientists feel, it's clear, that "Peter is trying to steal [their] conservation vision," she said.

While the Nature Conservancy and other BINGOs have changed their missions, they have not found a new story to tell. Their marketing still features gorgeous scenery, along with charismatic pandas and tigers. Younger, more diverse members may respond to human-centered conservation, but there are many older, existing members who will not want to change their worldview, Brand said.

"They're not going to welcoming rethinking their whole frame for why they love the organization," he said. "It's going to be a delicate balance in a large, membership-driven organization. It's one of the hardest things that you can do."

Many resist Kareiva's message not just because it's complicated. Some worry that it could be used by corporate interests to justify all sorts of exploitative behavior. It's a fair point, Marris said.

"It gives folks ammunition, but they haven't seemed to need that clip," she said.

Even Kareiva's peers cringe, at times, at how his ideas could be abused.

"I would hate to have Rick Perry read it," Knoxville's Simberloff said of one essay.

Beyond fears of corporate abuse -- nothing new at the Nature Conservancy -- Kareiva is asking members to adopt a different moral system. Gone is the bright line saying that all species must be saved. It's replaced by acceptance that some species will go extinct, said Michael Nelson, an environmental philosopher at Michigan State University.

"I kept wanting [in Kareiva's rhetoric] the recognition that this is a trade-off," Nelson said, "the idea that this would create a context that allow species to go extinct. I wanted the recognition that that's a tragedy."

Kareiva also tends to ignore the Theodore Roosevelt side of conservation, creating a straw man that's easy to bat down, said Tavis Forrester, a graduate student and ecologist at the University of California, Davis, who, with his advisers, wrote a [critique](#) of Kareiva's work.

"There's a big difference between ecologically functioning and pristine," he said. "We're looking to protect ecologically functioning places" -- like the Rocky Mountains -- "but not because they aren't going to change."

Yes, conservation has failed to stop the mounting extinction rate, but that's not because its ideas have to change, Forrester said. It's because many preserves in the developing world are protected in name only, and still are routinely exploited. Reserves that have teeth, like in the United States, work well.

In the end, the Age of Man shouldn't necessarily lead to a different conservation.

"The Anthropocene should stir us to greater conservation," he said.

## Ecosystem services

At the heart of conservation's new, human-centered wave, there remains a void.

If all life must not be saved, how does humanity know what to save, and what to sacrifice?

"We have to make some value judgments," Wyoming's Jackson said. "And that's something that scientists don't like. And that's something that conservationists and managers don't like. ... We just have to own up to that and say there are legitimate values that we have to own and justify."

With a small group of senior scientists, Kareiva has bet that these values stem from the services -- like clean water or air, or even bird watching -- that ecosystems provide for humans: the types of value even his "cold spots" can provide.

Over the past decade, the field of ecosystem services has grown like a weed, pulling together ecological models, social science and economics. It's the science at the heart of the Natural Capital Project, a scientific skunk works founded by Kareiva and researchers at WWF, Stanford and the University of Minnesota. The tools made by the group should allow managers to pragmatically decide how to act, Kareiva said.

"It's not about biodiversity," he said. "It's about having a forest so you don't get what happened in Haiti. It's about having vegetation so water doesn't get overloaded with nutrients. Having oyster reefs to reduce hurricane storm surges."

These services have become the new coin of the conservation realm.

"It's the only pragmatic way to do it," Princeton's Levin said. "And it's the only way to sell this to decisionmakers who otherwise won't pay any attention to nature."

The Nature Conservancy has begun to apply these tools. On the Gulf Coast, for example, it recently planned a mile and a half of oyster reef. Rather than just scouting for the most ecologically vital spot, though, the conservancy also accounted for low-income towns that could most suffer from a storm surge and gain from having a reef to help block it. One of those vulnerable regions got the reef.

On a much broader scale, the conservancy is copying the model used by New York City to protect its water supply -- limiting development in its upstate watersheds -- and applying it throughout Latin America. Rather than build treatment plants, Colombia bought up land around Bogota's watershed, paying sugar growers and soda companies to sustainably manage their properties.



A notoriously bad dresser, Kareiva will still polish up for meetings with the conservancy's trustees and donors, including this event at Runnymede Farm in Woodside, Calif. Photo courtesy of Lauridsen/TNC.

And if biodiversity is protected, too? Well, all the better.

"[The conservancy] has this huge platform, and they're going to fast-track 30 more water funds throughout Latin America through the next five years," said Ruckelshaus, who now serves as the managing director of the Natural Capital Project. "They're going to standardize it and make it much quicker."

Ecosystem services are no panacea, though, said Wiens, the former conservancy scientist. It's a recipe that can easily miss the nonmonetary values of the environment. And it won't necessarily help managers make the hard choices on what species to save. How will this triage be decided? There are no tools, no paradigm, that can do that yet.

"We don't have, right now, the framework to think through those cost-benefit calculations," Wiens said. "And I think that's partly because people have been avoiding this notion of triage."

For now, at conservation and ecology conferences, many young scientists speak exactly like Kareiva, said Marvier, his former postdoc. These are the future conservation managers and agency leaders. A generational dynamic is being played out. Kareiva's team seems to be winning. Team Biodiversity may soon leave the court.

Back at the conservancy's headquarters, meeting with the young scientists, Kareiva had finished his beer, an India pale ale from Heavy Seas-branded Loose Cannon. It was a good talk. There would be many more like it. Move conservation into working landscapes like farms, he had said. Value nature's services. Let go of the ideal. And bring in a base beyond affluent, educated whites. Let Thoreau go.

"Broaden the constituency to those loggers," he said.