



Moving Beyond Despair:

Reflections on the Smithsonian's 1st Earth Optimism Summit

by Ryan Greene and Kristen Minogue

THESE DAYS, "EARTH OPTIMISM" might sound like an oxymoron. From mass extinctions to global climate change, the list of dread-filled environmental headlines seems endless. While this doom-and-gloom list is true (and we should be paying attention to it), there are other lists that are also true and worthy of our attention. Hence the Smithsonian's inaugural Earth Optimism Summit. This three-day conference illuminated some items on an optimistic list highlighting stories of environmental hope, success, and change in the right direction.

"Given all the negative news reports about the state of our planet and the difficulties of governments working together to solve them, it would be easy to be cynical or pessimistic," said Smithsonian Secretary David Skorton at the summit's opening. "But I believe we have plenty of reason to be optimistic."

The summit's origins date back to World Oceans Day in 2014, when Smithsonian marine biologist Nancy Knowlton and others launched the #Ocean-Optimism Twitter campaign, challenging the widespread narrative of hopelessness surrounding our oceans. Knowlton's argument was simple: Glimmers of hope are vital. Without them, we will lose the energy necessary to tackle the monumental challenges facing our marine environments.

This same logic underpinned the Earth Optimism summit. Here, students, artists, researchers and policymakers shared their reflections on the past and their visions of the future. Stories of conservation success seemed to take an infinite number of forms, from unconventional farmers growing sustainable kelp to communities using affordable health-care to address the root causes of deforestation. Though the approaches varied, the goal was the same: a healthier home planet for all.

Included in this array were a number of stories about work here at the Smithsonian Environmental Research Center (SERC). Plant ecologist Dennis Whigham described how he and others are working to conserve the 200-plus native

orchid species in North America. Marine ecologist Matt Ogburn discussed how his lab is using cutting-edge monitoring techniques to aid river herring conservation efforts in the Chesapeake Bay. Finally, forest ecologist John Parker explained how his century-spanning BiodiversiTree experiment is revealing the multifaceted role of biodiversity in our ecosystems.

"Wildlife, people and functioning landscapes can and do coexist very effectively on the planet," said SERC director Tuck Hines, a member of the summit's leadership committee. "We need more examples of that, and to learn from those success stories."

None of these researchers worked alone. Each project demonstrated how scientists can team up with members of their communities. According to Whigham, this collaboration generates the energy that drives their science forward.

"When we find citizen science folks out there who see what we're doing and get excited about it, that feeds back and enables us to continue," he said.

This type of feedback loop is exactly what the Earth Optimism Summit was all about. By inspiring and celebrating collaboration, this conference was a reminder that working on tough problems is hard, but not friendless. There are countless people in countless places devoting themselves to our common future. And as Secretary Skorton declared, if we commit ourselves to working with and for each other, we may just be able to reach our goals.

"Is it naïve to be optimistic about the Earth?" Skorton asked as the summit kicked off.

"I don't think so.... When organizations and, most important, individuals, work together, we can and we will make a difference."

Planting A 100-Year Forest Experiment

"Biodiversity is risk management. This is why we protect biodiversity in our ecosystems. So if we lose one species, there are others left around to pick up the slack."
—John Parker

In winter 2013, SERC ecologist John Parker began a massive undertaking: Plant 20,000 trees for a new biodiversity project designed to last a century. He succeeded with a crew of technicians, interns and over 100 citizen scientist volunteers. They divided the forest—BiodiversiTree—into dozens of plots with one, four or 12 tree species, to see whether biodiversity helps a forest function better. Four years into the project, they've made a startling discovery: While on average, diverse plots so far don't have more surviving trees, they have more stability. Multispecies plots hold a more steady average; single-species plots are more likely to skyrocket or crash. Just like the stock market, it pays to diversify.



John Parker inspects a young sycamore tree in BiodiversiTree.



Conserving Orchids in the Wild

"Our mission is really simple: It's to conserve the genetic diversity of all the native orchids, initially in the U.S. and Canada. But showing that that model works, we're going to think globally about all the 30,000 species that are out there."
—Dennis Whigham

Over 200 orchid species blossom throughout North America, and more than half are endangered or threatened somewhere in their native ranges. In 2012, SERC ecologist Dennis Whigham teamed up with the U.S. Botanic Garden to create the North American Orchid Conservation Center. Their goal: Find the secrets to conserving all North American orchid species and clues to help propagate them in the wild. Headquartered at SERC, the coalition now has dozens of collaborators, including botanic gardens, universities and conservation organizations. The Smithsonian also houses one of the world's largest collections of orchid mycorrhizal fungi, the specific fungi orchids need to germinate and grow.

Left to right: Dragon's Mouth orchid (Gary Van Velsir); Showy orchis; Dennis Whigham, founder of the North American Orchid Conservation Center

Tracking Chesapeake Recoveries

"A lot of our iconic Chesapeake Bay species have come back pretty well in response to direct management actions, from bald eagles and ospreys that responded to banning DDT and have come back in huge numbers, to things like blue crabs and striped bass that have responded well to sustainable fisheries management."
—Matt Ogburn

The last few decades have been a roller coaster for popular Chesapeake animals like blue crabs and striped bass. Matt Ogburn heads SERC's Fish and Invertebrate Ecology Lab, which has been tracking several Bay fisheries for 30 years or more.

One of their latest hopeful discoveries centers on river herring. Once barred from their spawning

grounds by dams and other structures, these migratory fish have seen many streams reopen as those structures come down. Using an underwater acoustic camera called DIDSON, Ogburn's team detected an estimated 1.3 million migrating up a single river.



In addition to river herring, Matt Ogburn's lab also tracks crabs, sharks and cownose rays.