ECOfOCUS

CARY INSTITUTE OF ECOSYSTEM STUDIES

The science behind environmental solutions — *Vol. 8, Issue 1, July 2014*

Wildlife Conservation Society

CARY INSTITUTE APPOINTS NEW PRESIDENT

by Lori M. Quillen

Following a distinguished career at the Wildlife Conservation Society, Dr. Joshua Ginsberg will assume the role of president of the Cary Institute of Ecosystem Studies this fall. His appointment is the culmination of an international search undertaken by the Cary Institute's Board of Trustees. After seven years of transformative leadership, Dr. William Schlesinger retired this summer.

"We are thrilled at Dr. Ginsberg's appointment. He has been an inspiring leader at one of the world's most respected conservation organizations," commented Board Chair Irene Banning. "He is passionate about science and its essential role in improving society. Under his direction, we will continue to advance our core research programs, pursue a diversity of financial support, and continue translating scientific findings to citizens, decision makers, and educators."

Ginsberg received his PhD from Princeton University and his B.S. from Yale University. His career in conservation science spans 35 years and several continents. During the 80s and 90s, he led ecology and conservation projects in Asia and Africa. In 1996, he began his tenure with the Wildlife Conservation Society, taking on a series of senior management roles that benefitted from his scientific, fiscal, and administrative expertise.

"The Cary Institute counts among its staff some of the finest minds in ecosystem science. Their work has been instrumental in understanding and protecting the ecosystems that support life," Ginsberg remarked. "I look forward to building on the organization's 30-year track record of success, and bringing science to bear on the management of natural resources, biodiversity, and human health."

In Ginsberg's post as Senior Vice President of Conservation Programs, he oversaw initiatives in North America, Asia, Africa, Latin America, and the marine environment – including fundraising and managing an 87 million dollar budget.

"Josh Ginsberg has helped build the reach and impact of the Wildlife Conservation Society's global program for 18 years," said Wildlife Conservation Society President Dr. Cristián Samper. "We will miss his strategic thinking and strong management. As he leaves to run the Cary Institute, we know we will find connections to continue working with him on a variety of ecological and biodiversity issues."

> "I look forward to building on the organization's 30-year track record of success."

Throughout his career, Ginsberg has been engaged in the academic research community. An adjunct faculty at Columbia University since 1998, past appointments include: Research Fellow in Ecology at the Zoological Society of London, Honorary Research Fellow and Lecturer at University College London, and Research Fellow at Oxford University.

He is on the boards of the Open Space Institute and Catskill Mountainkeeper, and is a founding board member of the Blacksmith Institute, a not-for-profit that focuses on pollution remediation in the developing world. As a Diplomacy Fellow with the American Association for the Advancement of Science, he has provided guidance on international conservation issues, including matters relating to the Convention on International Trade in Endangered Species and African biodiversity.

Please join us in welcoming Dr. Ginsberg this fall!

HIGHLIGHTS

ECOfOCUS

Ecofocus is published by the Cary Institute of Ecosystem Studies. Our scientists are leading efforts to understand human impacts on air and water quality, climate change, invasive species, and the ecological dimensions of infectious disease. As an independent, not-for-profit organization, the Cary Institute produces unbiased research that leads to more effective management and policy decisions.

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FROM OUR PRESIDENT


On Location Studios

You will be in good hands with our new president Josh Ginsberg at the helm, and the best is yet to come.

Dear Friends of the Cary Institute:

This is my last letter in *Ecofocus*, as I will be retiring from the Cary Institute this summer. Our seven years in Millbrook have gone incredibly fast, and Lisa and I have certainly enjoyed our time here. Dutchess County is one of the most beautiful landscapes we have visited, and the grounds of the Cary Institute have filled our bird-list each week. I hope that with proper land-use planning this area will remain forever green.

Several people have asked me what I am most proud to have accomplished at the Cary Institute. My favorites are found in our new efforts at public outreach, through the 'Friday Night at Cary' lecture series, the Earth Wise segments on WAMC Northeast Public Radio, and our Cannoo Hills Creative Arts Residency. All these have allowed us to do a better job translating what we do at Cary—environmental science—to a larger public that needs it. These efforts have been great fun for me, and I thank all that have worked with me to make them happen.

I am also most incredibly proud of our scientific staff, what they accomplish, and the accolades they receive. Just this spring, Jon Cole was elected to the National Academy of Sciences—about the highest honor any scientist can achieve. During the past seven years we've added three new scientists to our ranks: Shannon LaDeau, Emma Rosi-Marshall, and Barbara Han. Each brings an active research program to the Cary Institute that augurs well for our continued future impact.

As we pass from our summer range in Lubec, Maine to our winter range in Durham, North Carolina, Lisa and I hope to make regular stops here in Millbrook, to see old friends and keep my finger on the pulse of Cary Institute activities. You will be in good hands with our new president Josh Ginsberg at the helm, and the best is yet to come.

Dr. William H. Schlesinger, President Emeritus

It is with deep sadness that we announce Dr. Paul Risser, a long-time friend of the Cary Institute as well as an Honorary Trustee and past Chairman of the Board, passed away on July 10, 2014. He will be missed by all of us.

AN INTERVIEW WITH JON COLE

by Lori M. Quillen

Cary Institute biogeochemist Dr. Jonathan Cole recently received one of the highest distinctions a scientist can achieve: election into the National Academy of Sciences. The honor recognizes his distinguished career in limnology, the study of lakes, rivers, and other inland waters.

Cole's tenure at the Cary Institute spans 30 years. He was one of the first scientists hired by the organization's founding director Dr. Gene Likens. A past PhD student of Likens' at Cornell, Cole had embarked on post-doctoral assignments at the Woods Hole Oceanographic Institute and the Marine Biological Lab before being drawn to Millbrook.

Recently, we discussed his path to the Cary Institute, how the organization has shaped his career, and some of his notable achievements.

Cary Institute Archive

What drew you to the Cary Institute? More than anything, I believed in Likens' vision: assemble bright scientists and put them to work understanding how ecosystems function. Academic freedom, relief from the burden of excessive teaching, and permission to focus on my science were all huge selling points. And early on, it became apparent that there was a unique, collaborative culture among the staff.

Would your path have been different at a university? There are a handful of very high performing university ecologists, but they are rare. With a full course load and endless committee responsibilities, I would have accomplished less. University colleagues joke that a job at Cary is like being on sabbatical. And this is largely true. But the bottom line is that most of our scientists outperform university colleagues when it comes to grants and publications – metrics by which good science is measured.

Among your discoveries: many aquatic food webs are supported by material from adjacent lands. How has this changed thinking? Limnology's roots are in oceanography. Historically, limnologists viewed lakes as mini-oceans. Land-grown organic matter – like fallen leaves – plays a negligible role in the ocean's food web. The same can't be said for lakes and rivers. We've found many are fueled, in part, by organic material that washes in from their watersheds. Recognizing that some fish are made of maple leaves required stepping back from the ocean paradigm.

You've also changed perspectives on the role inland waters play in the global carbon cycle. Inland waters make up a small part of Earth's surface. But in the past decade or so, my work and that of others has shown that these waters are disproportionately important in the carbon cycle. The sediments of the African Rift Valley Lakes, for example, contain about as much organic carbon as the rest of the entire terrestrial biosphere, including all the trees and all the soil. If we want our climate models to be accurate, we need to account for the role of inland waters.

Your work explores coupled biogeochemical cycles – what does this mean? A biogeochemical cycle is how an element moves through the Earth's ecosystems and its geologic landscape. This cycle includes chemical reactions and biological transformations. Aldo Leopold's essay "An Odyssey of an Atom" paints an evocative picture of the pathways. But in nature, elements like carbon and nitrogen don't cycle alone, they have points of intersection. Exploring these 'couplings' is essential to understanding how the real world works.

You retire this summer. What will you tackle as emeritus Distinguished Senior Scientist? I will continue my funded work on lake food webs, and will write more on linking terrestrial and aquatic carbon cycles. Election to the National Academy of Sciences opens some exciting possibilities, as the Academy reports to Congress on issues of national concern. I am particularly interested in weighing in on the impact that escalating population growth is having on the environment, with an eye toward solutions.

SPOTLIGHTS

STAFF NOTES AND DISTINCTIONS

Jon Cole was elected into the National Academy of Sciences, one of the highest distinctions a scientist can receive.

Peter Groffman was elected Chair of the Long Term Ecological Research (LTER) Science Council.

Gene Likens was honored with the A. Redfield Lifetime Achievement Award by the Association for the Sciences of Limnology and Oceanography.

Rick Ostfeld was recognized as an Ecological Society of America Fellow.

David Strayer is the new President of the Society of Freshwater Sciences.

Colin Fuss has joined Scientist Gary Lovett as Post Doctoral Associate.

Sylvia Lee has joined Scientist Emma Rosi-Marshall as Post Doctoral Associate.

Samantha Root has joined Scientist Alan Berkowitz as Education Program Assistant.

Sharon Schueler has joined Scientist Alan Berkowitz as Program Specialist in Urban Ecology Education.

The Cary Institute of Ecosystem Studies is an Equal Opportunity Employer. Minorities/Females/Vets/Disabled are encouraged to apply.

WELCOMING BARBARA HAN

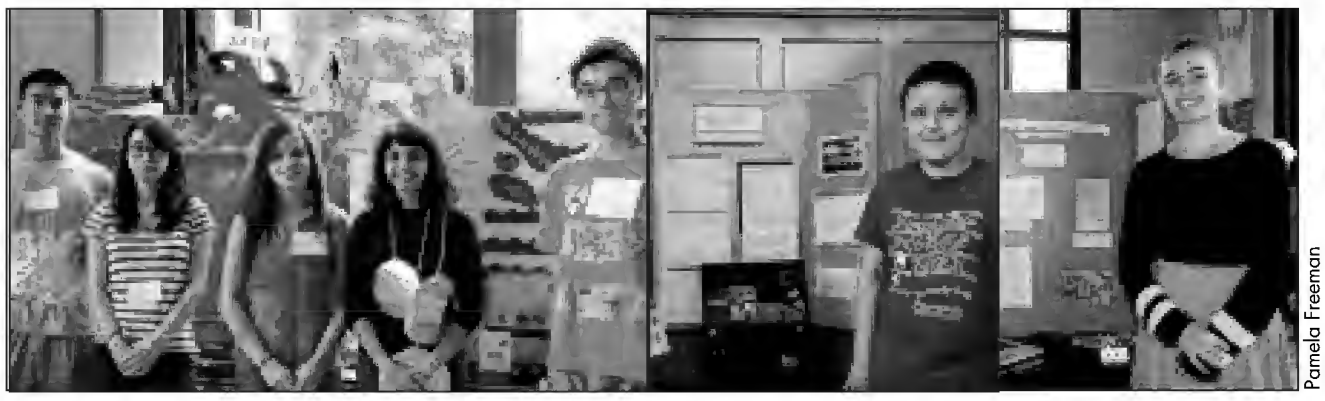
Join us in welcoming Dr. Barbara Han, the newest addition to the Cary Institute's growing infectious disease ecology team. Han received her PhD from Oregon State University and held two postdoctoral fellowships at the University of Georgia. Her research is at the intersection of ecology, supercomputing, and public health.

Richard Hall

Han uses "machine learning" to forecast outbreaks of zoonotic diseases—those that jump from animals to humans. Of more than a billion cases of human illness each year, the majority are attributed to pathogens maintained in animals. Han's computer algorithms analyze patterns and processes in nature that could result in the next SARS or AIDS.

By identifying what animals carry emerging infectious diseases and where they are located, Han is creating a forecasting tool that could help predict and prevent disease outbreaks. Her work will also inform land management, as it becomes obvious which diseases are more likely to emerge from certain habitats.

HUDSON DATA JAM



Pamela Freeman

For more than thirty years, our researchers have been studying the Hudson River and its watershed, analyzing everything from water chemistry to invasive species. That vast data set was the inspiration for a new offering by our Education Program.

The Hudson Data Jam, led by Cary Institute educator Kali Bird, challenged middle and high school students to bring long-term river data to life in a competition that melded science and creativity. The goal: to hone data interpretation and communication skills while giving students a better understanding of their local environment.

Workshops were held for regional teachers, and 89 students participated. Projects ranged from movies and original songs to dioramas and puppet shows. A panel of scientists and artists judged the submissions, and winners were revealed at an Awards Showcase held at Marist College in June. To view the best in the show, visit: www.caryinstitute.org/data-jam.

The Hudson Data Jam was made possible through generous funding from the Dorr Foundation and the Malcom Gordon Charitable Fund, which is managed by the Open Space Institute.

WHERE WE WORK

A PULSE ON AFRICA'S MARA RIVER

by Lori M. Quillen

Alexdi at en.wikipedia

From its origins in the Kenyan highlands, Africa's Mara River runs 245 miles to Lake Victoria, the world's largest tropical lake. The river provides water to a million people, many rural and poor. It also passes through two of Africa's most important game reserves: the Serengeti and the Maasai Mara.

Cary Institute scientist Dr. Emma Rosi-Marshall is working with colleagues at Yale University to understand how wildlife impacts the Mara River. Degraded waters have been linked to typhoid and cholera outbreaks, as well as fish kills. Her East African field site is home to the largest overland animal migration in the world.

A million and a half wildebeest cross the Mara annually in their quest for greener grasslands. In the chaos of the stampede, fatalities are common. Unsuccessful wildebeest drown in the river, which is further influenced by 4,000 resident hippos.

Each hippo contributes some 18 pounds of dung daily. On high flow days, deposits are washed downstream. But when flow is low, waste accumulates in pools. During the next high flow event, when these large pools are 'flushed,' the deluge of organic matter can result in fish kills.

Dubbed 'The River of Death,' the Mara is home to two of Africa's most deadly animals: hippos and Nile crocodiles. This presented a challenge to data collection. One answer was found in a collaboration with Carnegie Mellon University's Robotics Institute.

Remote controlled airboats were outfitted with monitoring sensors and disguised to look like crocodiles. Capable of creating underwater maps and recording environmental variables, the robo-crocs can perform reconnaissance largely undisturbed by river wildlife.

National Science Foundation funding will allow Rosi-Marshall and her colleagues to use the robo-crocs and other experimental approaches to pinpoint downstream impacts of wildebeest deaths and 'river flushing' events. Insights will be conveyed to managers with the help of partners at National Geographic and the World Wildlife Fund.

Natasja van Gestel

DISCOVER OUR GROUNDS

Looking to commune with nature? One of the Hudson Valley's best kept secrets is the Cary Institute's 2,000-acre campus.

Visitors are encouraged to explore our hiking trails, internal roadways, and Fern Glen, an assemblage of native plants that features a boardwalk, an observation deck, and views of a stone bridge spanning Wappinger Creek.

Hiking trails immerse visitors in a range of habitats, from hemlock forests and little bluestem meadows to a sedge-hummock wetland. Internal roadways are excellent for walking, biking, and bird watching. And the Fern Glen, an oasis for nature lovers, is home to frogs, turtles, dragonflies, and hummingbirds.

Campus kiosks orient and educate. Offerings include trail maps, ecosystem spotlights, and a guide to 101 birds that can be found in our fields, forests, and wetlands. While enjoying the scenery, learn about the ecology of Lyme disease, progress made on acid rain, and how deer transform forests.

Our grounds are open from dawn to dusk through October 31. Planning a trip? Visit www.caryinstitute.org/trails-campus for campus rules and trail reports.

SUPPORTERS' CORNER

ALDO LEOPOLD SOCIETY

Nearly 100 members of the Aldo Leopold Society attended the Ned Ames Honorary Lecture on April 25 featuring Bill Schlesinger's last official presentation, "If I had a Hammer." At the preceding reception, members warmly thanked Bill for his achievements as president, and bid him farewell upon his retirement. During the festivities, donors Mary Moeller and Clay Hiles, Executive Director of Hudson River Foundation, witnessed the unveiling of the Cary Institute's new boat, the Ned Ames, that is fully equipped for the next 20 years of Hudson River research.

Bill's talk hammered home the urgent need for science to guide solutions to our dependency on fossil fuels, biodiversity loss, and increasing population to ensure a habitable planet for the future. After thanking his staff and Aldo Leopold Society members for making Friday Night at Cary possible, the audience, in turn, provided Bill with a well-deserved standing ovation.

Pamela Freeman

Clay Hiles, Stuart Findlay, Bill Schlesinger, Mary Moeller, Ned Ames

Pamela Freeman

Francis Findlay, Olivia Fussell

Pamela Freeman

Robert Quinlan, Julia Widdowson, Bruce Ling

Pamela Freeman

Elizabeth Hilpman, Brad and Eugenie Gentry, Gretchen Long, Irene Banning

Pamela Freeman

Bill Schlesinger receives a standing ovation after the April 25th lecture.

CALENDAR

Upcoming Public Programs

Our Public Programs are a great way to expand your ecological understanding while learning about issues facing the environment. Lectures are held in our auditorium, located at 2801 Sharon Tpk., (Rte. 44) in Millbrook, NY. Seating is first come, first served. Registration is required for outdoor events. For more information call (845) 677-7600 x 121 or email freemanp@caryinstitute.org.

Friday, August 8 at 7 p.m.

Setting a Process in Motion: The Self Perpetuating Garden

Discover how to create ecologically-rich landscapes where nature does much of the planting. Landscape architect Larry Weaner will reveal how ecological restoration and proliferation strategies can nurture beautiful native plant gardens.

Friday, August 15 from 1 p.m. to 4:30 p.m.

27th Annual Undergraduate Research Symposium

Twelve students will present the results of their summer research projects. Topics include the effects of invasive plants in Hudson River wetlands, urban riparian ecosystems, ecosystem engineers, songbird communication, and ecological regulation of mosquitoes.

Sunday, September 28 at 10 a.m.

Forest Ecology Walk

As part of the Hudson Valley Ramble, Cary Institute scientist Charles Canham will lead an interpretive walk along the Wappinger Creek Trail. Learn the history of Dutchess County's forests from the first settlers in 1750 to current day. Over 250 years of land use patterns have transformed Hudson Valley landscapes. Register at http://forestecologywalk.eventbrite.com.

Wednesday, October 1 at 7 p.m.

The Tapestry of Science: Engaging Poets, Preachers, and Prisoners as Partners

Forest canopy expert Dr. Nalini Nadkarni will discuss the fascinating world of treetops, where studying plants and animals requires using ropes, hot air balloons, and construction cranes. Her lecture will have a special focus on collaborative projects that bring the ecology of rainforest canopies to diverse audiences.

Sunday, October 19 at 1 p.m.

Deer Ecology and Management for Landowners

Join Cary Institute Wildlife Biologist Mike Fargione on a woodland walk to see deer overabundance impacts on local forests. Learn how deer management plays a role in our current and future forests. Tips for mitigating damage, including the use of repellents, fencing, and controlled hunts, will be discussed. Call (845) 677-7600 x 121 to register.

Scientific Seminar Series

Free and open to the public, our scientific seminars are held on Thursdays at 11 a.m., from September through May, in the Cary Institute's auditorium.

For a complete listing of upcoming events, programs, and videos of past public lectures visit our website at www.caryinstitute.org/events.

Ways to Support the Cary Institute

Supporters receive an *Ecofocus* subscription and e-mail notification of lectures and events. **Aldo Leopold Society Members** are a special part of the Cary Institute family. Exclusive privileges include access to invitation-only trips, receptions, science updates, and reserved seating at our evening lectures.

Friends of the Cary Institute

- ❑ $50 Individual
- ❑ $100 Family
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- ❑ $____Other

Aldo Leopold Society Membership

For those who want to invest in unraveling the complex and challenging environmental issues facing all of us today.

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Visit us online at www.caryinstitute.org

FOUR FACTS ABOUT TICK-BORNE ILLNESS

Cary Institute scientists have been investigating the ecology of Lyme disease and other tick-borne ailments for more than 20 years. Here are some important tick facts to remember this summer.

A single tick bite can give you more than one infection. This is because blacklegged ticks can carry multiple pathogens, among them Lyme disease, babesiosis, and anaplasmosis.

Disease risk is tied to rodent populations. Long-term research at the Cary Institute has found when white-footed mice and chipmunks abound, so does the number of infected blacklegged ticks.

Intact habitats are healthier. We've also discovered that fragmented forests harbor more infected ticks than larger intact forests. This is because small forests have lower animal diversity, fewer predators, and an abundance of white-footed mice.

Predators and opossums make good neighbors. Predators, such as fox, control white-footed mouse numbers. And opossums are incredibly effective at killing ticks when they groom, eliminating thousands of blacklegged ticks weekly during the summer months.