



Newsletter

Volume 21, Number 6
November - December 2004

Calendar

CONTINUING EDUCATION

Consider signing up for a continuing education course! Below is a sampling of class offerings; to view the complete brochure please call 845-677-9643 or visit our web site at www.ecostudies.org/cep.html.

Biology

Jan. 26 (6 Weds.): **Introduction to Ecology**

Gardening

Jan. 30 (1 Sun.): **Survey of Perennials**
Feb. 8 (1 Tues.): **Planning a Flower Garden: The ABC's**
Feb. 12 (1 Sat.): **Annuals: Where to Start?**
Feb. 15 (4 Tues.): **Plant Propagation**
Feb. 26 (1 Sat.): **Evergreens for Shade Gardens**

Landscape Design

Jan. 8 (4 Sat.): **Landscape History & Theory**
Jan. 10 (6 Mon.): **Landscape Design I: Site Analysis**
Jan. 13 (8 Thurs.): **Construction I: Grading and Drainage**

Natural Illustration

Feb. 6 (4 Sun.): **Watercolor in the Greenhouse**

Volunteer Educators Needed!

Make a difference, have fun, and explore the IES grounds, gardens and greenhouses. Become a Volunteer Educator and help lead elementary school children through an active learning program about ecology, science and the natural world. Great for those who love the outdoors! To learn more and register, please contact Volunteer Coordinator Susan Eberth by phone at 845-677-7600 ext. 316 or send and e-mail to eberths@ecostudies.org.

THE ECOLOGY SHOP

See our unique assortment of nature and gardening gifts. Many items are fair-trade, recycled, or otherwise earth-friendly, so you can feel good about your purchases. *Senior Citizens Days: 10% off on Wednesdays.*

IES SEMINARS

Free scientific seminars are held at 11 a.m. on Fridays in the auditorium from September until early May. Below is a selection of upcoming lectures:

Jan. 14: "Dissolved phosphorus export to the coastal zone: how much is there and where does it come from?" *Dr. John Harrison, Rutgers University*
Jan. 21: "Carbon, iron and nutrient transport and processing in southern Quebec lakes." *Dr. Yves Prairie, University of Quebec*
Jan. 28: "Ecology education and ecological literacy." *Ms. Mary Ford, IES*
Feb. 4: "Floodplain inundation, ecosystem processes, and biodiversity." *Dr. Klement Tockner, Swiss Federal Institute for Environmental Science and Technology*
Feb. 11: "The physiology of life history - towards an understanding of organismal design in nature." *Dr. Martin Wikelski, Princeton University*
Feb. 18: "Linking water and nutrient cycles with vegetation change." *Dr. Robert Jackson, Duke University*

Ecology Field Programs for Children & Teachers

Winter and spring at IES bring a wealth of opportunities for school children, their teachers and other groups. Explore the world of exotic plants in the greenhouse, discover the inner workings of maple sugaring, investigate watersheds, learn about the dynamic interactions of a forest ecosystem, and observe, measure, and compare the various components of pond life at the IES Cary Pond. To register for classes, call the Education Office at 845-677-7600 ext. 316. Hurry — the programs fill up quickly!

HOURS

Fall Hours: October 1 - March 30

Public attractions: Mon.-Sat., 9-4, Sun. 1-4; closed public holidays. The greenhouse closes at 3:30 daily.
The Ecology Shop: Mon.-Fri., 11-4, Sat. 9-4, Sun. 1-4. (Please note: The shop is closed Mon.-Sat. from 1-1:30.)
Required free permits are available at the Gifford House Visitor and Education Center until one hour before closing time.

MEMBERSHIP

Join the Institute of Ecosystem Studies. Benefits include subscription to the IES Newsletter, a reduced rate on courses and excursions, a 10% discount on IES Ecology Shop purchases and participation in a reciprocal admissions program. Individual membership: \$50; family membership: \$60. Interested? Call the Development Office at 845-677-7600 ext. 120.

The Institute's Aldo Leopold Society

In addition to receiving the benefits listed above, Aldo Leopold Society members are invited to special lectures, excursions and science updates. To learn more, call the Development Office at 845-677-7600 ext. 120.

GREENHOUSE

The Greenhouse is a year-round tropical plant paradise and a site for controlled environmental research. Managed using integrated pest management, plants thrive in its pesticide-free environment! Open daily until 3:30 pm with a free permit (see HOURS).

TO CONTACT IES ...

... for research, graduate opportunities, library and administration:

Institute of Ecosystem Studies
Box AB, Millbrook NY 12545-0129
Tel: 845-677-5343 • Fax: 845-677-5976
Street address: Plant Science Building,
65 Sharon Tpke. (Rte. 44A), Millbrook, NY 12545

... for education, general information and The Ecology Shop:

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Education Program
Box R, Millbrook NY 12545-0178
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The Ecology Shop: 845-677-7600 ext. 309
Street address: Gifford House Visitor and Education Center, 181 Sharon Tpke. (Rte. 44A), Millbrook, NY 12545



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Editor's Note

The Institute is pleased to welcome a new senior staff member. This January, Ms. Susan Roeller Brown will take on the role of Chief Development Officer. Working closely with Institute President and Director Dr. Gene E. Likens, Ms. Brown will lead development initiatives crucial to the success of the Institute.

Interested in learning more about the man behind the Institute of Ecosystem Studies? This month's feature, a personal interview with Dr. Likens, provides insight into his path to ecology and the core values that have guided his direction of the Institute.

As the weather turns colder, and snow blankets the grounds, consider investigating the Institute's greenhouse. An oasis of tropical plants and vibrant greenery, it provides a wonderful respite from the winter weather.

The *IES Newsletter* is published by the Institute of Ecosystem Studies, located at the Mary Flagler Cary Arboretum in Millbrook, New York.

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Challenging Urban Ecology Legends, Innovating Management Practices

Concern about the environment is not defined by ethnicity or socio-economic status. Suburban streams have higher nitrogen and phosphorus levels than their urban counterparts. Pockets of rare plants exist within the urban matrix. These are just a few of the findings revealed by the Baltimore Ecosystem Study (BES), an interdisciplinary collaboration of over 30 researchers, educators and policy makers working to understand how urban ecosystems function.



By concentrating humans and the resources they consume, cities alter soil drainage, water flow, and light availability. Improving the ecological functions and amenities of cities depends on understanding the social and ecological factors governing the urban environment.

Led by Institute scientist Dr. Steward T. A. Pickett, BES research has made strong contributions to our ability to understand, and thus manage, the urban environment. Other IES scientists involved in the effort include Dr. Peter M. Groffman, a microbial ecologist, and Dr. Alan R. Berkowitz, an ecology educator. Dr. Pickett comments, "By linking studies of human populations and social institutions with traditional ecological studies, BES research has revealed unexpected patterns and processes in the Baltimore ecosystem. A number of these findings counter previously held, but untested, beliefs about urban ecosystems."

Urban ecology is defined by Dr. Pickett as, "the application of ecological principles and approaches to cities, suburbs, exurbs, and their hinterlands." Interactions between non-living factors, such as sunlight, and biological factors, such as plants, take place in all environments. When studying urban areas, the entire metropolitan picture is taken into consideration. Urban ecosystem managers must consider human infrastructure, cultural behaviors and biases, social organization and the economy. By coupling ecological information with social science knowledge about human behavior, a picture of the urban ecosystem emerges.

The majority of the U.S. population resides in metropolitan areas, yet ecological research on them is in its infancy. BES is one of only two NSF-funded long-term ecological research sites located in an urban environment. Partners include the Parks & People Foundation, the USDA Forest Service and Yale University's Urban Resources Initiative. By questioning assumptions about urban ecosystems, and collaborating across disciplines, BES participants

are discovering information that challenges some long-standing urban ecology legends.

BES views urban ecology legends as, "unsubstantiated assumptions, held by some, that could thwart the success of a management program." These biased assumptions can serve as roadblocks to understanding. Legends can be rooted in ecological or social biases concerning the quality of urban lands or the importance urban dwellers give to environmental issues. People that struggle to see urban systems as "part of nature" may assume they have low biological value. Others may define urban ecology issues, such as contaminated sites, by race or socio-economic status. An unbiased understanding of urban ecology is integral to increasing urban sustainability and including urban ecology in the socio-political dialogue.

Below is a list of eight legends and the BES findings that underscore the importance of questioning assumptions when advancing social and scientific understanding. Rather than suggesting the opposite of a legend is true, BES encourages individuals to take an unbiased view of the urban environment before making management decisions.

#1 Household income and ethnicity can predict ecological concern

Surveys performed in the BES research area, which encompasses a diversity of inhabitants, showed no correlation between ethnicity or income level and concern for ecological

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Through Talent, Serendipity and Hard Work, an Ecological Leader Emerges

Over the past 21 years, Dr. Gene E. Likens, the founder and director of the Institute of Ecosystem Studies, has created an internationally recognized ecological research center. An aquatic ecologist by training, Dr. Likens is best known for his seminal work on acid rain in the White Mountains of New Hampshire. When he was initially recruited to serve as the Institute's founding director, a career change was the last thing on his mind. A few decades later, it is one of his greatest achievements, one that is sure to be a lasting legacy. In an effort to shed some light on both the person and the vision behind the Institute, I recently interviewed Dr. Likens.

What shaped your early interest in ecology?

I grew up on a small farm in northern Indiana. My childhood was spent exploring the world around me, both on the farm and in the natural areas surrounding it. I was fascinated by wet places in particular and loved fishing. Northern Indiana sits at the southern extent of the Pleistocene glaciation; as a result the landscape is dotted with small lakes and ponds.

Raising registered Scotch short-horn cattle and membership in 4-H taught me a great deal about animal husbandry. Using the profits reaped from selling the cattle, I was able to finance my undergraduate education. So in a sense, rearing the cattle taught me about animals and enabled me to learn more!

At what point did you realize that you wanted to pursue a scientific career?

Initially, my dream was to become a baseball player! I was awarded an athletic scholarship to Michigan State, but decided to attend Manchester College, a small liberal arts college near my hometown. While attending college, I played baseball for two years in a professional rookie league in Kansas. As an undergraduate, my ambition was to teach high school biology and coach basketball, a popular goal for a Hoosier.

Through the persistent encouragement of Dr. Emerson Niswander, one of my undergraduate biology professors, I decided to take the GRE and pursue graduate school.

When applying to graduate school, was your focus aquatic ecology?

I didn't apply to graduate school with a specific course of study in mind. On my application, I listed my academic interests, which ranged from ichthyology to ornithology. I applied to three schools—the University of Wisconsin, Indiana University, and Cornell University. I went

on to attend the University of Wisconsin in Madison. I was not accepted to Cornell, which was a source of amusement some years later when I became a professor and chairman there!

How did you narrow your focus to aquatic ecosystems?

My life has been guided by serendipity. When I arrived at Wisconsin, I was fortunate to have been assigned to aquatic ecologist Dr. Arthur Hasler. He is best known for discovering that salmon return to their natal rivers through olfactory cues. Dr. Hasler was a pivotal mentor to me in both life and academics. Under his tutelage, I honed my limnological, grammatical and professional skills.

When did you become involved with what is now known as the Institute of Ecosystem Studies?

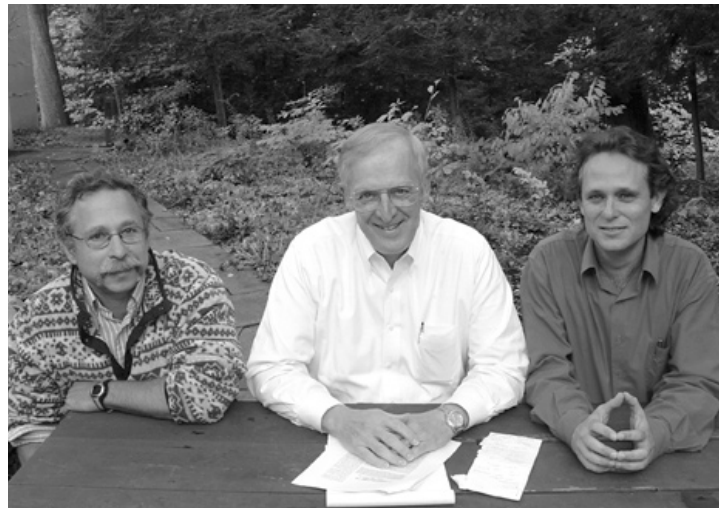
While working as a professor at Cornell, I was contacted by Dr. James Hester, who was then serving as the president of The New York Botanical Garden (NYBG). He was leading an initiative to transform the Cary Arboretum, a division of the NYBG, into an ecological research center. I was one of several scientists contacted to lead the effort. Initially, I turned the offer down. At the time, I was a tenured professor with an endowed chair. My professional and family life was settled in Ithaca.

What made you change your mind?

Dr. Hester was persistent. A year after I turned down his original offer, he contacted me again with a proposition I could not refuse—"you can do anything you want as long as you do it well." The concept of creating a new institution, with wide directorial latitude, was very appealing. When I signed on to lead the formation of the Institute of Ecosystem Studies, I did not take a leave of absence from Cornell. I was not interested in a safety net; my goal was to make the Institute a success.

Did a model inspire the Institute?

Early on, I invited many advisors to weigh in on the Institute's mission, but there was no guiding model. I drew upon the foundation that guides my own work—generating



Institute President and Director Dr. Gene E. Likens (center) discussing global water issues with IES scientist Dr. Jonathan J. Cole (left) and visiting scientist Dr. Fabio Roland (right). Dr. Likens is President of the International Association for Theoretical and Applied Limnology, Dr. Cole is President of the American Society of Limnology and Oceanography, and Dr. Roland is President of the Brazilian Limnological Society.

unbiased ecological information of the highest quality. I encourage staff to chase ideas and not dollars because, in the end, integrity and ideas prevail.

In the past two decades, the Institute has emerged as an internationally recognized leader in the ecological sciences. What fostered this success?

When it began, the Institute had the potential to become an intellectual backwater. Tucked away in Millbrook, removed from a university campus, we needed to do a lot of reaching out. To attract the best people, we had to offer an exceptional work environment.

The Institute has flourished because we hire top-rate scientists through international searches. This can't be overstated. By providing the staff with the academic freedom and community support they need to thrive, we have created a stable and productive environment.

We pay special attention to our visitors, who hail from around the world. As hosts, we strive to make their stay intellectually stimulating and welcoming. Based on their positive experience, many become ambassadors for the Institute.

From the impact that invasive species have on ecosystems to the ecology of urban areas, Institute scientists are generating important research about the world in which we live. Translating and transmitting this information is integral to our mission. Early on in my tenure, I established the Friday Scientific Seminar Series and the Cary Conference as communication conduits.

You've been an ecologist for over 45 years.

What do you find most rewarding about the profession?

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Serendipity, continued from page 2

I am constantly engaged in learning about the world we live in. Discovering new information is exciting and fun, as is the camaraderie and collaboration found in multidisciplinary research. Life as we know it depends upon the quality of the environment. I hope that my efforts have been helpful in informing sound policies on water and air quality.

What is one thing that everyone should know about IES?

In today's world, there is a great need for unbiased information about ecological problems. Understanding the ecosystems that support life is critical to protecting them. From the health of the Hudson River to the pollutants driving acid rain and global warming, the Institute provides a unique center to generate that knowledge. We do not accept contract research and we are not an advocacy organization. Our research provides the type of information on which sound environmental policies rely. ●

Challenging Urban Ecology Legends, continued from page 1

issues, such as air and water quality. While motivations may differ, there is concern across all socio-economic groups.

#2 Urban biodiversity is low and lacks value

New soil invertebrate species have been discovered in urban Baltimore and pockets of rare vascular plants exist in the BES study area. By identifying pockets of diversity, land managers can promote viable populations of native and rare species.

#3 Environmental inequalities only impact minority communities

Environmental justice concerns can unify groups, however there is a perception that non-minority groups are less likely to be impacted by degraded environments. In Baltimore, middle class whites are more likely than nonwhites to reside near Toxic Release Inventory Sites (TRIs). Because they release chemicals to nearby areas, TRIs are a potential human health risk.

#4 Human alterations overwhelm ecological processes

Research performed by IES microbial ecologist Dr. Peter M. Groffman, with colleagues, has shown that suburban watersheds retain nitrogen at a level similar to natural systems. By maintaining and increasing natural retention processes, such as vegetation in yards and parks, land managers can reduce nitrogen export from suburban watersheds.

#5 Urban social systems are unaffected by environmental change

Environmental quality can drive urban socio-demographics. Consider how sewer construc-

The Institute Hires a New Development Leader

Ms. Susan Roeller Brown will join the Institute of Ecosystem Studies as its new Chief Development Officer. Formerly the Senior Advisor to the President of Marist College, Ms. Brown brings a wealth of expertise to the Institute, including fundraising for major gifts, institutional planning and community relations. Most recently, Ms. Brown served as the project director for Marist College's Longview waterfront development project, raising over \$2.6 million for the initiative.

Her appointment is the culmination of a national search. A supporter of the Institute since its inception in 1983, Ms. Brown has a strong understanding of the organization's objectives. She will play a leadership role in securing support for capital, research and education initiatives. Institute President and Director Dr. Gene E. Likens comments, "We are very fortunate to have found a candidate with both the expertise and the vision needed to meet our long-term development goals."



Ms. Susan Roeller Brown will play a leadership role in the Institute's development initiatives.

septic systems resulting in lower and more variable water quality.

This fall, the National Science Foundation recognized the significance of BES research through a \$4,900,000 grant renewal, which will fund the study for another six years. In the coming years, BES will continue to challenge urban legends and solidify our understanding of how to best manage urban ecosystems. "The first phase of BES taught us how to work with disciplines that ecology has rarely engaged effectively. The results gained through these unique collaborations will help meet the challenge of understanding cities, suburbs and the surrounding open lands as an integrated ecosystem," Dr. Pickett comments.

Future projects include investigating how urban trees influence air quality and documenting the ecological effects of restored urban watersheds. Michael T. Rains, BES-collaborator and Director of the USDA Forest Service's Northeastern Research Station, comments, "As we look ahead to concerns about protecting natural resource sustainability, the critical role of BES research cannot be overstated." ●

Originally presented in an Ecological Society of America poster, the legends outlined in this article were compiled by S. T. A. Pickett, J. M. Grove, P. M. Groffman, L.E. Band, C. G. Boone, G. S. Brush, W. R. Burch, M. L. Cadenasso, J. L. Hom, J. C. Jenkins, N. Law, C. H. Nilon, R. V. Pouyat, K. Szlavecz, P. S. Warren, and M. A. Wilson. To learn more about the Baltimore Ecosystem Study, visit www.besler.org.