

CALS NEWS

THE MAGAZINE OF
THE COLLEGE OF
AGRICULTURE AND LIFE
SCIENCES

FALL 2011

FEAR NO
WEEVIL

ON OUR
BEST BEHAVIOR

EVOLUTION REVOLUTION

THE HEAT IS ON

FAITH AND FOOD



Cornell University



Alumni, current students, and other fans cheer on the Big Red football team entering Schoellkopf Stadium, as part of Homecoming Weekend. Credit: University Photo

ON THE COVER: The Chestnut Weevil, *Curculio elephas* Gyllenhal, is just one spectacular specimen captured by photographer Kent Loeffler for a forthcoming book. For more, see [the book](#).

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DEAN'S MESSAGE



Dean Boor (center) joins CALS students and faculty on a sod sofa on the Ag Quad in early September. Two dozen Art of Horticulture students transformed several truckloads of compost and pallets of sod into the huge and surprisingly elegant sofa. Credit: Craig Cramer

The return of students and fall colors reminds me to reflect on the year just passed and the one just beginning. Now into my second year as dean, I recognize the amazing array of opportunities I've had to represent the college and experience the diversity of CALS. From farm field days in Ithaca to marine outings in the Isles of Shoals, alumni events in New York City, and political meetings in Albany, the job has taken me to new places and introduced me to alumni, faculty, students, and staff involved in almost innumerable activities and interests. So perhaps it's not surprising when I'm asked: "What's it been like so far?" I thought I'd take this opportunity to share some of my highlights.

Getting to Know You This position has given me the opportunity to interact with a full spectrum of those who are truly dedicated to our college. I've found that I enjoy these interactions tremendously. Our inaugural "Coffee with the Dean" in April was the first of several events where I got to meet the CALS community in an informal setting. Ag Day, Empire Farm Days, the New York State Fair, ice cream socials, wine tastings, and other events around the quad and in the community have provided other relaxed venues for engagement. My interactions with students and alumni have been especially rewarding and inspiring. I love learning about the leaders we're sending out into the world, and hearing about their wonderful accomplishments when they come back to visit.

Intrepid Explorer My curiosity to see what's around every corner of CALS has been rewarded with discoveries about the amazing breadth and depth of offerings here. In faculty meetings, facility visits, and academic events, I've learned exactly what it is that our 3,500 undergraduates, 880 graduate students, and 364 faculty members do. The nutshell conclusion: A lot! One of my duties is to present awards to some of our amazing people. I look forward to these ceremonies, because each one provides further opportunity to discover and acknowledge great feats and commitment to the college. I am continuously inspired by the talent of our faculty and staff, and humbled to see how effectively they translate their passionate devotion to discovery into action as they deliver the college's land grant mission of applying knowledge with a public purpose.

Politics as Usual My first budget season was a crash course in the New York political arena. I saw quickly how crucial it was to hone my focus and articulate just how important CALS is to the citizens of this state. We gained many supporters and our message was heard, resulting in restored funding to many threatened programs. As last November brought in a new cadre of political players, I've met with our leaders, including Governor Andrew Cuomo, Lt. Governor Robert Duffy, Agricultural Commissioner Darrel Aubertine, and other members of the new administration.

The Joy of Giving The support of alumni, friends, and industry partners, especially during these tough economic times, has been heartening. Clearly I'm not the only one who believes so strongly in the mission of this college, as evidenced by contributions to the CALS Annual Fund, which has topped \$1 million for the past two years. I've also had the good fortune to attend many events celebrating some particularly generous gifts from alumni and friends, beginning with the naming of the Charles H. Dyson School of Applied Economics and Management and followed by the naming of the David R. Atkinson Center for a Sustainable Future. Other gifts bolstered important programs and curriculum offerings. And then there was the groundbreaking—or rather, ice cream scooping—event to celebrate the beginning of construction on a new and improved home for food science at Stocking Hall. Who would have guessed the Livestock Pavilion could be transformed into such a classy venue?

A Year to Remember My early days as dean coincided with the 100-year anniversary of Cornell Cooperative Extension and New York Farm Bureau. Beginning with the commemoration of the first county agent, John Barron, in March, there have been a number of events to celebrate this milestone, and I've been delighted to participate in many.

I'm sure my tenure will continue to be eventful, and I look forward to swapping memories with more of you as we meet.

*Kathryn J. Boor, Ph.D.,
The Ronald P. Lynch Dean of the College of Agriculture and Life Sciences*

New Northeast Superfruit?

Cornell's latest fruit variety is fashionably late. In fact, you may even spot some now.

Developed by associate professor of horticulture Courtney Weber, the Crimson Giant raspberry was developed specifically for the New York climate and can extend the harvest window for fresh, local raspberries to the beginning of November.

It boasts a true raspberry flavor and firm, bright red berries that don't darken quickly in storage. The fruit is larger than the average 2-3 gram berry, averaging a whopping 4.5 grams. Its late harvest requires

a protected production system such as high tunnels to shield it from fall frost. But that has the added benefit of reducing pests, diseases, and weeds, leading to higher yields.

Crimson Giant is expected to be a boon for growers seeking to command premium prices at a time when apples outnumber raspberries at farmers' markets.

At the other end of the season, growers have been introduced to another new "superfruit" that could serve as a useful "bridge crop" for you-pick farms, ripening after strawberries but before raspberries. Juneberries are little purple berries that pack a powerful nutritional punch: a half-cup serving of Juneberries has about 100 percent of the U.S. RDA for riboflavin, 70 percent for manganese, 23 percent for iron, a significant amount of calcium and dietary fiber, and a healthy dose of antioxidants. Their mild, dark cherry/raisin-like flavor once made Juneberries (also known as saskatoons) popular with Native Americans and they are still widely grown in Canada. Now, Cornell Cooperative Extension agricultural specialist Jim Ochtanski is working with farmers, chefs, and consumers to help them take root in central New York's fields and menus.

—Amanda Garris



The new raspberry, Crimson Giant, and Juneberries, inset. Credit above: Rob Way; right: Jim Ochtanski



Tapping into a Revitalized Hop Industry



Dr. David Gent of the USDA talks about downy mildew with growers at a harvester demonstration in August. Credit: Provided

The time is right for a hops renaissance in New York state: Microbrew consumption in the Northeast and the number of breweries in New York are on the rise. Many breweries are committed to using local foods, reducing their carbon footprint, and keeping jobs in the state.

To help them, Steve Miller, Cornell Cooperative Extension's first hops specialist, will lead a statewide effort to expand local production of hops, one of beer's key ingredients. Hops are vigorous, 20-foot climbing plants that produce flowers, or "cones," that shape a beer's character, infusing it with bitterness and aromas that can range from citrus to spicy or floral.

Miller is developing hops workshops and resources with a team of researchers from across the Northeast to

identify the best varieties and production methods for hops in this part of the country.

In the meantime, the proposed "Preserve, Produce, and Grow" legislation package would create a special license to allow farmers to brew and sell up to 15,000 barrels of beer on their property if they use a certain percentage of New York state-grown products.

—Amanda Garris

Lighter Lunch = Smaller Waistline

Is it possible to lose weight without major dieting and hunger pangs? Yes, with one simple change in eating habits: opting for a smaller lunch, says David Levitsky, professor of nutritional sciences and psychology, and graduate student Carly Pacanowski.

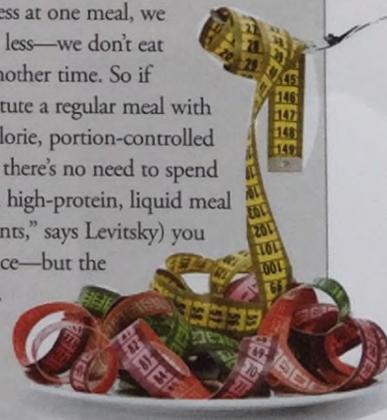
When study volunteers ate a lighter lunch, they were no hungrier than usual, even though they didn't increase their consumption later in the day or week to make up for the reduction in calories.

Levitsky and Pacanowski's five-week investigation measured the food intake of volunteers Mondays through Fridays. For the first week, all participants ate whatever they wanted from a buffet. For the next two weeks, half of the participants were given commercially available portion-controlled lunches, but they could eat as much as they wished at other meals. For the final two weeks, the other half of the volunteers ate a portion-controlled lunch.

Over the 10 days of consuming smaller lunches, participants consumed 250 fewer calories per day than usual and lost, on average, 1.1 pounds.

"Over a year, such a regimen would result in losing at least 25 pounds," says Levitsky. "Our bodies don't have the mechanisms to detect a small drop in calorie intake, so we don't compensate for it."

If we eat less at one meal, we simply eat less—we don't eat more at another time. So if you substitute a regular meal with a lower-calorie, portion-controlled one ("and there's no need to spend money on high-protein, liquid meal replacements," says Levitsky) you won't notice—but the scales will.



—Stephanie Salato and Susan S. Lang '72

Apple of the Artist's Eye



Los Angeles artist Jessica Rath has produced a series of photographic portraits, called "Apple Shadow," of leafless tree silhouettes of the work of Susan K. Brown, professor of horticulture in Geneva and one of only three U.S. apple breeders. The thousands of seed "sisters" from Brown's cross-pollinations produce hundreds of rows of genetically unique and uniquely beautiful trees. Some of Rath's apple art will be included in the exhibit *Food for Thought* at Wignall Museum, Rancho Cucamongo, California, in January 2012. "Apple Shadow" will be part of the artist's solo exhibit *Take Me to the Apple Breeder* at the Pasadena Museum of California Art in November 2012 before traveling to other U.S. museums.

Dirt: The Cure for What Ails You?

Birds do it, dogs do it, even some humans do it—eat dirt that is—but until recently no one knew why. Reports of humans eating dirt, especially, have puzzled biologists for hundreds of years. Yet Sera Young, PhD '08, research scientist in nutritional sciences, and Paul Sherman, professor of neurobiology and behavior, may have found the answer. They have concluded that humans eat dirt—technically called geophagy—to protect themselves from dietary chemicals, parasites, and pathogens.

Previous explanations have included hunger or the need to acquire such nutrients as iron, zinc, or calcium. But Young and Sherman found that people who eat dirt do so only in small amounts, often when food is plentiful and the need for nutrients is not a motivating factor.

The researchers discovered that geophagy takes place most often among pregnant women and children in tropical areas where pathogens thrive. It is also more common when toxic substances have been ingested and people are suffering from gastrointestinal distress. In other words, in some cultures, people eat dirt when their tummies hurt: They search out specific soils they consider to be clean and safe. The dirt is also typically carefully prepared and even heated before ingesting.

—*Krishna Ramanujan*

Pigs Gone Wild



Credit: Rex Allan Jones

Feral swine are running wild in Cortland, Onondaga, and Tioga Counties in central New York, according to CALS wildlife expert Paul Curtis. The pigs are more than just a growing nuisance. In addition to having nondiscriminating dining tastes—from the eggs of nesting birds and acorns to edible roots—they can also carry the pseudorabies virus, which can spread to livestock and pets. Of the 27 wild pigs captured and killed in 2010, two tested positive for the disease.

The feral pigs in central New York are relatives of Eurasian wild boars, wild-living escaped domesticated pigs, or a hybrid of the two. As many as a couple of hundred are roaming the state, says Curtis, associate professor of natural resources.

And unlike many domesticated pigs, feral pigs aren't known for their sweet dispositions. Since 2008, there have been three cases of feral swine aggression toward humans in New York and two reports of attacks against dogs, one of which died, according to a USDA report.

Did You Know

BEEES HELP HALLOWEEN

Pumpkins are big business in New York: the 2010 crop was valued at \$35 million, the nation's highest. Nearly half of all New York vegetable farms grow pumpkins. Entomologist Brian Nault is boosting yields even further using the eastern bumblebee—the best native pollinator, and it's not threatened by honeybee colony collapse.

BEWARE THE MULCH VOLCANO!

Too much mulch can starve a tree's roots of water, stunting tree growth and eventually killing the tree. When planning for next season's garden, keep in mind that mulch should be 2 to 3 inches deep and *not touch the trunk at all*, says horticulture professor Nina Bassuk '74. A wide radius of 3 to 4 feet for newly planted trees is sufficient.

HYDRANGEA COLOR

It is not the pH of soil by itself that influences the color of hydrangea blossoms, but the availability of aluminum, says horticulture professor William Miller, MS '84, PhD '86. Aluminum is only available to plants in low-pH, or acidic soils. When present, it makes blossoms blue; otherwise they are pink. To further complicate matters, pink cultivars can be blue, and blues can be pink, and some can go both ways, but white cultivars, like *Sister Therese*, cannot become pink or blue.

STARTING A VINEYARD IS A COSTLY ENDEAVOR

Establishing a vineyard in the Finger Lakes in 2010 would have cost \$18,880 per acre, says Professor Emeritus Gerald White. His economic analysis assumes a 50-acre vineyard planted with Riesling, Cabernet franc, Chardonnay, or Pinot noir grapes. The yearly cost of keeping vines alive after establishment: approximately \$2,500 per acre.

Extreme Makeover: Warren Hall Sustainability Edition



Home to the Charles H. Dyson School of Applied Economics and Management, the Department of Development Sociology, and the Community and Regional Development Institute (CaRDI), Warren Hall embodies the spirit of interdisciplinary learning, discovery, and engagement that defines the College of Agriculture and Life Sciences. Soon it will also embody the college's spirit of sustainability, thanks to a \$51 million, LEED-certified renovation.

Constructed in 1932, at a cost of \$500,000, Warren Hall was built in the Beaux Arts-style. Plans call for moderniza-

tion tempered by preservation. The brick and stone exterior, as well as the distinctive entry lobby and the large lecture hall, will undergo complete restoration, while the rest of the 128,355-square-foot, four-floor building will benefit from a complete update of the facility's infrastructure. However, reconstruction in the New York City-based FXFOWLE Architects plan will include repurposing, which even calls for the conservation of the bathrooms' marble partitions to be used as flooring in the re-opened building.

Other green project highlights include: maximizing the use of daylight throughout the building to reduce energy demands; the use of reflective roofing material and a green

vegetated roof to reduce heat island effect; the use of natural ventilation in offices and fan coil units for heating and cooling, as well as occupancy sensors for lighting and air-conditioning throughout the building, to achieve 48 percent in energy savings as compared with a code-compliant building; and ensuring that over 50 percent of the wood products specified on the project will come from Forest Stewardship Council (FSC) certified forests.

Commitment to being green will extend far beyond construction with environmentally friendly cleaning and integrated pest management plans, and landscaping designed and installed with the help of Department of Landscape Architecture students as part of Cornell's Sustainable Sites Initiative. The building is expected to earn a Gold LEED Project rating, with hopes for a possible Platinum rating.

Additionally, 75 percent of demolition and construction-generated waste is planned to be recycled or diverted from landfills.

Construction on Warren Hall is scheduled to be completed in 2014.

—Ellen Leventry '95

LEEDing the Way

Warren Hall isn't the only CALS building currently getting a makeover: Stocking, Rice, and Fernow Halls are also under renovation. Like Warren, they are all expected to earn the U.S. Green Building Council's Gold LEED (Leadership in Energy and Environmental Design) status, and may even achieve Platinum.

Online Reviews Too Good to Be True?

Online retailers depend on reviews as a sales tool but can you believe them? Increasingly reviews are tainted by "opinion spam"—phony positive comments to encourage sales or negative remarks to downgrade competitors.

To help identify the real deal, Cornell researchers are developing computer software to pick up the clues hidden in false postings. In a test on 800 reviews of Chicago hotels, a computer picked out deceptive positive opinions with almost 90 percent accuracy.

The work was conducted by associate professor of communication Jeff Hancock, professor of computer science Claire Cardie, and graduate students Myle Ott, MEN '07 and Yejin Choi, MS '09.

The researchers asked a group of people to deliberately write false positive reviews of 20 Chicago hotels. These were submitted with an equal number of truthful examples to three human judges, who scored no better than chance in identifying deception. Next, the researchers applied computer analysis based on subtle features of the text. Truthful hotel reviews, for example, are more likely to use concrete words about the hotel like "bathroom," "check-in," or "price." Deceptive entries more often include things that set the scene like "vacation," "business trip," or "my husband." Also, truth-tellers use more nouns, while deceivers use more verbs.

Ott cautions that the work so far is only validated for reviews of Chicago hotels. Next, they'll look at other categories and at negative commentary.

—Bill Steele

Ancient Eucalyptus Fossils



Fossils of *Eucalyptus* leaves, flowers, fruits, and buds dating back 51.9 million years have been found in Patagonia, Argentina, by CALS researchers. They are the oldest scientifically validated *Eucalyptus* macrofossils and the only ones conclusively identified as naturally occurring outside of Australasia.

'C' is for Cookie... and Cassava

Thirteen CALS food science students have developed a tasty way to address iron deficiency in developing countries: cassava cookies.

The team beat out 28 other teams to take first place in the Developing Solutions for Developing Countries category in an international competition at the Institute of Food Technologists (IFT) annual meeting held this June in New Orleans.

Their goal was an iron-fortified product suitable for school lunch programs in a poor area of Brazil, where half the population lacks adequate iron and cassava is a major food staple.

As part of the MandiMais project, they created a cookie called ManiKuki, which is naturally fortified with iron-rich cassava leaf protein concentrate and stuffed with an acerola filling. Acerola, a local fruit high in vitamin C, helps maximize iron uptake. ManiKuki provides 22 percent of the daily recommended iron intake and 250 percent of vitamin C for children ages 7 to 10.



ManiKuki may one day be available to children for just 16 cents per child per day through a Brazilian school meal program.

Another group of 15 CALS food science students took home second prize in the Product Development category for Vege3, a nutritious freeze-dried, crunchy vegetable snack that provides the equivalent of 2.5 servings of vegetables.

—Bethany Liebig '12

Students Help CALS Staff Go Green

Did you know you could save \$3,000 a year and reduce CO₂ emissions by 34,000 pounds simply by closing an unused fume hood? Well, neither did many of the researchers I met this summer during an enlightening internship with CALS Green.

As a member of the Tompkins County Conservation Corps, I joined eight other interns to inventory energy use and educate researchers in 90 labs in the six buildings included in the CALS Green energy conservation competition.

We went around in groups of two, knocking on doors, hoping to catch researchers in action. Many said they had never thought about how many fume hoods or freezers they used; we often had to follow them around the lab while they counted out loud. They often didn't know

the age of their lab equipment or how often it was used by other colleagues. But it was striking to observe the amount and condition of refrigerators and freezers in each lab; some had five or more, and many appliances were more than 10 or 15 years old and incredibly inefficient.

Many told us they feel there is an inherent barrier to energy conservation in labs because energy use is so crucial to all of their research. But they were also excited by the CALS Green project and willing to help in any way possible.

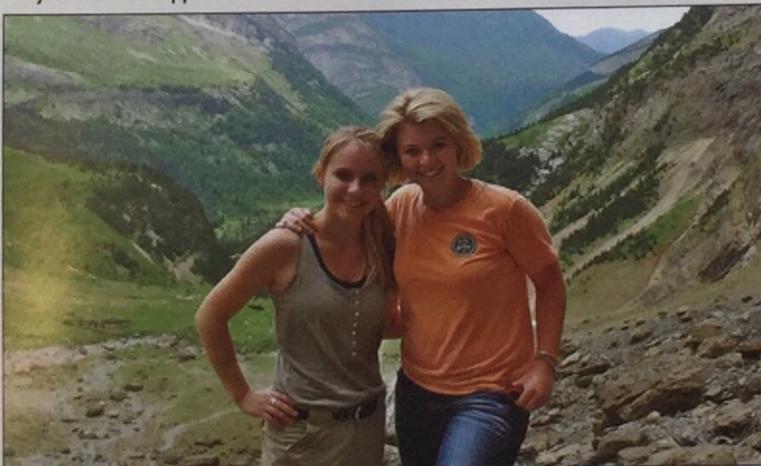
It was highly rewarding to talk with the people who were conscious of their energy use as well as those who were appreciative of our efforts and the information we had to share.

—Alison O'Neil '12

In the year since the CALS Green pilot project launched, the College of Agriculture and Life Sciences' behavior-based energy conservation and sustainability initiative has led to commitments from faculty, staff, and students to cut more than 1.6 million pounds of carbon dioxide emissions, saving almost \$180,000 in annual energy costs. With such success, the college is now preparing to share its energy conservation techniques—which include a building contest and interactive, individually customizable “take action” web tool—with the rest of the university.



Bonjour et Bon Appetit!



Erika Hooker '13 and Justine Britton (University of Illinois at Urbana-Champaign) hiking in the Pyrenees Mountains in the south of France.

Every morning I am excited to start the day. I make my coffee and toast a piece of fresh baguette from the night before. I touch up on some survival French sentences and head for the door. At 6:30, the sun is just breaking the horizon and I have a half-mile walk to the garage of the vineyard where I get my assignments for the day. The air is cool and crisp and the dew on the grass splashes my legs as I jog lightly across the lawn to the dirt road ahead. I cross over it in favor of the grassy lanes between rows of grapes and take the back way to work, winding through vines. It's a glorious start to the day. I am a junior in International Agriculture and Rural Development and Communication at Cornell, but when the opportunity came up in a CALS exchange program to intern at a vineyard in France and take viticulture classes, I couldn't pass it up...

Read more about Erika's amazing adventures in France, Spain, Italy, Romania, and Greece at calsnews.cornell.edu

Evolution Revolution: Punk Rocker Is Now CALS Lecturer

Greg Graffin, lead singer of and songwriter for the renowned punk rock band Bad Religion, is spending some time with a quieter audience here on campus.

BY BETHANY LIEBIG '12

In between jaunts to Jakarta and South America to perform before thousands of punk fans, Greg Graffin, MS '02, PhD '03, can be found in Warren Hall, where his microphone has been replaced with a lectern and his audience of 60 rapt undergraduate students has gathered to hear him preach about evolution instead of revolution.

The Bad Religion singer has traded T-shirts and badges for tweed and ties in his new role as Cornell lecturer.

Famous for leading the punk rock revival of the early 1980s, Graffin says he was always a bit of a "science nerd." The California native came to Cornell to pursue a Ph.D. in zoology, which he received in 2003. He fell in love with the Ithaca area and now has a home among the gorges, where he likes to escape the hustle and bustle of his hometown of Los Angeles to be inspired by nature.

"I consider it a great privilege and an amazing bit of luck that we [Bad Religion] are as well known as we are today," Graffin says. "But I never leveled with myself that it was as intellectually satisfying as any academic pursuit. Being able to lecture and to participate in the conversation that goes on in science, professionally, is a great privilege."

Now he wants to inspire the next generation to think critically and creatively, with open minds that challenge commonly held assumptions in a way that can contribute to informed social discourse. As he writes in his new book, *Anarchy Evolution*, "That's ultimately why it's so important to know about evolution: because it can change the way we think about ourselves and the world around us."

Graffin says his artistic side complements his scientific side, and both entail creativity. "True creativity surprises us because it doesn't obey the rules," he says. "It comes out of nowhere. Like when you study the fossil record and find species that once existed but don't seem to obey the laws of biology."

The course, Evolution (BIOEE 2070), was taught for many years by recently retired College of Arts and Sciences professor, Will Provine. A new version is being taught by Graffin along with Ecology and Evolutionary Biology (E&EB) professor Richard Harrison, Ph.D. '77. It teaches the basic science of evolution to nonbiology majors, using modern case studies to illustrate how the science is applied and interfaces with real-world questions. The tag-team teachers are addressing issues such as genetics, personalized medicine, drug and pesticide resistance, climate change, and the importance of biodiversity in this semester's maiden class, which reached capacity almost immediately.

Graffin's background is a striking contrast to Harrison, an evolutionary



Credits: Nina Stiller

Dual personas: Graffin as rocker and as professor

geneticist and East Coast native who has stuck with the Ivies for his entire career—undergraduate degree from Harvard, Ph.D. from Cornell, and nine years teaching at Yale before returning to Ithaca in 1986.

"We come from rather different backgrounds and have different expertise, but we seem to be compatible," Harrison says. "Our hope is there may be some public exchanges between us in front of the students."

He hopes to mold the course into one of the most popular on campus.

"Many of us in the E&EB department felt that a non-major's evolutionary biology course was a particularly critical course since evolution is obviously controversial in the eyes of the general public," said Harrison. "We really want to reach a broader audience of people who aren't biologists, but hopefully will go out, having learned about evolution, and be able to speak about it coherently and cogently when they get into the real world."

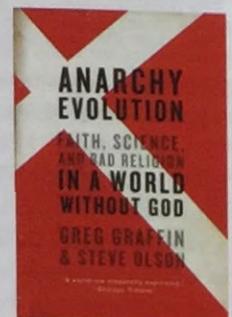
Graffin, whose initial appointment is for three years, said he would enjoy expanding his lecturing duties beyond evolution.

"Outside of this department, I have been thinking it would be fun to teach an interdisciplinary course with the music or art department about the history of punk music," he said. •

"That's ultimately why it's so important to know about evolution:

because it can change the way we think about ourselves and the world around us."

Anarchy Evolution



AROUND THE AFFILIATES

Releases Mark Successes for Shoals

Four seals now have a better chance of survival thanks to Shoals Marine Laboratory and its ongoing work with Mystic Aquarium's Animal Rescue Program. Calliope was rescued at two to three days old when it became clear her mother was not around. Tube-fed for the first two weeks of her stay at the aquarium, she was then slowly moved onto a full fish diet and released in June, aged about two months, at Appledore Island, off Portsmouth, N.H. In mid-August, three seals—Nell, Jenna, and Mouth—were successfully returned to the wild at nearby Duck Island, noted for its sizable harbor and grey seal population. The trio swam off immediately to explore their new home.

Talking in the Library for Ten Years

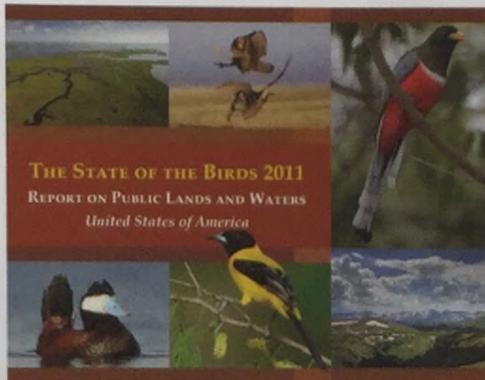
The “no talking” rule in Mann Library has some notable, and officially sanctioned, exceptions. Since the inaugural lecture of the Chats in the Stacks series in November 2001, when horticulture professor David Wolfe discussed *Tales from the Underground: A Natural History of Subterranean Life* (Perseus Press), Mann's Chats in the Stacks program has featured a wide-ranging series of faculty speakers from CALS and the College of Human Ecology. The talks highlight the rich diversity of work—from new discoveries in wastewater management to bee behavior—represented around the Ag Quad.

Over the years, four to five events each semester have consistently drawn a lively audience of faculty, alumni, students, and members of the Ithaca community.

Archive webcasts of each Chat from 2006 to the present are available on Mann Library's podcast page (mannlib.cornell.edu/podcasts). For more information about upcoming talks, visit mannlib.cornell.edu/events-exhibits.

The series is supported by the Mary A. Morrison Public Education Fund at Mann Library. Established by nutrition Professor Emerita Mary Morrison in 2000, the endowment enables Mann to undertake new outreach services that realize the library's evolving role as a dynamic community center for learning, communication, and the dissemination of knowledge.

Assessing Birds on Public Lands



The Cornell Lab of Ornithology has played a major role in the nation's first assessment of birds on public land. The research, which was presented in the 2011 State of the Birds report, found that more than 300 bird species have at least half of their U.S. distribution on public lands, highlighting the enormous potential for conservation. Partner organizations and more than 600,000 bird checklists from citizen-science participants also contributed to the analysis, which used high-performance computing techniques.

The United States has about 1,000 bird species, 251 of which are threatened, endangered, or of conservation concern. More than one-third of the country's lands and all of our oceans are publicly owned.

The report emphasizes the urgent need for increased protection and management by public agencies to prevent extinction of many island species, and to buffer forest and arid land species from urban development and agriculture. It also cites the importance of protecting severely declining ocean bird populations and balancing the demand for resources obtained through logging, mining, and energy extraction with conservation.

“Birds are excellent indicators of the health of the environment, including the human environment,” said Kenneth V. Rosenberg '76, director of conservation science at the Cornell Lab. “The report highlights the tremendous responsibility public agencies have for conserving birds and their habitats.”

Fifteen public and private organizations collaborated on the project, with Cornell Lab staff playing key roles in the scientific analysis and publication. The team generated novel bird distribution maps by combining the Protected Areas Database of the United States with bird observations from eBird.org, a citizen-science project of the Cornell Lab and National Audubon Society. The Cornell Institute for Computational Sustainability, Oak Ridge National Laboratory, and DataONE helped lead the analyses, which required 70,000 hours of supercomputer time on the National Science Foundation's TeraGrid. To learn more, visit www.stateofthebirds.org. —*Krishna Ramanujan*

Cornell Plantations Says “Let's Move!”

A hike for parents and children through the F. R. Newman Arboretum and Fall Creek Natural Area at Cornell Plantations marked the start of a three-year commitment to First Lady Michelle Obama's *Let's Move!* program. The event, held August 14, was in response to a May appeal by Mrs. Obama for public gardens to join the fight for better childhood health.

“We are thrilled to take part in this initiative,” says Sonja Skelly, Cornell Plantations' director of education. “Our arboretum, gardens, and natural areas are beautiful places where families can come for a walk, a run, and some vitamin N (for nature) to increase overall wellness—and have a good time!”

The *Let's Move!* initiative is dedicated to helping a generation of children make healthier choices and become more physically active, while also giving parents information and tools to assist. Studies have shown that time spent outdoors not only improves children's physical health but has positive impacts on their creativity and problem-solving abilities as well as their emotional and intellectual development.

Cornell Plantations, along with museums, zoos, science and technology centers, other public gardens, and historic sites across the country, has plans for more events. These programs focus on getting kids outside and moving, while also teaching them how to grow their own food and eat healthier.



Fear No Weevil

A forthcoming book aims to help researchers identify non-native weevils in glorious detail.

Celebrated in song, folklore, and statuary, the boll weevil—scourge of the American cotton industry—is perhaps the best known agricultural pest in the United States. But not so for its weevil cousins, a lacuna that E. Richard Hoebeke, a taxonomic and survey entomologist recently retired from the Department of Entomology, is looking to remedy with the help of Kent Loeffler, photographic specialist in the Department of Plant Pathology, in the forthcoming book *An Illustrated Identification Guide to the Adventive (Non-Native) Weevils (Curculionoidea) of North America*.

Specifically, Hoebeke and co-author James LaBonte, a taxonomic entomologist with the Oregon Department of Agriculture, hope to enable specialists and others to accurately recognize North American non-native weevils.

Like the boll weevil, which emigrated from Mexico to Brownsville, Texas, and beyond, many of the 3,200 North American species of weevil are not native to our fauna, either unintentionally introduced via commerce and a traveling public, or deliberately released for weed biocontrol.

Because of their great diversity, ability to thrive in any climate, association with virtually all plants, and a burgeoning global marketplace, weevils are especially successful hitchhikers to all of the world's continents. The accidental introduction of exotic weevils into North America has occurred since early colonial days. And although a large number of weevils introduced into North America, or soon to be on the continent's shores, are innocuous and apparently cause no measurable damage to plants, many are serious plant pests, such as the feared Japanese Pear Weevil (right).

The number of described weevil species on the planet is calculated to be about 62,000, with the total number of existing species likely approaching 220,000, meaning that entomologists have described just over a quarter of the diverse population of this important and largest group of herbivorous beetles.

What follows is imagery of the wonderful weevil as captured for the forthcoming book. Mann Library has featured selected photos as part of its "Fear No Weevil" exhibit throughout this fall.



Rhynchites heros
"Fruit Weevil"
"Peach Weevil"
"Japanese Pear Weevil"
"Japanese Apple Curculio"

GEOGRAPHIC RANGE

Native to East Asia (Japan, Korea, Taiwan, and some parts of China). Not yet known from or established in North America. This species represents a serious threat and great concern to American agriculture.

ECONOMIC IMPACT

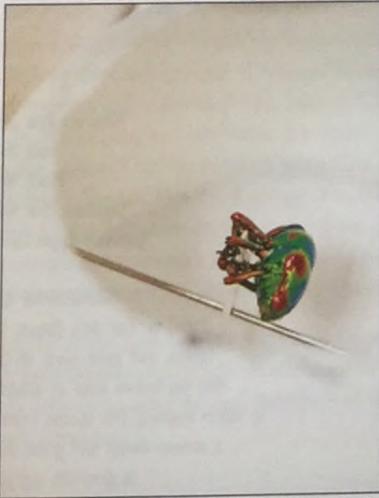
Common on apple throughout Japan, but also sometimes causes serious damage to pear, and attacks peach, plum, loquat, and other fruits. There is usually one generation a year. *Rhynchites heros* larvae live within the fruit and can survive between 18 and 50 days feeding on and developing within the fruit.

A Gem of a Shot

Just as jewelers need to capture the light as it refracts off of the sparkling facets of precious stones, so did photographer Loeffler with this magnificent Mesoamerican specimen. Using a ping pong ball to diffuse the illumination, he was able to capture the full spectrum of light reflecting off of its metallic carapace.



Credit: Kent Loeffler



Credit: Kent Loeffler

Let's Hear it for the Boll

Enterprise, A.L., erected this statue in 1919 in appreciation of the boll weevil for wiping out the area's cotton plants, forcing local farmers to transition to the much more profitable peanut.



Credit: USDA



Curculio elephas Gyllenhal
"Chestnut Weevil"

GEOGRAPHIC RANGE

Native to south and central Europe and northern Africa (Algeria). Not yet known from or established in North America.

ECONOMIC IMPACT

Feeds on the seeds (nuts) of chestnuts and oaks. Adult weevils emerge from the soil in late summer to early fall and cause feeding damage by piercing nuts with their long, slender snout. After feeding, female weevils turn around and deposit one to several eggs in each nut through the feeding hole. Upon hatching, the larvae or "grubs" consume the "meat" of the nut. After feeding inside the nut for about a month, the larvae chew their way out of the nut and enter the soil to pupate.



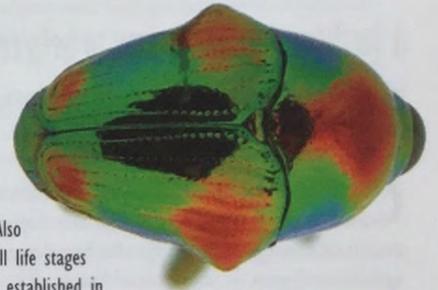
Eurhinus magnificus Gyllenhal
No Common Name

GEOGRAPHIC RANGE

Native to Mesoamerica (Belize, Costa Rica, Guatemala, Honduras, Mexico, Nicaragua, and Panama). First reported in Florida in 2002 (Broward County). Collected again in 2003 near Homestead (Miami-Dade County). Also intercepted in shipment of bananas from Costa Rica in 2004. In 2005, all life stages collected repeatedly in Broward and Miami-Dade Counties. Appears to be established in southeastern portion of state. Probably inadvertently imported into Florida via living plants or plant products.

ECONOMIC IMPACT

Adults feed on outer layers of plant stems, within cavities in stems and leaf petioles, and on leaf blades at portion of leaf attachment to petiole. Larvae induce galls on stems of *Cissus* spp. (*Vitaceae*). Only verified host in Florida is *C. verticillata*. Although sometimes planted as an ornamental, *C. verticillata* is a prolific perennial vine and generally considered a weedy species. *Eurhinus magnificus* not known to be a pest of commercial grapes and not considered a threat to *Vitis* spp. However, additional studies are needed to determine if other grape cultivars might be susceptible.



Anthonomus grandis Boheman
"Cotton Boll Weevil or Boll Weevil"

GEOGRAPHIC RANGE

Native to Central America and Mexico; migrated into the United States from Mexico. First appeared in the U.S. in Texas (near Brownsville) in 1892 and reaching Alabama in 1915. By the mid 1920s, it had entered all cotton-growing regions in the U.S.

ECONOMIC IMPACT

The cotton boll weevil is considered a key pest of cotton in the eastern United States. These weevils overwinter under leaf litter, in woods, among weeds, and along fencerows surrounding cotton fields. Adults feed on terminal shoots of cotton seedlings and immature cotton bolls, while larvae feed inside the boll, eventually destroying the plant. Also a serious pest in South America.



Coniatus splendidulus (F.)
"A Tamarisk Weevil"

GEOGRAPHIC RANGE

Native to the Mediterranean region and Asia. In North America, presently known only from a few localities in Arizona. The species has been found in Gilbert (Maricopa County), as well as along the Santa Cruz River from Marana (NW Pima County) to Amado (Santa Cruz County).

ECONOMIC IMPACT

A potential biological control agent of tamarisk or saltcedar (*Tamarix* spp.) in the West. The weevils were imported and released to control the spreading of *Tamarisk* in riparian areas. The larvae live on the surface of the twigs and spin a protective cage to pupate.



Cryptorhynchus lapathi (L.)
"Poplar-and-Willow Borer"

GEOGRAPHIC RANGE

Native to and widespread in Europe and Asia. First reported in New York in 1882 and in British Columbia in 1923. Now found throughout southern Canada and in the northern half of the United States from northern California eastward to the Carolinas.

ECONOMIC IMPACT

Attacks species of *Salix* (willow) and *Populus* (poplar). Larvae riddle stems of young trees in plantations throughout north-central North America. Complete girdling kills the tree above the injury.



Cylas formicarius (F.)
"Sweet Potato Weevil"

GEOGRAPHIC RANGE

Native to the Old World; accidentally introduced into the southern United States, Hawaii, Greater Antilles, Central America, Australia, and Japan. The sweet potato weevil can be found throughout the coastal plain of the southeastern U.S. from North Carolina to Texas and Hawaii. In the Caribbean it is found in Cuba, Puerto Rico, Jamaica, Dominican Republic, Haiti, Guyana, St. Kitts-Nevis and in Central America—Mexico and Panama.

ECONOMIC IMPACT

Cylas formicarius is considered the single most important pest of sweet potato (*Ipomoea batatas*) in countries where it occurs. Weevil infestation ranges from 20 to 50% on many farms and can even reach to 100% depending on the season and variety. Higher infestation occurs during dry seasons. Weevil damage to tubers causes heavy losses. The larvae feed in the tubers and the adults feed on the stem and leaves.



Lost Ladybug ... Found!



Credit: Peter Probst

One of the first C9 found in New York and one found in Colorado by Gail Starr.

The nine-spotted ladybug, New York's official state insect, was feared to be extinct in this state until citizen scientists rallied to Cornell's call to help look for it. Several nine-spotted ladybugs were spotted by citizen-scientists on Long Island this summer.

"The nine-spotted ladybug was once one of the most common ladybugs in the United States, and it was so revered in New York for its role in suppressing pests that it was named the official state insect in 1989," says John Losey, associate professor of entomology and director of the Lost Ladybug Project.

But a decade or so later, the little lady seemed extinct throughout the eastern U.S. because extensive surveys by scientists failed to find any live specimens. The New York State Assembly was so sure the nine-spotted ladybug was absent that it passed a bill to replace the ladybug as state insect in 2006. That bill never went to the Senate and never became law. Now those fears can be put to rest: The first nine-spotted ladybug—*Coccinella novemnotata*—was discovered by a volunteer July 30 at the Quail Hill Organic Farm in Amagansett on Long Island's South Fork (Suffolk County). Since then, volunteers and project staff have found 20 more nine-spotted ladybugs at Quail Hill.

—Susan S. Lang '72

Across North America, ladybug species distribution is changing. Over the past 20 years, several native ladybugs that were once very common have become extremely rare. During this same time, ladybugs from other places have greatly increased both their numbers and range. For more than a decade, the Lost Ladybug Project has been asking citizen scientists to help them identify changing ladybug distribution patterns to discover where all the ladybugs have gone and prevent more native species from becoming so rare. Interested in helping with the search or finding out more? Visit the Lost Ladybug Project website at www.lostladybug.org.

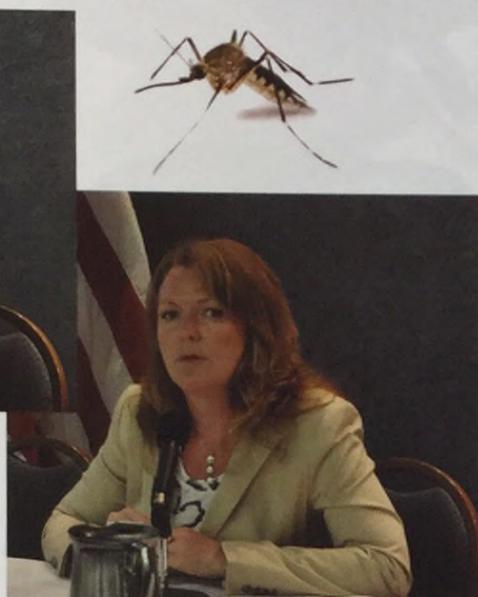
CALS IN THE CAPITOL

Experts Warn of Bedbug, Mosquito Invasions



Credit: Mark Lawrence

Laura Harrington (above) and Jody Gangloff-Kaufmann (right) briefing Congressional staffers.



Cornell bug experts created a buzz on Capitol Hill warning a swarm of media and Congressional and Senate staff about bedbug and mosquito invasions.

The Washington briefing by entomologists Jody Gangloff-Kaufmann, PhD '99, and Laura Harrington was organized by CALS in partnership with Cornell's Atkinson Center for a Sustainable Future and the Cornell University Agricultural Experiment Station.

Gangloff-Kaufmann said the resurgence of bedbugs in the last decade could be due to home-use bans on several insecticides and an increase in global travel.

The bugs are particularly hard to get rid of when they infest multiple-family apartment buildings. The poor and elderly may especially feel the bite, because state-of-the-art heat treatments can cost up to \$3,000 for a one-bedroom apartment, Gangloff-Kaufmann said. Even though bedbugs often carry a stigma of poverty and filth, their resurgence probably began in the upscale travel and hotel industry.

Harrington noted an increase in mosquito-transmitted diseases worldwide due to increased global travel, failures of public health and mosquito control programs, and climate changes that alter mosquito ecology and habitats.

Asian tiger and Asian bush mosquitoes, for example, can transmit more than 22 different disease-causing viruses and are on the rise in the United States. West Nile virus has spread throughout the country, and there have been recent outbreaks of dengue fever in Florida and Hawaii.

Harrington conducts research on the reproductive biology of mosquitoes to develop new biological control methods that reduce egg production and curb the female's appetite for blood.

—*Krishna Ramanujan*



BUG BITES

BEDBUGS

Adult bedbugs can live for half a year without food. Newly hatched bedbugs are pinhead-size and light in color; once matured and fed, they are the size of a pencil eraser and dark red. A female may lay 200-400 eggs in her lifetime of up to one year. Bedbugs are not known to transmit any diseases to humans, although their bites could allow antibiotic-resistant infections like MRSA to take hold.

MOSQUITOES

The mosquito-transmitted diseases malaria and dengue impact 530 million lives each year, causing more than 3 million deaths and immeasurable suffering in over 200 countries worldwide. More than 2.5 billion people are at risk each year, and recent epidemics have affected millions. There are 4 dengue virus serotypes, which cause more illness than any other insect-borne viral disease. There is currently no vaccine for dengue and no cure.



Capitol Diary

Peter Davies, professor in the plant biology and horticulture departments, will serve as an advisor on agricultural and food policy issues during the 2011-2012 academic year as a Jefferson Science Fellow in the U.S. Department of State. Davies is one of 13 Jefferson fellows selected from U.S. universities to spend a year as a science advisor with the State Department or the U.S. Agency for International Development, and may be asked to commit the following five years to serve as a consultant to the State Department.

Per Pinstrup-Andersen, H. E. Babcock Professor of Food, Nutrition, and Public Policy, the J. Thomas Clark Professor of Applied Entrepreneurship and Professor of Applied Economics, testified before the U.S. Senate Committee on Agriculture, Nutrition, and Forestry alongside USDA Secretary Tom Vilsack and several other experts about the global food and nutrition situation and implications for the 2012 Farm Bill.

Chris Barrett, the Stephen B. and Janice G. Ashley Professor of Applied Economics and Management and International Professor of Agriculture in the Charles H. Dyson School of Applied Economics and Management, has been appointed to the research committee of AGree, a new initiative headed by former USDA Secretary Dan Glickman and funded by several private foundations, whose purpose is to transform food and agricultural policy.

More than Tape: 3M Partners with CALS Food Scientists

When Martin Wiedmann, PhD '97, tests meat samples suspected to be tainted with *Salmonella*, he may be able to do so even faster, thanks to a new high-tech tool recently added to his arsenal. The professor of food science has partnered with 3M to test a new molecular diagnostic system that could cut pathogen detection times from 72 hours to just 18 hours.

"Rapid and easy detection of food-borne pathogens is a continuing challenge, and we are very excited to test this product and see if it can make the process quicker," Wiedmann says.

3M, a Minnesota-based company known for its innovation in many marketplaces, also has a successful Health Care Division focused on food safety. For decades, 3M Food Safety has been a leader in producing 3M™ Petrifilm™ Plates, microbial indicator count plates. 3M is expanding its scope into developing the next generation of scientific technology, and the new device—a sleek robust unit about the size of a laptop—is designed to be easy enough to use outside the lab, by industry and testing facilities.

Using this new device, prepared samples are loaded and quickly assessed. The resulting data is then available for immediate analysis and documentation via a direct computer connection.

Wiedmann says he will use the device alongside more traditional methods while he tests samples as part of several of his ongoing research projects, which trace how pathogens like *Salmonella* and *Listeria* are transferred throughout the food chain.

The data he collects not only support the range of uses of 3M's new instrument, but also add to their database of pathogen reactions, a valuable resource to the machine's developers as well as future customers.

Many of the pathogens Wiedmann tests in his laboratory are not available anywhere else.

3M is also set to gain valuable feedback on how its product performs under rigorous testing in academic lab conditions, and how it might be improved for



Credit: Stacey Shackford

John David (far left), a technology services engineer with 3M, talks with staff in Professor Martin Weidmann's lab.

its future customers based on user experiences.

Robert Koeritzer, technology manager in 3M's Food Safety Department, says 3M was drawn to Cornell because of Wiedmann's prominence in the food safety field and the CALS connections within the broader food industry.

"Cornell has great relationships with many of our customers, so it understands the problems they face and can help us understand how we can develop innovative solutions," he says. "For us to do a study with a recognized university like Cornell gives us credibility with our customers and the industry."

Koeritzer says he hopes the project will be the first of many collaborations. "Ultimately, we are looking to work with Cornell long term to develop future technologies that will help our customers succeed."

—Stacey Shackford

Exploring Opportunities with Kraft Foods

In late September, representatives from Kraft Foods met with Dean Kathryn Boor and CALS faculty from the Charles H. Dyson School of Applied Economics and Management, the Department of Food Science, and the Department of Animal Science to discuss active research, ongoing collaborations, and possible future partnerships that complement CALS' role in the New York state dairy industry.

"Because we offer academic breadth and depth in teaching, research, and extension on topics ranging from animal health—through the College of Veterinary Medicine—and management to farm and industry profitability to dairy processing, we are well-positioned to be a comprehensive resource for the dairy industry," says Boor.

Currently, the Department of Food Science serves as a key resource in processing excellence for Kraft operations. Through this historic relationship, CALS researchers have worked closely with New York state processing plants to ensure companies like Kraft Foods maintain a leading level of performance by consistently improving their processing operations. Kraft also employs CALS alumni in positions throughout New York, as well as nationally and internationally.

Boor adds, "It's exciting to think about ways in which our expertise can help to inform Kraft's strategies and growth. These conversations reminded me of how much our efforts in the academic arena translate to real-world needs and successes."

Helping Welch's Perfect Its Purple Juice

In 2009, when Welch's noticed a "green" aroma in their purple grape juice and puzzling color changes during processing, they turned to CALS' Department of Food Science. The "green" aroma—reminiscent of grass or bell pepper—was sparking complaints from consumers.

Gavin Sacks, MS '02, PhD '05, assistant professor of food science, was able to identify the likely culprits—two compounds that were elevated in the green-smelling juice—and Welch's is following up with studies this year to see how its production is affected by such variables as weather and vineyard practices.

The connection grew out of an existing collaboration between Welch's, Sacks, and Olga Padilla-Zakour, MS '88, PhD '91, the department's associate chair, who were already studying a new processing method that retained the juice's vivid purple color.

Using the new processing method, Welch's made further investments in their Westfield, N.Y., facility, resulting in an estimated \$239,000 in savings during the first year, according to John Pacheco, Welch's director of grape technology.

—Amanda Garris

The Department of Food Science has recently hosted visits from other businesses interested in research collaborations, including Diversey, DuPont Qualicon, Yancey's Fancy, Murray's Cheese, World's Best Cheese, Old Chatham Shepherding Co., and Wegman's.

The Chicken-or-Egg Fallacy

BY PARFAIT M. ELOUNDOU-ENYEGUE

Professor Eloundou-Enyegue contributed the following piece as part of The New York Times Room for Debate series, which focused on the topic "Women's Choices: School vs. Children." The accepted thinking—that as women become more educated, they have fewer children—has been cited in campaigns to promote education for girls in countries with high population rates. But in a recent study, Joel Cohen, head of the Laboratory of Populations at Rockefeller University, and his co-authors from the University of Oslo, Øystein Kravdal and Nico Keilman, found that childbearing kept Norwegian women from pursuing a higher education more than education impeded childbearing.

Does such research challenge the conventional wisdom or are the results simply different from country to country, depending on a country's level of development? How do we refine the age-old question: Does education reduce childbearing, or does childbearing get in the way of education? Eloundou-Enyegue's piece addresses this discussion. His original piece appeared on July 14, 2011. The complete debate can be found at: <http://ow.ly/6pasO>.

Across the world, women with more education generally end up having fewer children. To some, this appears to raise a chicken-or-egg question. Does childbearing limit women's educational attainment or does education get in the way of bearing multiple children?

It is difficult to pinpoint the right direction of causation.

In theory, either scenario is plausible. A girl born in a "pronatalist" environment might later revise her childbearing aspirations as the experience of schooling transforms her world views, access to contraception, bargaining power, or economic opportunities. Conversely, a teen's unexpected pregnancy might alter the costs and social support available for her pursuit of education.

In practice, however, it is difficult to pinpoint the right direction of causation. To begin with, proving any causation is hard with the after-the-fact survey data that social scientists often use in their research. Second, most studies on this issue have specialized on one or the other direction, with some looking only at whether education influences childbearing, and others looking only at whether childbearing influences education.

Until this recent study, few had devised simple methods to simultaneously study and compare these two influences. A third problem is the framing of the question itself. Asking a simple either/or question obscures the fact that the answer could be neither or both. Or that the answer might vary across places and times.

In the end, weighing on this apparent chicken-or-egg question requires toeing a fine line between laying a methodological egg—that is, making bold claims with limited evidence—and being chicken, that is, excessively hedging findings and shying away from any firm conclusion.

Our view is that the early education and fertility outcomes in women's lives matter. The real question is how much each contributes to the later course of women's lives. These relative contributions likely vary across societies, depending for instance on the median ages when fertility begins and when education stops.

After all, childbearing has less room to get in the way of education when most girls quit school early; and education has more room to affect childbearing in societies that tolerate a wider range of family configurations.

SOUND BITES "It's like Queen Anne's lace with an attitude," Charles O'Neill, coordinator of the Cornell Invasive Species Program, tells MSNBC about giant hogweed. "Its sap can make a case of poison ivy seem like a mild itch. Stay dear!" "I did the calculations and they could carry a Nimbus 2000," Cornell Lab of Ornithology expert and owl owner Laura Erickson told MSN while analyzing whether real-life Hedwigs could perform the same tasks they are assigned in the fictional Harry Potter books and films. "A message from a wizard would weigh no more than the kind of prey they would normally catch." "Birds get lost. It happens all the time," Kevin McGowan, of the Cornell Lab of Ornithology, told ABC News when questioned about the Antarctic emperor penguin that made a 2,000-mile wrong turn and wound up in New Zealand. "Greece could sell off its crown jewels by privatizing government assets, but everyone is going to recognize it as a fire sale, so the question is how much money they could raise," economist Eswar Prasad told NPR in a story about the country's debt crisis. "We're not trying to be cowboys. We are being careful with this. We know we've screwed it up big time in the past," said entomologist Mark Whitmore, commenting in the *Erie Times-News* on the introduction of wasps to combat the invasive emerald ash borer.

About the Author

Parfait M. Eloundou-Enyegue, associate professor of development sociology and associate director of the Cornell Population Program,

studies educational attainment and gender inequality. He has consulted for many development agencies, written extensively on questions about population and development, and is on the board of directors of the Guttmacher Institute, which aims to advance reproductive health worldwide through research, policy analysis, and education. Currently, Eloundou-Enyegue is studying 3,300 families to document changes in schooling and access to employment in Cameroon, his native country.

He joined the CALS faculty in 2000, yet yearned to maintain an intellectual bridge with sub-Saharan Africa. He saw a connection with Francophone Africa as particularly potent; therefore, his major outreach activity is to build capacity for demographic analysis in those countries. Limited by language barriers, scientists there had not forged close ties with U.S. scholars in population sciences. Yet Africa was in the midst of complex population changes, with many social and economic outcomes on the line. Experts believed that great strides could be made in reducing poverty, school dropouts, gender inequality, and child and maternal mortality if policies were based on solid expertise in demographic data analysis.

In 2006, he began volunteering for summer teaching at IFORD, an institute for demographic training based in Cameroon. He was soon joined by some of his students and a few colleagues, including fellow development sociology professor Tom Hirschl, Cornell Statistical Consulting Unit director Françoise Vermeylen, and three recent graduates, Vongai Kandiwa, MS '99, Sarah Giroux '03, MS '06, and Scott Sanders, MPA '06, MS '07. What started as a small volunteer effort has since grown into a complex venture holding workshops two or three times a year. The group hopes to help create a data and statistical center, modeled after Cornell's Institute for Social and Economic Research (CISER), to serve as a repository for social science data for the region.



Credit: David Hawhurst

FAITH AND FOOD

FROM KOSHER LAW TO PORTION SIZE, TWO CALS RESEARCHERS ARE SERVING UP FOOD SCIENCE AND PSYCHOLOGY INFORMED BY RELIGION. BY ELLEN LEVENTRY '95

For decades, manners mavens from Emily Post to Amy Vanderbilt have admonished readers to keep their elbows off the table, say “please” and “thank you,” and never mention religion at the dinner table. Two CALS scientists are disregarding that last bit of advice.

Brian Wansink, the John S. Dyson Professor of Marketing and director of the Cornell Food and Brand Lab, set out to tackle what was an apparently secular question—when did the phenomenon of “supersizing” start?—and ended up tracking the incredible growing American portion size by examining depictions of the Last Supper.

Wansink’s team started the hunt for the origins of supersizing in the modern American kitchen by content analyzing all eight editions of the classic cookbook *The Joy of Cooking*—from 1936 to 2006—to determine whether portion sizes had grown in accordance with its serving suggestions.

Historical information was more difficult to come by until divine inspiration, of sorts, struck. Wansink, the author of *Mindless Eating: Why We Eat More Than We Think*, and his brother, Craig Wansink, professor and chair of the Department of Religious Studies at Virginia Wesleyan College and an ordained Presbyterian minister, scrutinized 52 of the best-known paintings of the Last Supper, as collected in Phaidon Press’s *Last Supper*. They measured the size of the main course, the plates, and the bread and indexed them based upon the size of the heads in each painting.

“The Last Supper provided a tremendous Rorschach food test of history,” says Wansink. “There’s no mention of food in the Gospel versions other than just bread and wine. Whatever the artist painted would have been based on their imagination and grounded in their day-to-day experience.”

The self-funded study, published in the April 2010 issue of the *International Journal of Obesity*, found that “portion distortion” has been happening for a millennium, with the main courses depicted in the paintings growing by 69 percent, plate size by 66 percent, and bread size by 23 percent.

“The increase in these things pretty much mirrors the increase in availability and affordability of food in whatever culture in which it’s painted,” notes Wansink. “Supersizing is a byproduct of food being cheap and plentiful.”

The brothers also discovered that the meal depicted at the Last Supper—considered by many scholars, based on descriptions in several Gospels, to be the Jewish Passover Seder meal—became less kosher, with Jesus and his disciples eventually being painted feasting on *trayfe* (non-kosher) delicacies like eel.

Joe Regenstein '65, MS '66, head of the Cornell Kosher and Halal Food Initiative (CKHFI), knows the kosher food rules well, but he wasn’t always aware of the how: as a young faculty member specializing in fish and poultry processing, he attended a meat sciences lecture on kosher slaughter and found it fascinating.

“I came from a Jewish home. My mother had grown up kosher. I had all the framings, but what I didn’t have was the details,” explains Regenstein, a Conservative Jew who now keeps a kosher home. “It was a wonderful talk. But while the kids normally were engaged by this instructor, they were totally disengaged. He provided the technique, but not the cultural framework.”

Approaching his colleague with concerns about the lack of context, Regenstein soon found himself teaching the section and would go on to teach the popular Kosher and Halal Food Regulations course. (*Kosher*



After indexing the sizes of the foods in depictions of the Last Supper by the sizes of the average disciple’s head, brothers Brian (above) and Craig Wansink found that both portion sizes and plate sizes have increased by over 65 percent in these paintings. Credit: Jason Koski.

being Jewish dietary laws and *halal* being the Muslim equivalent.) He also directs the CKHFI which addresses issues at the interface of religious communities, regulatory agencies, consumers and the food industry—an important initiative as foods carrying a kosher mark comprise about 40 percent of the market.

Regenstein, who often collaborates with well-known animal behavior expert Temple Grandin, is currently focused on developing international animal welfare standards for kosher and halal, and humane on-farm halal slaughter. His group is also investigating whether it is possible to examine the lungs of a live sheep to determine if the sheep is likely to meet kosher requirements. Currently, the animal’s lungs must be examined post-mortem, an expensive and complicated process that often yields kosher certification for less than 50 percent of the slaughtered animals.

Regenstein, who has worked on religious food regulation enforcement with many religious groups and consumer and governmental institutions, may be best known as the person who helped Nabisco begin developing a kosher Oreo. Regenstein’s eye is still on the sweet prize, working to improve other kosher sweets and treats.

Undergraduates in the “Candy Lab,” a disused meat lab, are trying to create better-tasting kosher gummy bears and marshmallows using fish gelatin, an approved substitute for gelatin made from pork and non-religiously slaughtered beef. While it’s too early to share results, Regenstein notes, “We have no trouble getting rid of our leftovers.”

While Regenstein concentrates full-time on the interactions of faith and food, Wansink, who primarily focuses on mindless eating, returned to the topic to investigate whether families who say grace together eat differently than those who do not.

As part of a current pilot study of 200 families in the greater Ithaca area, Wansink, a Congregationalist whose family says grace before dinner, wondered whether there was any correlation between healthier eating habits and the practice of giving thanks—sacred or secular—before meals.

He has found only minor differences in relation to what people eat. In the families that pray together, kids tend to drink milk or water instead of soda, and are more likely to try new vegetables or dishes. But they are also more likely to eat bread and a dessert at the meal.

Saying grace does seem to be associated with better behavior at the table, he says. Grace-saying families are more likely to eat more dinners together—an average of 2.1 more meals per week—and are more likely to stay at the table until everyone is done.

Perhaps, the best news is that, on average, whoever cooked the meal is thanked more often. Surely, Miss Manners would approve. •

CALS in the City
Uptown & Downtown





Uptown,
downtown,
and
in between,
CAL S is helping
to develop
a different kind
of apple—
The Big Apple

BY MOLLY CRONIN '11

The College of Agriculture and Life Sciences knows a thing or two about developing apples—66 varieties at last count—so it should be no surprise that CALS is on the ground in New York City helping the Big Red make a big mark in the big city.

From the Bronx to Battery Park and beyond, CALS specialists are improving the lives of millions of New York City dwellers by improving livability and sustainability. Here, we take a look at just some of their varied contributions.



High Aspirations Along the High Line

Suspended above the West Side, snaking its way along disused freight railway tracks through the Meatpacking District to Hell's Kitchen, the High Line Park has helped transform a once gritty area of New York City into a quirky urban oasis.

Thanks to a unique cross-cultural collaboration, Cornell landscape architecture students and their Chinese counterparts from Shanghai Jiao Tong University (SJTU) may be able to make their mark as part of the park's Gansevoort Street Project.

Students from the two institutions convened this summer, charged with the challenge of designing an aesthetically and environmentally innovative crossing to connect the High Line to an area where pedestrian safety is a very real concern, as drivers try to navigate the abrupt change from a straightforward grid street pattern to diagonals and the Henry Hudson Parkway.

The nine participating graduate and undergraduate Cornell students met nine SJTU third- and fourth-year undergraduates in the city, assessed the site, then headed back to Ithaca to draw up plans.

They came up with some conceptual ideas as well as more detailed concepts for continuing the past industrial aesthetic from the High



Above: A Gansevoort Street Project rendering by Nick Parilli (Cornell), Wang Qi (SJTU), Xie Yuxi Sissi (SJTU), and Yang Hanzi (Cornell) Right: The Cornell and SJTU student group

Line down to street level and creating raised seating areas in the plaza at Gansevoort Street and 14th Street to separate pedestrians from traffic. And they decided to go green with all of them, says Kathryn Gleason '79, associate professor of landscape architecture.

"All of the schemes considered storm water run-off, permeable paving, and other green infrastructure," she says.

The complete plans, which may serve as inspiration for the landscape architecture company eventually hired to complete the project, have been submitted to the New York City Department of Transportation for review as the City considers next steps for implementations in the Meatpacking District.



A Tree Grows in Brooklyn

A tree grows in Brooklyn...and the Bronx... and Manhattan...and about a million places around the city, thanks in part to Cornell horticulturists.

Professor Nina Bassuk '74 and many of her colleagues in the departments of Horticulture and Natural Resources have been working closely with New York City's Department of Parks and Recreation for years, to plant trees in several areas.

Bassuk first got involved in 1997, when the city contacted her about using the innovative CU-Structural Soil™ she had developed along with her former graduate student Jason Grabosky MS '96, PhD '99 crop and soil science professor Harold Van Es, and Lynne Irwin, of the Local Roads Program in Biological and Environmental Engineering. The special blend can be packed very densely to support the pavement laid above it, yet still



allow tree roots to spread beyond the small section of soil in which they are planted.

Bassuk's bond with the urban environment goes back much further.

"Growing up in Brooklyn, propagating plants was my hobby. I had a real appreciation of the trees on my block," says Bassuk. "When I did my undergraduate work at Cornell, I loved my woody plant identification courses, and trees became my special interest."

She is now involved in MillionTreesNYC, a 10-year initiative to plant a million trees across New York's five boroughs. Extension specialist Keith Tidball is helping to lead the research effort, which involves nearly 100 researchers and practitioners, in partnership with the David R. Atkinson Center for a Sustainable Future.

Bassuk will bring her passion for urban trees to the public in December in a lecture at the 92nd Street Y, as part of a "Changing Earth" series co-sponsored by Cornell Plantations, which will also feature a talk by Plantations Director Don Rakow MPS '77, PhD '87, about the importance of gardens in community parks.

Shorna Broussard Allred, associate professor of natural resources, and extension associate

Gretchen Ferenz also educate residents in Jamaica, Queens, and Canarsie, Brooklyn, about the importance of trees as part of the Urban Forestry Community Engagement project.

"After gaining input from residents, we are now educating them so they are able to be stewards of their urban trees and the broader environment, with the expectation they will take this knowledge and make tangible changes in their communities over the long term," Ferenz says. "This is a model of research and extension working together to address a real-world need."

New York City landmarks including Yankee Stadium and Lincoln Center also have Cornell to thank for their latest lush green looks—turf specialist Frank Rossi PhD '92 helped design sustainable grass installations at both venues.



An Appetite for Change

Residents of low-income communities in urban areas often lack easy access to healthy foods. For Miguel Gomez, assistant professor in the Charles H. Dyson School of Applied Economics and Management, that challenge has led to his involvement in a project to improve access to fresh foods in 10 Northeast communities identified as "food deserts"—including both urban and rural areas. Funded by the USDA, researchers at 10 institutions will study not only access, but also supply, with a focus on regional production and distribution. First steps include developing relationships with store owners and community leaders to identify the key barriers to a healthy food supply, and setting up interviews to understand supply chains and consumer behaviors.

"The goal in the five-year project is to increase consumption and availability of healthy foods and therefore increase the health of children, adults, and elderly in these communities," Gomez says.

Some of that production may very well come from the boroughs, if attendance at Rob Ralyea's MS '98 workshops are any indication. The senior extension associate in the Department of Food Science travels around the state offering advice to those who want to start small dairy processing plants, such as ice cream shops. A workshop held in Brooklyn last spring generated a lot of interest, he says.

"Being armed with information helps those who start a business do it right the first time and helps bolster the dairy industry in New York," Ralyea adds.

From local production to global outreach, CALS is working with the United Nations to solve global food issues. Cornell has housed the United Nations University Food and Nutrition Programme for Human and Social

Development (UNU-FNP) since 1986. Patrick Stover, director of the Division of Nutritional Sciences, serves as director of the UNU-FNP.

Also, Cornell recently partnered with UNICEF, the United Nations Children's Fund. Currently underway is a project that uses existing distance education infrastructure from *Cornell Nutrition Works* to provide training for UNICEF nutrition field staff on infant and young child feeding procedures. The course, "Programming for Infant and Young Child Feeding" will include concepts on optimal breastfeeding, complementary feeding and infant and young child nutrition in emergencies and in the context of HIV/AIDS, explains Stover.



Getting Their Hands Dirty

When it comes to producing healthy food, an increasing amount of New Yorkers prefer to do it themselves. An estimated 1,000 community gardens have cropped up across the city, and many Brooklynites are participating in the Farmer Field School program spearheaded by horticulture graduate student Megan Gregory.

A concept she picked up while a Peace Corps volunteer in El Salvador in its Agroforestry and Environmental Education program, the Farmer Field School methodology encourages residents to try environmentally friendly gardening practices together.

This season's experiment involved using cover crops to enrich the soil and discourage weed growth. Participants at 10 community gardens, three backyard gardens, and youth farms in Bedford-Stuyvesant and East New York planted crimson clover, wheat, and hairy vetch, a soil-improving legume. They experimented with different combinations and recorded the results, which will be shared in both English and Spanish on a bilingual website.

"When they are well-facilitated and supported, Farmer Field Schools can build farmers' and gardeners' understanding of ecological processes in agriculture, and their capacity for problem-solving and innovation," Gregory says. "This is especially important in cities, where farmers and gardeners must adapt traditional agricultural practices to overcome the challenges of growing food in an urban setting."

But before they dig too deeply, they should be sure the soil is safe. Urban soils often contain contaminants such as lead and other heavy metals that can harm human health, and gardening can increase exposure through incidental soil ingestion, inhalation, and crop consumption.

Since the founding of Cornell's Healthy Soils, Healthy Communities project in 2009,

extension specialists, faculty, and students from the Department of Crop and Soil Sciences, Cornell Cooperative Extension, the New York State Department of Health, and community partner GreenThumb have tested the soil of 75 community gardens in all five boroughs for contaminants and other properties, according to extension specialist Hannah Shayler MS '08. Drawing on their soil remediation research, the group then educates the public and helps develop strategies to manage any contamination and reduce risks.

"Urban community gardens certainly present interesting challenges because gardens are all so unique and different," Shayler says. "It's very important to us to continue to involve New York City gardeners in our research and development of educational programs to promote best practices for healthy gardening."



Thar She Blows!

When acoustical traps were laid in New York City waters in 2008, researchers with the Cornell Lab of Ornithology's Bioacoustics Research Program, initially funded by New York State Department of Environmental Conservation, were surprised to hear not only the 20-minute serenades of six species of whales, but a cacophony of other fish.

"Black drum fish lit up the night with their choruses. Males were out there singing their hearts out: 'Hey Baby! Hey Baby! Hey Baby!'" says Chris Clark, director of the Bioacoustics Research Program. "There's a cornucopia of life 10 miles off the Verrazano Bridge. It's mind-boggling!"

Senior extension educator Chris Pickerell '93 also spends many of his days in the waters of Long Island Sound—wearing a wetsuit and SCUBA gear. Pickerell leads the Eelgrass Restoration Program.

A critical habitat for many fish and shellfish in Long Island Sound, including bay scallops, striped bass, seahorses, and pipefish, eelgrass meadows also help prevent shoreline erosion and keep near-shore waters clear of fine sediments, he says.

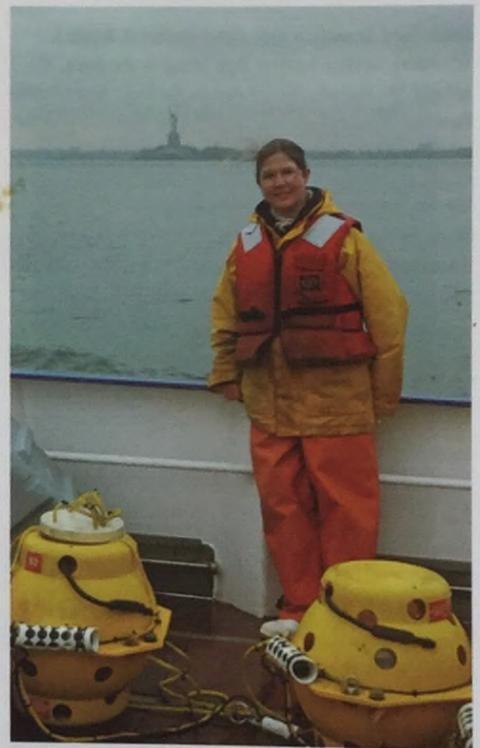
Once home to extensive eelgrass meadows, the growth in Long Island Sound was wiped out in the early 1930s by a slime mold epidemic called the "wasting disease," and recovery has been slowed by shoreline development and dredging.

Pickerell hopes to reverse this trend, by enlisting community volunteers who weave eelgrass shoots into burlap disks, a transplanting method that he developed over the last five years. The success of the program has gained national and international attention, with Pickerell now consulting for others who wish to replicate his efforts along both U.S. coasts as

well as in Europe.

Matt Hare, associate professor of natural resources, also works in Long Island Sound, to study its surf clam population, which has turned out to be different than anyone expected.

Not only does the major harvesting area contain a well-known northern variety (*S.s. solidissima*), but also a relative from the south (*S.s. similis*). The discovery, made last year, may impact the clamming industry in the Long Island Sound, particularly in estimating sustainable yields. Hare is now trying to figure out how and when the warm-weather clam arrived, whether the two subspecies are hybridizing in the temperate waters that they share, and if there are other hidden populations of *S.s. similis* in southern New England.



Whale researcher Ingrid Biedron in New York harbor with Marine Autonomous Recording Units affectionately called "Pop-ups." Credit: Nicole Nihnovets, NYSDEC



When Bed Bugs (& Other Pests) Bite

The time is rapidly approaching when every New York City resident will have had at least one encounter with a bed bug. Luckily, Jody Gangloff-Kaufmann PhD '99 is on the case.

Cornell's urban entomologist has been busy fielding calls from concerned citizens, business owners, and officials about the pesky critters that have invaded the city. She was one of 20 experts who helped develop guidelines for New York City, which include a bed bug task force



Above: Carol Kennedy, a high school teacher at Arturo A. Schomburg Satellite Academy High School in the Bronx, NY, brought her students this summer to the Eagle Street Rooftop Farm in Brooklyn, New York, as part of an exploration of the urban environment. Photo credit: Alex Kudryavtsev.

and a broad education campaign. Together with her colleagues at the New York State Integrated Pest Management Program—which also runs a project targeting multi-occupancy apartment complexes—Gangloff-Kaufmann is waging an all-out information assault in an attempt to battle the bug.

“Awareness is prevention, prevention is the cure,” she says.

Meanwhile, wildlife expert Paul Curtis has his own campaign to reduce conflicts between city dwellers and the critters that have been moving into their urban jungle in growing numbers recently: coyotes, deer, raccoons, and geese.

He is in the midst of a five-year study of coyote ecology and behavior to look at changes in both coyote and human behavior.

“These animals can flourish in urban parks and green spaces, including areas such as Central Park,” Curtis says. “People will need to find ways to coexist with urban wildlife to minimize potential conflicts and concerns.”

Other city creatures have proven to be excellent educational tools for first-graders at P.S. 228 in Queens. By participating in the Cornell Lab of Ornithology’s Celebrate Urban Birds project, the pint-sized citizen scientists discovered they have a lot in common with birds, needing the same things to survive: air, water, food, and shelter.

Students put feeders in trees to bring sparrows and pigeons in closer. They watched and counted the birds for several weeks and reported what they saw online to the Cornell Lab, providing data for studies about how



Above: A New York City Department of Education (NYDOE) official and an NYDOE Intern observe a hydroponic plant’s root system with Philson A.A. Warner at the Cornell University Cooperative Extension (CUCE) Nutrient Drip Flow Technique Hydroponics SECA Cell at the CUCE Rooftop Labs.

birds survive in cities.

In a landscape of brick and pavement, teachers at the magnet school for the arts used the project to spark student curiosity about nature.

“We believe that when children watch birds, then draw or paint them, they are engaging and observing on a deep level, gaining appreciation for city wildlife they may not have noticed before,” says project leader Karen Purcell ’87.

“In addition to our playground observations, students also watched birds at home and even their parents became citizen scientists,” says first-grade teacher Belkis Parache. “They were fascinated with the new birds they found and so excited to learn the names of the birds they were seeing!”



Students of Sustainability

For students at the Food and Finance High School in Manhattan’s Midtown West neighborhood, growing hydroponic lettuce and herbs and raising tilapia are both part of the curriculum and a means by which they are making their own community sustainable. The school, which focuses on culinary arts

and hospitality-oriented finance, opened in the fall of 2004, and Cornell Cooperative Extension–New York City (CCE–NYC) was involved early on because of Cornell’s hydroponics and aquaponics expertise. Not only is produce grown in the labs an integral part of the school’s science curriculum, it also supplies school lunches, according to Don Tobias, executive director of CCE–NYC.

This summer, CCE–NYC also began planning for a greenhouse on the school’s roof, with the intent to open a small retail operation where students will sell the crops to members of the local community, he says.

And CCE is taking part in a \$1 million USDA initiative to strengthen school garden networks in 57 sites across the country. Programming to educate youth gardeners—including the creation of on-site gardens—will begin this spring at 21 schools across New York, with four in New York City. The project hopes to promote sustainability and increase access to and consumption of fresh fruits and vegetables by elementary school children. It will also measure their physical activity, time spent outdoors, and ecological literacy. Through the Civic Ecology Lab, natural resources Ph.D. student Alex Kudryavtsev works with several community-based non-governmental organizations in the Bronx—including The Bronx River Alliance, Youth Ministries for Peace and Justice, and Rocking the Boat—to engage teens in environmental stewardship projects, including the restoration of urban forests, parks, riparian (where land meets a river or stream) habitats, and oyster reefs along the lower eight-mile section of the Bronx River. He also captures stories from the students and other educators and shares them on a blog and website (www.urbanec.org).

And low-income minority high school juniors from Manhattan’s Lower East Side got an opportunity to pursue original environmental research this past year, thanks to a collaboration between the Henry Street Settlement and CCE–NYC’s Family and Youth Development program. College Achievement through Urban Science Exploration (CAUSE) brought students to Ithaca for a three-week summer college program, in which they worked with Cornell students on research projects and visited local areas of environmental interest.



From soil to surf, from treetops to rooftops, CALS’ commitment to creating an ecologically healthy and livable New York City will forever remain elemental to the university’s land grant mission of serving the people of New York and supporting economic and community vitality throughout the state. •



The Heat Is On:

From Subways to Dairy Barns,

Is New York Ready for Climate Change?

Climate change is happening, and it will transform how New Yorkers live, work, and play in the coming decades. CALS is at the forefront of helping New York both prepare for the challenges and seize the opportunities of a climate in flux. **BY AMANDA GARRIS**

In 2080, will New York City residents take a submarine to work instead of the subway? Will vast irrigation networks be as commonplace in western New York as they are today throughout the western United States? Will once rare catastrophic flooding in the Southern Tier, such as that recently experienced throughout the region, become the norm?

More than 20 College of Agriculture and Life Sciences scientists—including representatives from the departments of Earth and Atmospheric Sciences, Natural Resources, Horticulture, Plant Pathology and Plant-Microbe Biology, Ecology and Evolutionary Biology, and Animal Science—recently addressed these questions, predicting climate trends for the next century and assessing their potential impacts in a comprehensive climate change response analysis focused on New York. The ClimAID report, funded by the New York State Energy Research and Development Authority (NYSERDA), is a roadmap to prepare the state.

Floods and extreme weather are immediate, headline-making examples of how incremental increases in the earth's temperature are already affecting New Yorkers, but the real impact will be seen over the coming decades. Shifting weather patterns are poised to affect everything from food and drinking water quality to the snowpack for winter recreation.

Across the state, heat waves are predicted to be more frequent and intense, requiring a greater power supply to keep air conditioners humming, particularly in the urban heat island

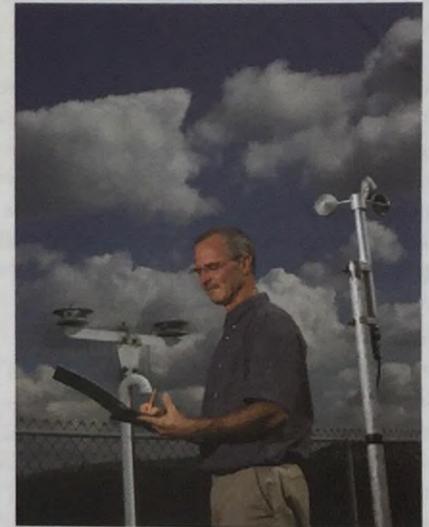
of New York City, which presently accounts for half of the state's energy use. The sea level rise—predicted to be from 8 to 55 inches by 2080 depending on the degree of polar ice cap melting—would jeopardize New York City's low-lying, coastal power plants, railways, and transportation hubs. In other parts of the state, irrigation systems might be regularly required to chaperone crops through heat waves.

Working with colleagues from Columbia, Rutgers, the City University of New York, and the Mount Sinai School of Medicine, Cornell experts applied climate models and predicted the outcomes for New York's farms, transportation systems, waterways, energy sector, ecosystems, telecommunications, public health, coastal zones, and wildlife.

"Our goal was to provide decision-makers with cutting-edge information on New York's vulnerability to climate change and stimulate planning for adaptation," says Art DeGaetano, professor of earth and atmospheric sciences and one of three principal investigators for the report. "We have the capacity to address many of the risks ahead, buffer the negative impacts, and embrace new opportunities."

A New Climate for Farming

Farming contributes nearly \$5 billion annually to the state's economy and occupies about 23 percent of the state's land. Many of New York's iconic and economically important farm products—including dairy products, apples, and maple syrup—will require some strategic adaptations to maintain current levels of production.



Art DeGaetano

Credit: University Photo

Average temperatures—expected to increase 4 to 9°F well before the end of the century—will drive many of these changes. While uncomfortable for humans, these temperatures are downright detrimental to milk yields.

"Cows produce maximum milk between 30 and 75°F," says Larry Chase, professor of animal science. "With heat stress, cows spend more time standing and walking and less time resting. A decrease of one hour of resting time is associated with a 2-3 pound decrease in milk-production per cow. Ultimately, climate change is predicted to cause a 5-15 percent decline in milk production."

The solution: retrofitting barns with ventilation fans and sprinkler systems to keep cows calm, cool, and collected.

For the state's tree crops—including apples and maples—trends in winter temperatures rather than summer highs present a challenge. Ironically, despite the overall warming trend, extreme temperature swings in recent winters have led to an increase in cold damage.

“Variable winter temperatures can ‘de-harden’ plants and make them more susceptible to mid-winter freeze damage,” says horticulture professor David Wolfe. “Or they may leaf out prematurely in early spring and then get hit by a frost event.”

Warmer winter temperatures also affect maple syrup production, which requires an alternation between cold nights and warm days to drive the sap for tapping. Maple producers are already experiencing impacts from climate change.

“Maple yields have been slowly decreasing for 30 years,” says professor of ecology and evolutionary biology Brian Chabot. “Studying the climate models, we anticipate that producers will at least need to begin tapping earlier—in January or February—instead of waiting until March.”

He added that growers have options, from the simple—plant a few more maple trees—to the technological; using a vacuum tapping system, for example, has been shown to double or even triple sap yield.

A potential advantage for New York under the climate predictions is a longer growing season, which may bring opportunities for farms to diversify into new crops and varieties. Cool season crops such as broccoli, spinach, and peas may be replaced by heat lovers like tomatoes. European wine grapes, grown in several parts of the state, would likely grow better with a change in climate.

Shifting Species

While farmers are starting to learn about the array of options available to them to adjust to climate change, native species are responding on instinct to earlier springs and warmer summers.

A recent analysis of weather over the past 30 years by the National Oceanic and Atmospheric Administration showed that average annual temperatures have increased in every state in the continental United States, and climate models predict the trend will continue. In New York, climate change is predicted to affect phenomena as diverse as the varieties of apples that will grow to the runway length required for airplane takeoff.

“Researchers at the Lab of Ornithology have observed earlier arrival of migrating birds as well as bird populations moving northward within their traditional ranges,” says Wesley Hochachka, assistant director of the Lab of Ornithology and an expert in bird population studies. “They are trying to understand thermal constraints on birds, from direct heat stress to effects on the number of eggs they incubate.”

While birds can take flight in search of more hospitable areas, other species will be limited by their ability to move into suitable habitats. Accordingly, large shifts in species composition are expected in natural landscapes, and loss of unique habitats in New York such as spruce-fir forests and alpine tundra is predicted.

Wolfe, the lead author of the Ecosystems and Agriculture chapters of the ClimAid report, says this creates a need to preserve wildlife corridors to allow animals to migrate out of areas that no longer provide hospitable habitat.

“As habitat disappears, an important policy is to establish migration corridors that would allow animals from insects to large mammals avenues to move to a new environment,” says Wolfe. “Because much of the forested land is privately owned, there will be greater opportunities for citizen science and monitoring.”

Also targeted for monitoring: invasive weeds and insects that will be drawn to the warmer climate. Kudzu, a vine native to China and Japan which already blankets entire landscapes in parts of the American South, will likely climb its way into New York. On the fauna side, new statewide tracking systems will be

needed to monitor and manage newly arrived pests like the hemlock woolly adelgid, which kills or weakens the trees with a toxin it injects while feeding.

“When considering the changes in ecosystems, we need to think about ecosystem services, like air and water purification and flood control,” notes Wolfe. “We’ll need to manage for ecosystem services and biodiversity instead of strict species conservation.”

Water, Water Everywhere?

Will storms like Hurricane Irene, which deposited 10 inches of rain in less than 24 hours, become more frequent? Although storm prediction was not part of the analysis, DeGaetano's data consistently shows more extreme precipitation, with more rain falling in flash-flood-prone heavy downpours and less in gentle showers.

Heavy rains and flooding don't just affect crop yields—flash floods threaten infrastructure and personal property, as more than 120,000 residents in the Binghamton area and northern Pennsylvania found out when they evacuated their homes in the wake of the latest tropical storm.

Overall, precipitation in New York is predicted to increase by 15 percent by 2080, but the pattern of precipitation will change, with more rain falling during the winter months and periods of drought occurring during the summer.

Reductions in the flow of large rivers and lower groundwater tables during summer heat waves could lead to conflicts among competing water users, including farmers, homeowners, and industries.

CALS faculty are already working directly with municipalities to shore up their long-term planning of water resource infrastructure in light of climate predictions.



Susan Riha

Credit: University Photo

“We are coaching municipalities on adaptive management—also called non-optimal management—to help them consider possible changes in climate when making decisions regarding when and where to invest,” says Susan Riha, professor of earth and atmospheric sciences and director of the Cornell Water Resources Institute.

Communities can make critical decisions now

about increasing the size of storm pipes, siting wastewater treatment plants outside of high-risk flood plains, and even moving homeowners out of high-risk areas.

The predictions for a plentiful and seasonally variable water supply puts New York in an enviable position for agriculture and summer recreation, compared to other parts of the country. But managing the excess water is key, says Riha.

Closer to campus, a research associate who works with DeGaetano has been applying climate models to make decisions on the future source of Ithaca's drinking water: Six Mile Creek Reservoir or Cayuga Lake?

"Climate change was not really a factor in decision-making before now," says DeGaetano. "But using the climate projections, it's clear that a larger body of water is a much less risky water source in the long term."

Tools for Decision-Making

Climate change solutions come at a price, which presents a challenge—at what point does a new climate pattern justify action by a New York farmer or a town?

With the predictions from the NYSERDA report in place, climate science is transitioning from a focus on projection to strategies for adaptation, mitigation, and modeling of complex weather patterns.

Wolfe is working with colleagues to develop online decision-making tools to help farmers evaluate when to invest in adaptations such as expanded irrigation capacity or improved drainage systems.

"Farmers will be able to play out scenarios tailored to the unique climate projections for their farm," says Wolfe. "They will be able to evaluate the difference in profits if they wait five years to invest in irrigation compared to waiting 10 years. We want to give farmers tools to optimize how much and when they invest in adaptation strategies."

From not enough water to too much, Gang Chen MS '96 PhD '98, assistant professor of earth and atmospheric sciences, is developing



Gang Chen

Credit: University Photo

new methods to predict the location and severity of snow storms. Powerful winter storms can be very expensive to cities due to the cost of snow removal, and were identified in the ClimAID report as a particular threat to citizens in remote rural locations due to service disruptions in power and telecommunications.

The first of four new joint interdisciplinary hires made in conjunction with the David R. Atkinson Center for a Sustainable Future, Chen uses physics to analyze global-scale weather phenomena like El Niño and La Niña cycles and the jet stream.

"The jet stream is like a train moving from west to east, with winter storms as the passengers," says Chen. "Where they disembark, they can deposit massive amounts of snow like that experienced in Washington, D.C., last winter."

Predicting the jet stream's path will help predict where storms will occur in the future.

Another key partner for decision-makers is the Northeast Regional Climate Center directed by DeGaetano. It is one of six federal centers that collect climate data and develop tools for analysis.

"For years, we have been a trusted source of current and historical weather information for everyone

from farmers to lawyers to engineers, and lately we are providing more information about the future climate," he says.

"One of our goals is to let people know that the weather conditions they take for granted have not only already changed, they will continue to be a moving average." •

CLIMATE PREDICTIONS BY REGION:

The ClimAID analysis recognizes that each region within New York will face unique challenges. Here's a sample of what's predicted by 2080.

WESTERN NEW YORK & THE GREAT LAKES PLAIN: This region brings in the highest agricultural revenues in the state, but the increasing risk of summer drought will make irrigation a commonplace safeguard.

CATSKILL MOUNTAINS AND THE HUDSON RIVER VALLEY: New York City's watershed will

no longer have a climate suitable for spruce and fir forests, and hemlock trees are threatened by the hemlock woolly adelgid—an insect pest moving northward as the climate warms. Cool-water-loving brook trout will be replaced by bass. While winter recreation will be reduced by lower snow pack, it will be offset by increased summer opportunities.

SOUTHERN TIER: This dairy-dominated agricultural economy will need barns retrofitted with cooling systems. Flooding along the Susquehanna River may increase, and the region will be the first line of defense against invasive species migrating north.

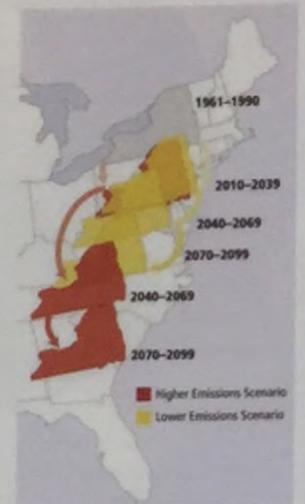
NEW YORK CITY AND LONG ISLAND: The coastal zone, which pairs high population density with vulnerability to storms, will experience the greatest economic impact in the state. The upper-end prediction for sea level rise by 2080—two feet—would flood the subways and put 25 percent of New York City streets under water. The heat-absorbing properties of concrete and pavement can make the city 10°F higher than the surrounding rural areas.

HUDSON AND MOHAWK RIVER VALLEY: The Hudson River will be vulnerable to saltwater ingress. Popular apple varieties may decline because winters are insufficiently cold.

TUG HILL PLATEAU: Hydropower currently provides 19 percent of New York's energy, much of it generated in this region. While lake-effect snows could increase in the short term, water levels in the Great Lakes could decline.

ADIRONDACK MOUNTAINS: The midwinter snowpack in the Adirondacks is predicted to barely surpass 4 inches by 2080—compared to the current average of 16 inches—decreasing winter recreation opportunities and threatening many of the region's unique alpine plant and animal species.

The final report is expected in November 2011.



Credit: Union of Concerned Scientists/NECA



ON OUR a BEST ^ BEHAVIOR

Why do we need sleep? How do we control movement? How could societies be more cooperative? Researchers in the Department of Neurobiology and Behavior are gaining remarkable insights into these questions and more through their study of our fellow animals.

By STACEY SHACKFORD

What can a simple, sinewy four-millimeter-long fish larva possibly tell us about complex conditions like Parkinson's disease? How about the humble honeybee—and politics? Or the cacophonous cricket—and courtship.

Plenty.

From basic biology to befuddling behavior, it turns out there's an awful lot we can learn from our fellow animals, if only we know where to look.

Scientists in the Department of Neurobiology and Behavior (NBB) peer into the spines of zebrafish, hover over the hives of honeybees, and venture into the wild to watch other animals in their natural habitats.

Their discoveries have shed light on the way we walk, talk, and walk the talk. And their unique collaborations have helped transform the field, which is one reason why their classes are consistently full of curious undergraduates. Around 250 choose it as their focus, making NBB the most popular concentration among biology majors.

Neurobiology and behavior is a synthesis of many disciplines: physiology and anatomy, ecology, vertebrate and invertebrate zoology, biological psychology and anthropology, genetics, developmental biology, chemistry and biochemistry, physics, and mathematics. The interests of the department's 23 faculty members and 29 graduate students span a broad spectrum. Some study how behavior works on the neurological level, others how it evolves. The common glue is a shared interest in what animals do—and what that might mean for humans, who are animals too.

Rules of Attraction

Imagine visiting a flower as a bee. It would be a lot like entering a big, bright bouncy castle with a ball pit in the center, sensory overload giving way to confusion as you try to locate a single straw hidden in the dark depths in search of a few mouthfuls of sweet, sustaining sugar water—while also expending a lot of energy hovering and manipulating your bulbous body into strange configurations. You'd probably appreciate a few tactile or olfactory cues.

Luckily, plants provide such assistance, often through complex chemical processes that have only recently been unraveled – by NBB professor Rob Raguso and a few others worldwide – through the field of chemical ecology. Founded by Raguso's predecessor, Professor Thomas Eisner (see sidebar), chemical ecology is the study of chemicals involved in the interaction of organisms such as insects and plants.

Traditionally, it's been the bold colors and shapes of flowers that have attracted the attention of ecologists, and the assumption was that those were also the most important characteristics for insects.

But Raguso has found that this is not always the case. So much else has to be considered: scent, flavor, location, environment, population, and timing.

"All the bright displays and odor in the world may not convince insects to pollinate," Raguso says. "They interpret their world through environmental cues and context."

Raguso, who joined the department in 2007, has done groundbreak



Pollinating a flower can be a daunting task for bees and other insects. Luckily, the plants often offer some tactile and olfactory chemical assistance. Left: Credit Kent Loeffler; Above: Barrett A. Klein

ing work in understanding odors. For instance, he discovered that strawberry pollen has an attractive scent, that the same odors dissolved in the nectar of sky pilot flowers can be used to simultaneously attract pollinators and repel enemies, and that some plants communicate with their preferred pollinators through a “secret handshake” of chemicals.

A discovery that tobacco hornworm moths have carbon dioxide receptors on their lips led him to explore what role the compound might play in pollination. He found that the large flowers let out a big breath of CO₂ when they exploded open at night.

Although the flowers remained open and visually attractive all night, the moths were more likely to visit when the presence of CO₂ was strongest, perhaps because it indicated the flower was newly opened and thus more likely to contain nectar.

“That was a riveting discovery. It’s something really basic and it makes sense to everybody in retrospect, but no one had thought to look for it,” Raguso says.

Raguso’s work has some very practical implications for humans. Understanding why insects are attracted to certain colors and odors could lead to the development of more effective traps, transforming pest management practices. And his research sheds a lot of light in other applied industries where chemistry matters, such as wine.

Moving Testimonies

Two floors down, on the ground floor of Corson-Mudd, Professor Joseph Fetcho spends his days surrounded by fish, something he didn’t imagine he’d be doing 10 years ago. He started out as a snake person. But he’s grown quite fond of the tiny swimmers whose transparent bodies enable him to directly observe their inner workings.

Fish talk From hoots and grunts to cringe-inducing cries, it turns out that fish and humans have a lot in common when it comes to communication. Like other vertebrates, fish vocalize to communicate important information—such as health and reproductive status—to potential mates and neighbors. In the case of the toadfish, they use their “swim bladders,” air-filled sacs that allow fish to alter their buoyancy. By vibrating nearby muscles, the sacs also become sonic instruments. Boris Chagnaud—a postdoctoral researcher in Professor Andrew Bass’s lab who is now at the University of Munich—identified two distinct groups of neurons that control the duration and frequency of such vocalizations. The finding could provide a road map for understanding how our own brains build neural codes to control our larynx, and how birds control their syrinx, Bass says.

A fully sequenced and easily manipulated genetic system adds to the attraction, as does the availability of “brainbow” gene technology that allows for the creation of color-coded nervous systems and dynamic mapping of changing neural activity in live animals.

Thanks to the humble fish – and Fetcho’s visionary observations – we now know a great deal more than we once did about how the nervous system produces and controls movement.

We know that our circuits are built in a highly organized, temporal order, for example.

This has potential implications for Parkinson’s disease, which is characterized by a slowing of movement. Fast movements seem to be the first to go; those are also the first ones the body produces, the “oldest” in the system, according to Fetcho’s research, so there may be some correlations.

“If you don’t understand how speed of movement works, it’s very difficult to begin to understand what happens in Parkinson’s disease,” Fetcho says. “We hadn’t even thought to look until we saw this pattern in age-related order tied to function in zebrafish.”

The small fish are also helping Fetcho unlock clues about what happens in the brain while we sleep – and why we sleep at all.

“One of the biggest questions in neurobiology is why we need sleep, which you’d think we would have answered by now,” says Fetcho.

“Animals that are deprived of sleep die. Something fundamental is going wrong with their nervous system function, yet we still don’t know what that is.”

By observing changes in neural activity at different times of the day, in different states of sleep, Fetcho hopes that zebrafish will once again provide critical answers to this fundamental, universal question.

“I think to some extent society is losing sight of the relevance of all animals for human biology. It’s very important to appreciate that we can learn a lot about human biology by studying non-human animals,” states Fetcho.

Cooperative Attention

Fetcho’s colleague Professor Thomas Seeley doesn’t just consider himself a scientist; he’s a “social physiologist.” His subject: bees.

“The hive is an exquisite piece of biomachinery that runs as smoothly as our bodies,” Seeley says. “It’s like a superorganism, with all of the bees cooperating and working together to make a functioning whole.”

“I want to understand how they work so well to solve problems, such as controlling internal temperatures, gathering enough nutrient-rich food, deciding when to expand the nest, and where to live when setting up a new home. These are all questions we face ourselves as organisms, but bees have to do it together, as a society,” he adds.

An example of this is outlined in his bestselling book, *Honeybee Democracy*. When bees relocate to a new home, they leave the hive in a swarm of some 10,000 bees. The vast majority of them rest quietly in a beard-like cluster that hangs from a tree branch, while about 500 fly off to scout out potential dwelling places.

When they return, each tries to sell her discovery through a series of signals that form a “waggle dance.” The bees then select the winning site



Don’t call me Polly They’re talkative birds, with impressive, humanlike linguistic abilities, and thanks to graduate student Karl Berg, we now know that parrots learn their first calls just as human infants do—from their parents. Berg ventured to Venezuela to study green-rumped parrotlets and found that the birds make signature contact calls, sounds that function much like a name, that are used to find and recognize mates and identify chicks. He swapped eggs around to see if the chicks would pick up calls resembling those of their foster parents or their biological ones. He found the foster parents were their role models.

together by conducting a popularity contest – much like our own political process, Seeley says. “The one difference is that the bees are completely honest, and to the best of our knowledge they don’t resort to negative campaigning.”

Honeybees have good reason to be so harmonious: everyone’s working towards the same reproductive goal, with a single queen bee generating all the offspring, and the worker bees acting as policemen, eating any errant eggs laid by common workers.

That’s not the case for wasps, says Professor Hudson Kern Reeve, Ph.D. ‘91. Their nests often contain more than one female. Some are more dominant than others, and they seem to exercise this dominance at different levels. If they sense one of the subordinate females may leave the colony and venture out to set up her own competing nest, for instance, they may cede some of their reproductive control in order to entice her to stay.

“The workers have lots of incentives for being selfish in a wasp society, and that’s why I’m interested in them. How do they balance the degree of selfishness and cooperation within these societies?” Reeve says.

It can create conflict, but not always. There’s often a tug-of-war between individual and group needs, and it seems to be driven by competition. Internal competition is often overcome by the need to band together to stave off external competition. Introduce a new neighboring colony, and suddenly production and cooperation skyrocket, Reeve has found. Sound familiar?

One of Reeve’s students, Jessica Barker, tested this tug-of-war theory on Cornell undergraduates. She handed \$100 to the students and gave them the option to either keep the entire sum or contribute it to a pot whose contents would be multiplied by some factor and then divided equally among the group’s members. The majority contributed to the pot. When an element of competition was added – participants were told they could pay for increased shares – cooperation dropped, and was only restored when they were reassured there would be no cheating.

Reeve believes many similarities can be drawn between insect and human societies, especially when it comes to cooperation and conflict.

“They’re not just small-brained robots with wings. They’re making sophisticated social decisions from moment to moment,” he says. “The same principles might also apply on the molecular level, within cells and genomes.”

“Can we explain the variation of conflicts in a way that will enable us to minimize conflict in human groups and ultimately design more cooperative societies? That’s my long-range goal, but we are not going to do it right unless we understand the underlying behavior based on sound evolutionary principles,” Reeve adds.

Singing Clues

Professor Kerry Shaw is also interested in evolutionary principles, particularly what drives new species to form.

She observes crickets, and in particular, closely related cricket species in the genus *Laupala* endemic to Hawaii – an ideal place to study evolution in action because the Big Island is a contained geographic area



Run, mouse, run When you’re being chased by a hawk, you’re better off scampering than galloping, even though galloping is faster—dexterity wins over speed. That’s just one lesson Professor Ronald Harris-Warrick learned by studying the way mice run. He identified a group of spinal cord

nerve cells responsible for locomotion in the animals and studied how they worked at different speeds to maintain a normal running pattern and prevent the switch to galloping at high speed. It’s the first such research to examine the mouse spinal cord at more than a single locomotion speed, and it involved various methods, including meticulously inserting microscopic electrodes into single nerve cells and electrically stimulating nerves to simulate signals from the brain.



Post doctoral associate Kimberly McArthur, above, takes a close-up look at a zebrafish in Professor Joe Fetcho’s lab, while technician Nicole Gilbert, left, tends to the hundreds of tanks of zebrafish in the basement of Mudd Hall. Credit: Kent Loeffler

with a well-documented and visible geologic history that goes back just 500,000 years.

Environmental adaptation does not explain the speciation of crickets on the islands, but changes propelled by sexual selection might.

The male crickets Shaw studies produce a simple song, and the females are very attuned to variations in that song, with a remarkable ability to distinguish pulse rates between different species.

Fortunately, those simple songs are also pretty simple to synthesize on a computer. Placed on a table between two speakers, a female cricket will walk toward the source of sound she finds most appealing, making it easy to measure her preferences as researchers introduce different songs.

Shaw suspects some of those preferences may be genetically driven. Much is unknown about cricket genetics, but Shaw has been able to map the genes believed to be connected to the crickets’ communications and has found that the simple songs are actually controlled by a complex assortment of genes. These genes seem to be located in the same region of the genome, in both the male and female, which suggests that which



Avian divorce Bird families have more structural parallels to human families than most primates, according to Emeritus Professor Stephen Emlen, who has spent 25 years observing avian species that engage in bi-parental care and cooperative breeding. When a stable pair bond is broken (through death or separation), and a new replacement pair bond is formed, it often leads to increased

conflict among family members. These changes closely parallel changes reported after divorce and remarriage in human families. Predicting these changes in birds has implications for understanding stepfamily dynamics, Emlen says. Family counselors have taken note, incorporating many of his theories into their practices.

drives the call also drives the response.

"If those genes are linked, it's easy to imagine how changes in one trait could lead to changes in mating," Shaw says.

As the signals and preferences among different groups of crickets change, they become less likely to breed outside their groups, and the gene flow between them declines until it becomes completely severed, and separate species emerge.

"Although we don't completely understand the reasons, we can see the consequences," she says.

In addition to studying cricket behavior, Shaw also does research into the basic biology of her subject.

"Understanding how species exist in the world is a fundamentally important question that enriches our experience," she explains. "Where would we be if we didn't have a knowledge of biodiversity? I think we would be much poorer."

Inspiring Behavior

Corson-Mudd Hall is one of the only places in the world where you can find such breadth of behavioral research.

"We are pretty special," Seeley says. "Most programs have neurobiology in one department, and behavior tucked elsewhere, such as ecology and evolutionary biology.

"We envisioned in the 1960s that neurobiology and behavior were converging, and that proved correct," he adds. "Traditionally, the field has been interested in investigating the activities of individual neurons, on a cellular basis. The hot area now is in the circuitry that underlies behavior, how the nervous system processes emotions or handles decision-making. The field has kind of caught up to us."

Raguso definitely sees the benefit in being constantly challenged to think beyond the science and consider it in context of behavior, adaptation, and evolution.

Fetcho agrees. He believes context is everything. When confronted with a fever, for instance, your instinct is to try to attack and alleviate it; but you may reconsider when you realize why the fever evolved – as a means for the body to kill bacteria.

"We must keep in mind these functional roles," Fetcho says. "Having people who think about what the behavior means for the organism in its environment helps us understand the neurobiology."

It's also led to some unexpected collaborations.

When Fetcho noticed a correlation between IQ and the ability to tap out a consistent, measured metronome rhythm, he suspected it might have something to do with good neural wiring and body control.

He shared his hypothesis with Reeve, who wondered whether there was further correlation among animal calls and the timing efficiency of their nervous systems, theorizing that the steadier songs would be more attractive because they suggested the creature would also have other favorable neural-controlled characteristics, such as quick reaction times.

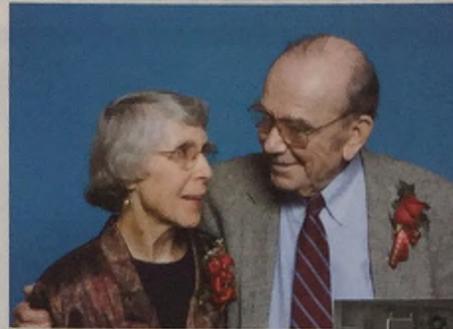
They then turned to Shaw, who used her crickets to test the theory. Early results seem to support their hypothesis, and the trio plan to continue the collaboration. •



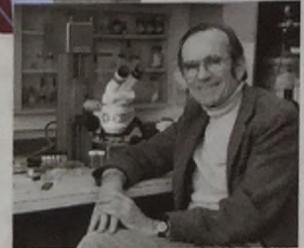
The flies have it Some species of flies have ears that are smaller than the head of a pin yet can localize sounds as well as ours can. Studies by Professor Ronald Hoy into how they solve problems of acoustical physics have led to collaborations with engineers to design a new generation of hearing

aid microphones that "biomimic" fly ears. Fruitflies have also proven a good model to study epilepsy, as they suffer from seizures similar to humans. Associate Professor David Deitcher uses the insects to help identify the pathways that regulate the relevant neuron activity. A group of undergraduates affiliated with the nonprofit student group FACES (Facts, Advocacy, and Control of Epileptic Seizures) also operate their own lab, in which they study the effects of epileptic drugs on the flies.

In Memoriam: Thomas Eisner



(Above) Thomas Eisner and his wife, Maria, at the 2004 CALS Alumni Awards reception. Maria served as an indispensable member of his research team, becoming an expert in electron microscopy. (Right) Eisner in his lab.



It was a love of insects that led Thomas Eisner to explore chemistry, biology, ecology, evolution, behavior, morphology, and even engineering. The resulting cross-disciplinary discoveries changed the field—and led to the creation of a new one.

Eisner joined the Cornell faculty in 1957 as an assistant professor in the Department of Entomology, and went on to uncover highly evolved processes and systems among insects, such as chemical defenses, that were previously unexplored.

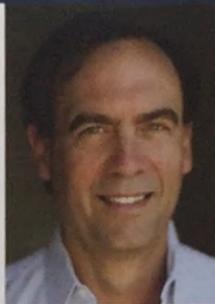
Among his discoveries of remarkable biological phenomena were: unraveling the web-making process of spiders; explaining the explosive, high-temperature spray of the bombardier beetle and how it wards off predators; and understanding why the firefly, which does not bite or sting, is not eaten (it tastes terrible!). He referred to insects as "master chemists" and was an authority on their pheromones.

Considered the "father of chemical ecology" with his Cornell colleague and friend Jerrold Meinwald, Eisner was author or co-author of some 500 scientific articles. In 1994, he earned the National Medal of Science, the highest scientific honor in the United States, and his bestselling autobiography *For Love of Insects* won the Best Science Book in the 2004 Independent Publisher Book Awards and the Louis Thomas Prize for Writing.

Beloved by students and highly regarded by his colleagues for his genius and humility, Eisner was also a well-known nature photographer; his film *Secret Weapons* won the Grand Award at the New York Film Festival and was named Best Science Film by the British Association for the Advancement of Science. He was also a classical pianist, mentor, conservationist, memoirist, and humanitarian, leveraging his own prestige to help imprisoned scientists in the Soviet Union and "disappeared" scientists in South American dictatorships.

Eisner died from complications of Parkinson's disease on March 25, at home in Ithaca, N.Y. He was 81.

GENERATIONS AND INNOVATIONS



CALS may be known for “growing the Ivy,” but our alumni are also seeding and growing tech startups that change the way we live, work, learn, and play. From the fun and games of Nintendo to the educational innovation of Blackboard, these Cornellians represent just a fraction of the outstanding alumni doing pioneering work in the tech sector.

KURT G. ABRAHAMSON '83 CEO, ShareThis

Kurt Abrahamson is the CEO of ShareThis, the largest platform for sharing Internet links, which reaches more than 400 million users across nearly 1 million websites. Abrahamson has an accomplished history of growing and leading successful digital media companies. He began his career at Jupiter Communications, which he helped build from a 12-person group to 520 employees worldwide, establishing Jupiter as a leader in Internet research. He was then hired as one of the first 900 employees at Google, where he managed the direct sales channel for publishers and helped lead the global launch of Google AdSense. He has also served as CEO of SocialMedia.com, a leader in online display advertising.

Abrahamson holds a master's degree in public policy from Harvard, and enjoys skiing and cheering for the San Francisco Giants.

H. ALEX RUIZ '90

Senior Vice President, Tenthwave Digital LLC

Alex Ruiz has been working in digital marketing for 15 years, successfully pushing the leading edge of using the Internet to connect with customers in a business known for rapid advances. Ruiz began his career in Account Management at K2 Design, one of the first boutique digital agencies. Since then, he's built digital and social marketing campaigns for brands like Jim Beam, Birds Eye, Adidas, American Express, and *The Wall Street Journal*. Ruiz has worked at a host of digital marketing agencies including 360i, Digitas, i33 communications, and Dennis Interactive. He currently holds the position of senior vice president of client services at Tenthwave Digital LLC, a nationwide firm specializing in social marketing, digital strategy, and website design.

Ruiz serves on the Advisory Council of the Charles H. Dyson School of Applied Economics and Management. He was also New York City regional alumni director for the Cornell University Council and a founding board member of the Cornell-Alumni Student Mentoring Program.

JANINA D. PAWLOWSKI '82

Co-founder, E-Loan

Founder and CEO, Pescadero Foods

Janina Pawlowski co-founded the online mortgage lender E-Loan in 1997 with an ambitious idea: use technology to remove as many steps as possible between the borrowers and the capital markets. In only a few short years, the company revolutionized the mortgage industry and became the largest online lender in the nation. Pawlowski left E-Loan in 2001 to spend more time with her daughter.

Today, Pawlowski raises chickens in Pescadero, C.A., and supports local agriculture. She is the director of the nonprofit Preservation of Land for Agricultural Needs Trust, which preserves agricultural land, and the founder of Pescadero Foods, which sells pasture-raised eggs in Northern California under the brand Wattle & Comb. Pawlowski hopes to use technology to forge closer connections between farmers and markets. She is a member of the Cornell Communications Advisory Board and has been invited to the President's Council of Cornell Women.

REGGIE FILS-AIME '83

President and Chief Operating Officer, Nintendo of America

As a teenager, Reggie Fils-Aime had always planned on pursuing a career in science. At Cornell, he majored in applied economics and finance, but an offer to join Proctor and Gamble's prestigious brand management program as an undergraduate steered him into sales and marketing instead. Since then, he has held leadership positions in marketing for Pizza Hut, Guinness beer, and VH1. Today, he is the president and chief operating officer of Nintendo of America—the first American to hold the position. He is credited with revamping Nintendo's image in North America and bringing gaming back to the masses. In fact, a following of gamers consider him an industry celebrity.

Fils-Aime is a member of the Advisory Council for Cornell's Communication department and has given a guest lecture at Cornell on Nintendo's marketing strategy targeted at gamers across a spectrum of demographics.

DANIEL CANE '98

President and Chief Executive Officer, Modernizing Medicine
Co-founder, Blackboard

Daniel Cane is a successful serial entrepreneur whose first company, founded when he was still an undergraduate at Cornell, revolutionized the classroom experience for students nationwide. In 1997, Cane co-founded CourseInfo LLC, which merged to form Blackboard, a technology company that engages students in interactive learning experiences. Cane was instrumental in raising more than \$100 million in venture capital and helping take the company public in 2004. Today, Blackboard has grown to over \$400 million in annual revenues and more than 1,400 employees worldwide.



In 2007, Cane founded Kadoo Inc., an online storage and personal sharing network, which was sold in 2009. Today, he is president and CEO of Modernizing Medicine, which is revolutionizing the way doctors and their patients interact through technology.

JOE ESSENFELD '01
 Founder and CEO, JIBE

Joe Essenfeld founded JIBE last year with a multimillion-dollar idea: let people use their existing online social networks to find connections when applying for jobs online. His company operates a website that uses Facebook and LinkedIn to connect job applicants with people they already know at companies where they apply. Essenfeld came up with the idea for the site after being frustrated by recruiting websites that provided a large quantity of applicants rather than high-quality applicants.

Essenfeld is an experienced executive with a background in operations and recruiting. Before JIBE, he was the chief operating officer of Insomnia Cookies, a late-night cookie delivery service found in college towns across the country. He also served as vice president of Dartcor Management Services, a corporate hospitality and restaurant management firm.

SCOTT K. BELSKY '02
 Founder and CEO, Behance Network

A quintessential entrepreneur, Scott Belsky believes that creative people who are especially productive have the ability to change the world. And he's dedicated his career to helping them make it happen. Belsky is the founder and chief executive officer of the Behance Network, the world's leading online network for creative professionals across multiple industries, including photography, graphic design, illustration, and fashion. Behance also oper-

ates a think tank, offers a mobile productivity application, and provides a service building professional portfolios. Belsky is author of the national best-selling book: *Making Ideas Happen: Overcoming the Obstacles Between Vision and Reality*, which details his research uncovering traits that help creative people bring their ideas to fruition.

Belsky has consulted for leading media and Fortune 500 companies and traveled the world to talk about his research.

He is a recipient of the CALS Outstanding Alumni Award, member of Cornell's Quill and Dagger honor society, and serves on the advisory council of the Entrepreneurship@Cornell Program. In 2010, he was named one of the 100 most creative people in Business by *Fast Company* magazine.

ADAM HIRSCH '04
 Chief Operating Officer, Mashable

A living testament to the power of persistence, Adam Hirsch worked his way into a job at the digital media company Mashable with some innovative ideas about social media, and an unwillingness to take "no" for an answer. After several years in the real estate industry, Hirsch wanted to reorient his career toward one of his passions: technology. So he began emailing the founder of Mashable with ideas about how to improve the growing blog. Following a flood of proposals, Hirsch eventually received a job offer.

Today, he is chief operating officer of the online news site that covers digital culture, social media, and technology and gets 13 million unique visitors a month. Hirsch oversees Mashable's business development, including marketing, partnerships, advertising, and events.

His initial ideas about bringing together communities of people interested in social media have come to fruition.

NANCY PEI-PEI CHEN '08
 Head of Logistics, Quirky

Nancy Chen is an expert in inventory management, planning, sales forecasting, and trend analysis. She is putting those skills to work at Quirky, an online consumer products company that uses social networking to empower people to bring their inventions to market. The concept is to collect ideas submitted by the general public, refine them with input from a social network, and eventually bring them to market. On average, Quirky launches 60 new products each year designed and developed in partnership with its social network. This fall, Quirky products will be featured in more than 1,000 Bed Bath and Beyond stores across the nation.

Prior to Quirky, Chen managed planning for the U.S. division of Italian shoe designer Salvatore Ferragamo and worked as a buyer for department store Lord & Taylor.

STEPHANIE PALACIOS '09
 Account Executive, Greater Than One

When Stephanie Palacios graduated from Cornell, she was determined to get a job in the advertising industry despite a difficult economy and a glut of talented graduates. She began her career as executive assistant to the CEO of Greater Than One, a digital marketing agency specializing in regulated industries like healthcare.

Within a year, Palacios worked her way up to account executive, establishing herself as a rising star by working on accounts such as Genentech, Continuum Health Partners, and French Culinary Institute. Today, Palacios connects her clients with Greater Than One's graphic designers, media buyers, information architects, and software developers to create unique online experiences.

OUTSTANDING ALUMNI

David R. Atkinson '60
Outstanding Alumni Award



Each November, the CALS Alumni Association and the College of Agriculture and Life Sciences honor alumni who have achieved recognized success in their businesses, professions, or other endeavors; have been actively involved in, worked for, and demonstrated leadership on behalf of the college and Cornell University; and have made significant contributions to the betterment of society through humanitarian and charitable efforts.

Outstanding faculty and staff are also recognized for significant contributions in teaching, research, extension, or administration.

For more detailed biographies of this year's winners, visit calsnews.cornell.edu/alumni.

David R. Atkinson is a successful businessman, a good university citizen, and a visionary philanthropist. An accomplished CALS alumnus, he is deeply committed to Cornell University and its land grant mission.

Atkinson is the founder of Atkinson & Company in Princeton, N.J. He retired in 1992 as general partner of Miller, Anderson & Sherrerd LLP, an investment counseling firm based in Philadelphia.

A prolific investor with both a professional and intellectual interest in energy, the environment, and economic development, Atkinson has been an important advisor to the university.

As a member of the CALS Advisory Council from 2003 to 2009, he co-chaired with Professor Mike Hoffmann the Environmental Sustainability and Development Task Force. The task force's work led to the creation of the Cornell Center for Sustainability, which Atkinson and his wife, Patricia, later seeded and ultimately endowed. That initiative is now known as the David R. Atkinson Center for a Sustainable Future.

Atkinson is also a life member of the Cornell University Council, and in 2010 was named a Presidential Councillor, the highest honor the university bestows.

The Atkinsons' impact at Cornell also is evidenced by the David R. Atkinson Professorship in Ecology and Environmental Biology, a position held by Robert Howarth since 1993, and the annual Atkinson Forum in American Studies, which brings to campus individuals and groups that enrich the curriculum and the cultural life of the university.

The Atkinsons reside in Yardley, P.A., and have three sons, Michael, Steven, and Paul (Eng '92).

Yongkeun MS '78 & Sun Paik Joh, MS '77
Outstanding Alumni Award



Since graduating from Cornell, Yongkeun and Sunny Joh have used science to help food manufacturers create healthier, tastier, more stable, and more appealing prepared food. Their company, Advanced Food Systems, Inc.—which they founded in 1982—develops and manufactures customized ingredient systems for food products that can be found in many chain restaurants, fast-food products, and pre-packaged foods throughout the United States, Canada, and other countries.

The Johs met at Cornell as graduate students. Yongkeun, food science, and Sunny, pomology, were married while completing their studies. While students, they were actively involved in the Korean Student Association as executive members.

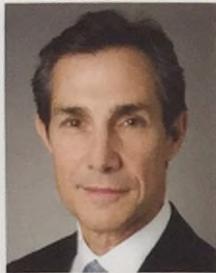
They contribute their time and support in recognition of those who helped them achieve their success: CALS and Cornell and the Korean American community. Yongkeun has been a member of the CALS Advisory Council and Cornell University Council. He shares his experiences in food science and his entrepreneurial expertise through lectures and dialogues with students and young industry professionals.

The Johs have made generous contributions to the college, including the Yongkeun Joh Professorship of Food Chemistry and Ingredient Technology and the Joh Family Graduate Support Fund in the Department of Food Science, specifically designated to aid Asian students.

In addition, they have provided support for East Asian/Korean academic and cultural programming, the Johnson Art Museum, and Shoals Marine Laboratory.

They live in Princeton, N.J., and are the parents of two daughters, Sunnie and Julia (A&S '01).

Thomas N. Marino '78
Outstanding Alumni Award



Through professional, volunteer, and athletic leadership, Thomas N. Marino is recognized by colleagues, former classmates and teammates, and others as a lifelong dedicated Cornellian.

Currently, Marino is a managing director and senior relationship manager at Barclays Capital, a role that makes him responsible for many of the firm's most strategic global clients. Prior to his current role, he was Global Head of Recruiting and Programs for Lehman Brothers, Co-Head of Global Equity Sales, and also was Co-Head of the European Equities Division and based in London for over 5 years. He is also a founding member of CityLax, a nonprofit organization that partners with the New York City public school system and community groups to promote lacrosse as a mainstream sport for youth in the five boroughs.

While at Cornell, Marino was an avid member of the varsity lacrosse team. He serves on the Cornell University Council, the Athletics Advisory Council, the CALS Advisory Council, and on the University's Major Gifts Committee.

In addition to volunteer leadership, Marino has staunchly supported his alma mater through his philanthropy. In 2001, he provided critical leadership in the memorial ceremony honoring Eamon McEneaney '77, a former lacrosse teammate and poet who was a victim of the 9/11 attacks. Marino also created and coordinated the effort to endow the Eamon McEneaney Visiting Professorship in Irish Literature and Creative Writing in the College of Arts and Sciences.

Additionally, he has generously supported men's lacrosse, the Charles H. Dyson School of Applied Economics and Management, and the Johnson Graduate School of Management.

Marino and his wife, Jill, live in New York City. They have two children, Jacqueline and Nicholas.

Laurey G. Mogil '76
Outstanding Alumni Award



Whether through her roles with the CALS Alumni Association, the CALS Advisory Council, the President's Council of Cornell Women, as a current parent of a CALS student, or as an alumna more generally involved in events and outreach, Laurey G. Mogil is a tireless advocate for the university, and her remarkable enthusiasm motivates others to become informed and involved in the Cornell community.

Mogil is a board-certified ophthalmologist who specializes in the diagnosis and treatment of glaucoma. She is a partner of Kochman, Lebowitz & Mogil MDs, LLP, (also known as KLM Ophthalmology) and Brooklyn Eye Surgical Center, a single-specialty ophthalmic ambulatory surgical center, which was the second such center to open in New York.

She holds a voluntary position as assistant clinical professor of ophthalmology at Mount Sinai School of Medicine, teaching medical students, residents, and fellows.

Mogil is a Fellow of the American College of Ophthalmology, and a member of the American Society of Cataract and Refractive Surgeons, as well as of the New York Glaucoma Society, and has recently been nominated to the American Glaucoma Society.

As president of the CALS Alumni Association, Mogil spearheaded the alignment of the association's and the college's priorities. She also helped develop career exploration trips for students and built stronger ties among alumni.

She and her husband, Robert J. Hellman '76, live in New York City. They have two children, Allison '14 and Evan Matthew '07. Allison is currently an editorial director for Slope Media on campus; Evan is a member of the Quill & Dagger Society and a former president of the CALS Student Ambassadors.

Kenneth E. Pollard '58
Outstanding Alumni Award



Kenneth E. Pollard exemplifies commitment to lifelong community service and involvement. Since graduating from Cornell, he has been one of the most effective and widely respected advocates for New York agriculture.

Pollard's key role in new marketing opportunities for New York's cherry and apple production allowed state growers to realize improved profitability through diversification from processing toward fresh market supply. As merchandising director and, later, executive vice president of the Western New York Apple Growers Association and New York Cherry Growers Association, Pollard expanded the marketing program for apples and cherries in purchasing, consumer relations, and public relations.

He worked closely with food service operators and retailers to increase the sales of apples, apple products, and cherries. He is also the architect of an effective promotion program during October and February, National Apple and Cherry Months, respectively.

Pollard is an ardent supporter of CALS and has collaborated with several CALS faculty members to improve the production and marketing of New York-grown apples.

Pollard has been honored several times for his service to the state's agricultural sector during his career. He received the 2002 Distinguished Service Award from the NYS Agriculture Society, the New York Horticultural Society Award for "outstanding contributions to New York State's agricultural industry," and a special citation from the NYS Department of Agriculture and Markets.

He and Beulah, his wife of 56 years, reside in Cayuga, N.Y. They have three grown children—Laura, Robert, and Susan—and seven grandchildren.

OUTSTANDING ALUMNI

Andrew Ross Sorkin '99
Young Alumni Achievement Award



Andrew Ross Sorkin is one of the most well-respected journalists in the United States.

He is the author of *Too Big to Fail: The Inside Story of How Wall Street and Washington Fought to Save the Financial System—and Themselves*, which chronicles the events of the 2008 financial crisis. The book won the 2010 Gerald Loeb Award for Best Business Book, and was shortlisted for the 2010 Samuel Johnson Prize and the 2010 Financial Times and Goldman Sachs Business Book of the Year Award. The book was adapted for the HBO television movie *Too Big to Fail*, which was nominated for 11 Emmy Awards. Sorkin was a co-producer of the movie.

Sorkin, who started writing for the *New York Times* while still in high school, is a financial columnist for the paper. He is also the founder and editor of *Dealbook*, an online daily financial report he started in 2001.

Recently, Sorkin added a new role: co-anchor of CNBC's early-morning show *Squawk Box*. He has also appeared many times on NBC's *Today* show, *Charlie Rose* on PBS, and MSNBC's *Morning Joe*.

Sorkin received an award for breaking news from the Society of American Business Editors and Writers in 2005 and again in 2006. In 2007, the World Economic Forum named him a Young Global Leader. In 2008 and 2009, *Vanity Fair* included him on its "Next Establishment" list. Sorkin also is a term member of the Council on Foreign Relations.

Sorkin stays engaged with his alma mater: he was a member of the 1999 Communication Fellows Program and is on the Department of Communication Advisory Board. He often returns to campus to speak to students and has been a featured speaker for Cornell programs such as Cornell Wall Street.

He and his wife, Pilar, live in Manhattan, and are the parents of two boys.

Dennis D. Miller, Ph.D. '78
Outstanding Faculty Award



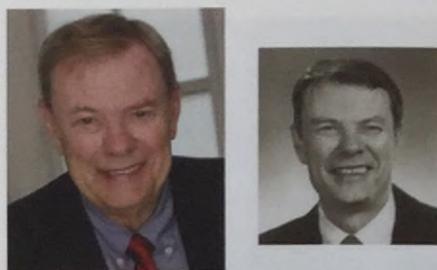
As a professor in the Department of Food Science, Dennis Miller's research on iron is dedicated to improving the nutritional status of people around the globe. His programs explore the relationships among nutrition, food science, and agriculture. For Miller, the greatest challenge to humankind in the 21st century is providing a sustainable, nutritionally balanced, and safe food supply for everyone on Earth, while considering the future needs of an expanding world population. An exemplary scientist, teacher, and administrator, he is recognized for his collaborative efforts and global perspective.

Miller currently serves as chair of the Department of Food Science, holds a joint appointment in the Division of Nutritional Sciences, and is a member of the graduate fields of Food Science and Technology and Nutrition. He teaches courses in food chemistry, nutrition, and sustainability. His specific research interests are iron fortification of foods, iron bioavailability from diets, and the regulation of iron absorption in the intestine.

He is the recipient of the Cornell Institute of Food Science Advisory Council Teaching Excellence Award and the Council's Leadership Award. He is a Fellow of the Institute of Food Technologists and in 2008, he received the Babcock-Hart Award sponsored by the International Life Sciences Institute-North America and the Institute of Food Technologists. Also in 2008, he received the Outstanding Service to the CALS Community Award, and in 2009, he was chosen by CALS students to receive the Professor of Merit Award for outstanding teaching and advising.

He earned a PhD in nutrition from Cornell, an M.S. in biochemistry from the University of Washington, and a B.A. in chemistry from Augsburg College in Minnesota. He and his wife, Christine Olson, live in Ithaca, N.Y., and have two grown daughters, Emily and Erica.

Norman R. Scott, Ph.D. '62
Outstanding Faculty Award



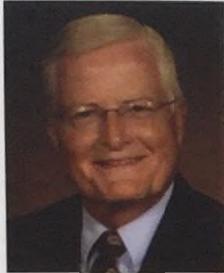
Arguably the nation's preeminent biological and agricultural engineer, Norman R. Scott has shaped Cornell's biology-based engineering curriculum for more than a generation. This approach currently taught at Cornell had its genesis with several of Scott's courses in the 1960s and 1970s. His early research, most notably his NIH-funded work in the 1960s on thermoregulation in animals, was crucial in defining the broad set of biological engineering topics that remain important today.

Scott has served the university for over 40 years, dedicating 14 years as a CALS and Cornell administrator, while remaining a leading national researcher in biological engineering. His career has ranged from assistant professor in the Department of Agricultural Engineering to director for research at Cornell's Agricultural Experiment Station to an appointment as the university's vice president for research and advanced studies. In his various administrative positions, Scott has helped to significantly broaden Cornell's land grant mission. He also provided leadership to establish three fundamental research areas—Genomics and Integrated Molecular Biology, Advanced Materials, and Information Sciences—that remain the basis for future directions for Cornell.

A respected researcher, administrator, and educator, Scott has received numerous national and local awards and has been elected as a fellow to a number of very prestigious organizations. In 1990, he was among the first faculty of the Department of Biological and Environmental Engineering to be elected to the National Academy of Engineering. He also received the Cornell Cooperative Extension Award in 1995 and the SUNY Outstanding Faculty Award in 2007.

He and his wife, Sharon, live in Trumansburg, N.Y., and are parents to Robin, Nanette Sue '88, and Shirlene.

CALSAA President's Message Alumni Engagement—What Does this Mean for You?



During the mid-1990s, the Gallup organization researched how companies could increase their number of customers and hold them. The term “customer engagement” was coined by Gallup to describe why the small percentages who stayed faithful

to companies and their brands did so. Customers remained faithful not because of price or product alone (although those were important factors), they did so primarily because they were emotionally attached.

So how does this apply to our work with you, the alumni of the College of Agriculture and Life Sciences?

In 1900, Liberty Hyde Bailey, as chief of Cornell's newly created Bureau of University Extension of Agricultural Knowledge (a position he held until he became dean of the College of Agriculture in 1903), stated: “Perhaps the institution of learning has two coordinate functions as an organ of civilization—studiously to educate the few, enthusiastically to awaken the many.”

Those words apply equally to our work with CALS alumni today. The college continues to “studiously educate the few,” while our responsibilities as members of the CALS Alumni Association are to “enthusiastically awaken the many.”

Our work is to arouse and stimulate alumni to action by exciting you with engagement strategies. We want to promote loyalty—so you will make multiple contributions of time and resources and will recommend college and alumni programs to others.

But we also hope you'll strengthen your emotional attachments to the college. To promote the four primary characteristics of emotional attachment among our alumni, we must put into operation these constructs:

Confidence—keep our marketing message synchronized with that of the college;

Integrity—provide competent, fair, and ethical services;

Pride—treat alumni with respect and hold you in high esteem; and

Passion—foster an ardent affection and devotion that compels alumni action.

Therefore, the job of the Alumni Association is to produce passionate and emotionally connected alumni and move you to partner with CALS as advocates of its mission and cause.

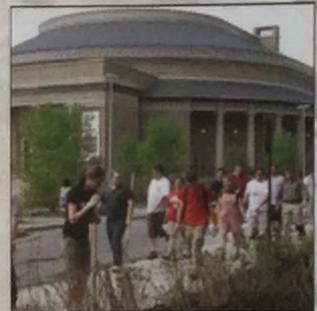
John E. Lutz '64, MEd '65
2011–2012 CALS Alumni Association President

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ALUMNI NOTES

It was a happy Homecoming for the 14,000 alumni who flocked to the hill on September 17 to watch Cornell trounce Bucknell 24-13. Among them were Ithaca mayoral hopeful Svante Myrick '09, pictured below with Elyse Richardson '06. A CALS grape stomping booth sponsored by the Viticulture and Enology program was also a big hit with visitors of all ages.



CALS badges were hot commodities, worn proudly by Mary and Peter Pamkowski '74, right, while Deborah Feld '10 and Karah Conklin '10, far right, enjoyed some candied Cornell apples.



Credit: Jennifer Benson

Alumni News

Loren Tauer has been appointed as the first David J. Nolan Director of the Charles H. Dyson School of Applied Economics and Management, following a generous donation by the Nolan family. The position was created by Peter J. Nolan '80, MBA '82, and his wife, Stephanie '84, in recognition of Peter's father, David J. Nolan '49, MA '51. David J. Nolan has been a leader in agricultural finance, serving as chairman, president, and chief executive officer at the Central National Bank of Canajoharie before retiring in the mid-1990s. He also served on the CALS Advisory Council, CALS Planned Giving Committee, and the Cornell University Council.

More than 100 years ago, a Cornell professor took his passion for fieldwork and freshwater science and spun them into an entirely new field of study: limnology. Now, a new gift from his estate is providing for its future. Professor James G. Needham taught the first limnology course in the United States—and possibly in the entire world—at Cornell in spring 1908, describing it as “an introduction to the study of the life of inland waters.” Mann Library recently received a major bequest from Needham's grandson, James W. Needham, who died in March 2010, to support Mann Library's collections in entomology, limnology, ecology, and natural history. The new gift boosted an existing endowment by Needham, creating the single-largest acquisitions endowment at Mann. The library has created an online exhibit to celebrate Needham's life and contributions, called “Inland Waters: James G. Needham & the Origins of Cornell Limnology.”

Cornell's world-renowned plant breeding program received a big boost recently, with the appointment of assistant professor Michael Mazourek, PhD '08, as the first Calvin Noyes Keeney Professor of Plant Breeding. Calvin Noyes Keeney was an entrepreneurial seed grower in Genesee County, N.Y., who bred the stringless refugee wax, the first stringless variety of green beans. Between 1887 and 1911, he introduced 17 new bean varieties, and according to a history written by C. D. Jarvis in 1908: “[He] undoubtedly has done more along the line of bean breeding than anyone else in America.” His daughter, Ruth Keeney, bequeathed one-fourth of her estate to Cornell to support the plant breeding program. She died in 1974, and part of the fund was used to support a graduate assistantship. The rest was invested, and has recently reached an amount sufficient to endow a professorship. Mazourek specializes in the breeding of peas, peppers, melon, and squash.

Renowned for its ability to record, analyze, and preserve the sounds of the natural world, the Cornell Lab of Ornithology's microphones are scattered around the globe, capturing the voices of birds, elephants, whales, and more. The problem has always been the time it takes to review massive amounts of data and pull out relevant sounds for study. A two-year, \$1.25 million gift from the Kenneth L. Harder Trust will help break the data logjam, funding the backbone of the lab's Acoustic Monitoring Project, or AMP. The Harder gift will be used to develop a new, faster system of automated acoustic data analysis—whether it's teasing out the tiny peeps of nocturnally migrating birds or the long-distance moans of courting whales. This generous gift comes courtesy of trustee Scott Harder, Karen (Tillman) Harder '81, Liv Harder '11, and Donald Harder. Kenneth Harder, Scott's uncle, was a lifelong birder.

CALS News is published twice a year by the College of Agriculture and Life Sciences, a unit of the State University of New York, Cornell University, Ithaca, N.Y. Cornell University provides equal program and employment opportunities.

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10/11 CP 37M

The College of Agriculture and Life Sciences has sustainability as a core value. This magazine was printed regionally using soy-based inks, on 25 percent post-consumer fiber paper, in an eco-friendly process that recycles virtually all chemical, paper, and metal waste. The paper is certified by the Forest Stewardship Council (FSC) (www.fsc.org) and the Sustainable Forestry Initiative (SFI) as a product of well-managed forest, controlled sources, and recycled wood or fiber.

ONE MORE THING ...

Inevitably, as an issue of CALS News is planned and developed over months, events unfold in the last moments of production that should rightfully be included, even though time might be short. This column is dedicated to helping get those breaking news items to the reader as quickly as possible.

For additional current CALS headlines, including Dean Boor's place on the international agricultural stage at a conference in Colombia, recent research findings on how to identify psychopaths by their Tweets, the Lab of O's role in a Hollywood movie, and the discovery of a common ancestor with a sixth sense, visit our Newsroom at www.cals.cornell.edu.

CALS Student Elected to Leadership in FFA

Sophomore Ken Quick, Jr. '14 will travel the world as a young advocate of agriculture after being named one of six leaders of the 540,000-member National FFA Organization—the first student from New York to be selected in 15 years.

Ken, who is majoring in agricultural education with a focus on international agriculture policy, was named the National Eastern Region Vice President of the FFA on Oct. 22. He had previously served as president of the New York State FFA.

The new role will see his team travel more than 100,000 miles in service of the organization. He is set to go to Japan, visit agricultural education classrooms and conventions throughout the United States, and meet with legislative and agricultural leaders to develop partnerships and influence the future of agriculture.

"I've become a passionate advocate for the future of agriculture and for the role of our generation within the food, fiber and natural resources industries," Quick said. "I had no idea just how much this organization would consume my future. FFA gave me the skills to further my impact. I've seen how FFA can change a student, a school and a community. Young people need FFA."

The 19-year-old's affiliation with FFA began five years ago, when, as a freshman in high school in Granville, N.Y., he helped to begin a FFA chapter. The son of Washington County dairy farmers Ken and Diane Quick, he was a member of the Future Business Leaders of America, sports teams, and the Junior Holstein Association before chartering the FFA program in his school.

He worked with FFA Advisor Terry Wheeler '85 to bring agriculture classes to Granville Central School and within a few short years, Quick was leading 4,000 NY FFA members from over 80 programs in rural and metropolitan school districts.

"Throughout my FFA career, I have been fortunate to be surrounded by advisors, coaches, peers and even junior high members who have helped to develop me into the man I am today—a true product of every FFA program, partner and experience I have had," Quick said.

Also earning high accolades at the National FFA Convention were several other College of Agriculture and Life Sciences students. Amika Osumi '15 won the highly competitive national Job Interview Career Development Event (CDE). Joey Chase '15, Corrine Ogle '14, Corey Reed '13, Danielle Sanok '13, and Anna Smith '13 placed second in the national Alpha Tau Alpha collegiate parliamentary procedure contest, with Danielle placing first among the secretaries. Jessica Krause '15 earned a bronze recognition in the national FFA Extemporaneous Public Speaking CDE. Katie Grandle '13, Rebecca Harrison '14, Bob Hockenbury '13, Carly Neumann '13, Corinne Ogle '14, Ken Quick '14, Aaron Santangelo '13, Morgan Shaver '14, and Anna Smith '13 earned the highest individual recognition in FFA with the American FFA Degree, an honor bestowed to less than 2 percent of the FFA membership.

The National FFA Organization provides agricultural education to 540,379 student members in grades 7-12 in 7,489 local FFA chapters in all 50 states, Puerto Rico, and the Virgin Islands. The National FFA Organization makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education. •



Sophomore Ken Quick, right, is named National FFA Eastern Region Vice President at the organization's national convention in Indianapolis on Oct. 22. Credit: Provided

ENDNOTE

Akwe:kon celebrates 20 Years of Inclusiveness

By ELISABETH ROSEN '12

The story of Akwe:kon, the first university residence in the country purposely built to celebrate Native American heritage, began with a contradiction: Even though the campus was built on their ancestral homelands, many Haudenosaunee (Iroquois) students felt unwelcome and isolated in the university community.

Akwe:kon opened 20 years ago at Cornell to change that. Taken from the Mohawk language and pronounced “a-gway-go,” it means “all of us.”

“The foundation of Akwe:kon 20 years ago was a milestone,” said Cornell President David Skorton Sept. 9 at Akwe:kon’s 20th anniversary celebration in the Appel Commons Multipurpose Room. Skorton was one of eight speakers to deliver tributes to a place that seemed to have shaped the lives of many in the crowd.

Jane Mt. Pleasant ’80, MS ’82, former director of the American Indian Program and associate professor of horticulture at Cornell, noted, “In the 1960s and early ’70s, the few Native students who enrolled at Cornell, for the most part, found enormous alienation.”

The idea of Akwe:kon first surfaced in April 1972 at a conference on Iroquois education after some members of the Cornell community had been demanding for quite a while that the university devote more resources to Native students. At the end of the conference, they presented administrators with a list of seven demands.

Most of the demands were met, including more aggressive recruitment and retention of Native students, the creation of an academic program in American Indian studies, and an Indian residential center (which became Akwe:kon).

“Cornell is first and foremost an intellectual space,” Mt. Pleasant said. “We deal with ideas and knowledge and the life of the mind. Today, Akwe:kon is ‘Indian country’ for Cornell’s Native community in a profound and very real way.”

“But [Akwe:kon’s founders] saw that success for Native students depended first on meeting their emotional and personal needs ... [They] needed to feel at home, within their own homelands. It required creating new ‘Indian country’ within the Indian country on which Cornell stands.”

Not everyone at the time, however, supported the idea.

“I was totally against it,” said Frank Bonamie, a Cayuga chief who was living in Ithaca at the time and who was a driving force behind the American Indian Program, which is housed in CALS. “Mainly because I wanted to invest money in the program, in the students. But I was wrong. It did everything that I wanted it to do.”

The founders’ philosophy of inclusion has shaped the residence hall’s approach to programming, noted the speakers. Today, students interested in Native culture can participate in a wide array of cultural and community service activities. As the founders hoped, the center provides many students with a home away from home.

“I’m so happy and so thankful for AIP and Akwe:kon,” said Abraham Francis ’14, who lives in Akwe:kon. “If it weren’t for them, I wouldn’t still be here this year.”

After many of the speeches, the speakers were presented with traditional handwoven baskets and blankets. Skorton received a large Mohawk basket, which he held up to applause.



Credit: Provided

The six stones to the west of the building represent the six nations of the Haudenosaunee Confederacy. Standing on the stones, from left to right (or west to east as they represent the confederacy): Mia McKie '12, Tuscarora; Melanie Redeye '10, Seneca; Joel Harris '11, Cayuga; Bradley Carrier '10, Onondaga; Jake Swamp '11, Oneida; Mary Lafrance '09, Mohawk.



Credit: Provided

Akwe:kon’s architecture and design

The two-story, wood-frame building was designed by the architectural firm of Flynn & Battaglia. Two of the architects, Peter Flynn '69 and Nancy Redeye '85, are Cornell alumni.

The building itself is an artistic achievement, representing an institutional commitment to Native peoples, and Cornell’s relationship with Haudenosaunee and other Native communities throughout the region. The footprint of Akwe:kon is in the shape of an eagle, and the design elements on its exterior walls are from wampum belt symbols that are the basis of Haudenosaunee history, politics, culture, and cosmology. Its architecture and design are educational tools that represent Haudenosaunee culture and history.

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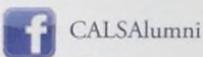
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Name that bug ...

We may be going buggy (see our cover weevil feature), but we think this photo by Kent Loeffler may have captured a new insect species. Help name this "bug" by sending your suggestion. CALS Communications will review the entries and select a winner. That winner will receive a 32 oz. jug of Cornell maple syrup. Please send submissions by December 31 to calsnews@cornell.edu. Results will be posted on the CALS Alumni Facebook page in January.

This issue of *CALS News* features many pictures by Loeffler, who is the photographer in the Department of Plant Pathology & Plant-Microbe Biology. When he joined Cornell in 1985, with degrees in biology and biomedical photography, he also brought with him experience photographing microorganisms for a protozoology textbook, as well as human and animal eyes for a medical school eye bank. Loeffler continually experiments with new technologies and their applications to teaching and research.

For this image, Loeffler made a panorama by compositing several pictures of Weill Hall together using the program PTGui. Then this panorama was mirrored effectively doubling its size. Finally, it was reduced in size to a square, rotated, and run through the Polar Coordinates filter in Photoshop.

And the winner was ...



With nearly 50 entries, selecting the winning caption from the Spring 2011 issue was a tough choice. Once the votes were tallied, the top entry was clear:

"Face. The final frontier"
by Casey Carlstrom MS '92

Thanks to all who participated!

To see more images in this series, use this QR code:



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