Providing for a global sustainable future through scientific discovery, innovation, and community engagement.
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There are 629 public four-year institutions in the United States. There are another 1,845 private four-year institutions and 1,666 public and private two-year institutions—that totals 4,140 two-year and four-year degree-granting institutions in the U.S. All of these institutions have a teaching mission. Most have a research mission as well. However, only 107 of the 4,140 institutions have land grant status—where teaching, research, and Extension work together to solve our nation’s critical food, health, and environmental issues.

UConn Extension—in the College of Agriculture, Health and Natural Resources—provides the critical third leg of the land grant mission: public engagement. This document presents highlights of UConn Extension programs from across the state of Connecticut. These highlights are drawn from the work of Extension faculty and staff collaborating with our many and valued volunteers and stakeholders. The highlights reflect our focus on food, health, and environmental issues that affect citizens, families, communities and businesses across the state. These programs create solutions to our most challenging societal issues using the best available science and technology—created through our College and University research programs.

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The College of Agriculture, Health and Natural Resources (CAHNR) is committed to its status as a land grant institution, serving Connecticut and the global economy through research, education, and public engagement. Extension fulfills the land grant university’s third mission of outreach and public engagement.

Over 100 UConn Extension specialists work in the 169 local communities across Connecticut as educators, problem solvers, catalysts, collaborators and stewards. To many Connecticut residents these specialists are the face of UConn (see large map). Our eight regional Extension Centers, the Sea Grant program at Avery Point, the 4-H Education Center at Auerfarm, the Home and Garden Education Center and the UConn Extension office in Storrs are strategically located throughout the state (see small map) to meet local needs.

UConn Extension’s off campus classrooms include: high-tech greenhouses and computer labs, coastal estuaries, elementary school gardens, community centers for high risk teens and municipal town halls. We use an interdisciplinary approach and take knowledge directly to the public. UConn Extension enhances small businesses, the economic and physical well-being of families and offers opportunities to improve the decision-making capacity of community leaders. To accomplish this, Extension focuses on CAHNR’s four core values: learning, discovery, engagement, and global citizenship.

![Number of Active UConn Extension Programs in Towns](image.png)

<table>
<thead>
<tr>
<th>Number of Active UConn Extension Programs in Towns</th>
<th>Based on 2013 Active Programs</th>
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<tr>
<td>Under 10 (none)</td>
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<td>11 - 14</td>
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2014 HIGHLIGHTS OF EXTENSION

- $4.9 million in external grants
- 280 formal outreach programs
- 3,916 downloads of the Rain Garden App
- 411 articles & publications
- 20,180 youth participated in 4-H programs
- 1,214 people received financial education training
- 31,350 hours of community service donated by our Master Gardener volunteers in communities across the state
- 154 municipalities in the state have attended our Land Use Academy
- 1,093 shellfish industry members and regulatory staff have received HACCP training
- 1,191 4-H volunteers
- 13,400 Connecticut citizens educated about invasive insects
- 253 members of the Center for Learning in Retirement
Community Outreach

Through our outreach program efforts, 115,519 clientele contacts were achieved during the past year. FoodCorps Connecticut reached 13,793 people. FoodCorps members focus on improving school food environments. Operation Military Kids (OMK) is a national effort to support children of service members before, during, and after deployment. OMK reached 7,319 kids. Connecticut 4-H helps youth make good decisions, and develop leadership and citizenship skills while improving self-confidence. 4-H reached 21,371 youth and volunteers.

Collectively, Extension had 393 published works, in both print or online formats.

5 Easy Ways to Give to UConn Extension

Online
Visit http://s.uconn.edu/extension to make a donation online.

Text
1. Text 50555 the following: “UConn Extension [your name].” For example: “UConn Extension Jonathan Husky.” Unless you specify an area of support (by including Extension in the text), the donation will go to the Fund for UConn.
2. You’ll get a response confirming the donation. Respond “YES.” A $10.00 donation will then be made to the mGive Foundation to support the University of Connecticut Foundation, Inc. Charges will appear on your wireless bill, or be deducted from your pre-paid balance. All purchases must be authorized by account holder. Must be 18 years of age or have parental permission to participate. Message and data rates may apply. Text STOP to 50555 to STOP. Text HELP to 50555 for HELP.

Call or Mail It
Call 800-269-9965 to make a donation to UConn Extension or mail it to:
The University of Connecticut Foundation, Inc.
Attn. Data Services, 2390 Alumni Drive, Unit 3206
Storrs, CT, 06269-3206
Please make your check payable to the University of Connecticut Foundation, Inc. and include “Fund 23078 - Cooperative Extension”, “Fund 30978 - 4-H Centennial Account”, or “Fund 31108 - Nancy H. and David E. Bull CES Innovative Programming” in the memo line of your check.

Volunteer
Give back to UConn Extension by volunteering in one of our programs. Email extension@uconn.edu or call 860-486-9228 for more information.

Your gift will be received by The University of Connecticut Foundation, Inc., a Connecticut non-profit and a 501(c)(3) tax exempt organization that exclusively benefits UConn. All contributions are subject to certain administrative fees that support Foundation operating expenses and other priorities determined by the University unit receiving the gift. Donors have the right to request that gifts remain anonymous. You may contact us or obtain a copy of our financial report at 2390 Alumni Drive, U-3206, Storrs, CT 06269, 800-269-9965, or www.foundation.uconn.edu.

2014 HIGHLIGHTS OF EXTENSION | 5
UConn Extension Celebrates 100th Anniversary of Smith-Lever Act

The Smith-Lever Act of 1914 established the Cooperative Extension Service as an educational partnership between the country’s land-grant universities and the U.S. Department of Agriculture. A state-by-state network of Extension educators throughout the country stimulates innovative research and delivers vital education programs to adults and youth.

On September 19, 2014 over 300 guests gathered to celebrate a century of leadership and service by UConn Extension. Jennifer Riggs—a dedicated Extension volunteer—and Gregory Weidemann, Dean of the College of Agriculture, Health and Natural Resources (CAHNR) co-hosted the evening’s events. Guests were treated to dinner featuring locally sourced wine, cheese, vegetables, seafood, and poultry. Congressman Joe Courtney and Senator Richard Blumenthal provided remarks prior to dinner. Videographer G. Morty Ortega—son of CAHNR faculty member, I. Morty Ortega—created a short documentary highlighting UConn Extension’s contributions around the state. The evening also included a congratulatory video from U.S. Secretary of Agriculture, Tom Vilsack and a Proclamation from Connecticut Governor Dannel Malloy. Dinner concluded with Centennial Caramel Crunch ice cream, an award-winning flavor created specifically for the centennial celebration and made by the UConn Creamery.
Highlights of Extension: TYING RESEARCH TO REAL LIFE

COLLEGE OF AGRICULTURE, HEALTH AND NATURAL RESOURCES

(From top left, clockwise)
1. Early 4-H leaders at a training session
2. A group of 4-H girls in 1914
3. Meadow Lake Dairy Club members learn to evaluate a calf
4. A group from the Dutch Point Colony in Hartford work on clothing projects
5. A poultry presentation
6. A honeybee project
7. Bruce Wilbur, program manager/educational outreach, right, looks at a greenhouse
8. Professor Rudy Favretti, far right, and plant science students study a home landscape model
10. An in-store consumer nutrition information lesson
11. A youth gardening project
12. CLEAR has been documenting land use change in Connecticut since 1985
13. Associate Extension Educator Candace Bartholomew studying a specimen
14. The Middlesex County Extension Center in Haddam
15. 4-H FANs IM youth learn about MyPlate at an afterschool activity
16. Hartford County 4-H members with a poster they made
17. Using GPS technology
18. 4-H youth members at the Hartford County 4-H Fair dairy show
19. Assistant Extension Educator Emily Wilson answers questions for a student on a mapping tool
20. Extension Educator Tessa Getchis working on a boat in Long Island Sound
21. Assistant Extension Educator David Dickson creates a video using an iPad
22. Associate Extension Educator Tom Worthley and a forestry group
23. Senior Extension Educator Donna Ellis releasing biological controls
24. Middlesex County Master Gardener Coordinator Gail Reynolds, Carol Youell and Russ Bidwell
25. Locally sourced cheese, vegetables, seafood and poultry were featured
26. Mickey and Tuula Fitzgerald with Sue Chartier
27. Over 300 guests attended the Centennial dinner
28. Dr. Robert and Mary Leonard
29. Associate Dean Cameron Faustman, Associate Dean Mike O’Neill and John Volin, Department Head of Natural Resources and the Environment
30. Gregory Weidemann, Dean of the College of Agriculture, Health and Natural Resources, and Rineicha Otero, Program Administrator, pose with Smith and Lever at the Centennial Dinner. (Photos 24 - 29 courtesy of Dean Batteson.)
Great Gull Island is home to one of the most important nesting habitats for Roseate and Common terns in the world. The estimated 1,300 pairs of Roseate terns that summer on the 17-acre island at the eastern end of Long Island Sound represent the largest nesting concentration in the Western Hemisphere, and the 9,500 pairs of Common terns are the largest concentration of this species in the world.

But while the terns are currently thriving, their environment is being overrun by nuisance and invasive plant species, such as the wild radish, Black Swallow-wort, and Asiatic Bittersweet, that threaten to destroy their nesting sites.

That is why Juliana Barrett, associate extension educator with Connecticut Sea Grant and UConn Extension has partnered with Helen Hays, the long-time director of the Great Gull Island Project, and others, to stem the tide of unwanted vegetation, even if it means hand-pulling the invaders, one pesky plant at a time.

Good tern nesting habitat requires flat, sparsely vegetated surfaces that are close to water, such as the beaches that line Long Island Sound, according to Margaret Rubega, associate professor of ecology and evolutionary biology, who is also Connecticut’s State Ornithologist.

The problem, she says, is that as humans started building houses, waterside restaurants, marinas, and other structures, the coastline became a place that was no longer hospitable to the nesting birds.

“Prior to all this development there was enough land suitable for nesting so that if a predator discovered a colony of terns, the birds could just get up and move,” Rubega says. “But now there just isn’t much open beach any more, and what little is left is disturbed by people and their pets and the type of predators that tend to associate with human habitation. This makes it all the more important that the nesting habitat on Great Gull Island is preserved.”

When Barrett received a grant from the Environmental Protection Agency’s Long Island Sound Study, she partnered with the U.S. Fish and Wildlife Service to develop a habitat management
“We have a national treasure right here in the [Long Island] Sound, and we just can’t afford to let it slip away.”

 plan for the island which is owned by the American Museum of Natural History. Adding the expertise of UConn Extension’s invasive species expert Donna Ellis and that of Joel Stocker at UConn’s Center for Land Use Education and Research (CLEAR), who agreed to map vegetation changes using a quadcopter, or drone (see box, right), an initial plan was developed with the primary purpose of reinforcing tern habitat.

The project also received help from the National Guard. “Because Hurricane Sandy had destroyed the island’s only dock, we had no way of getting the 14 tons of supplies we needed to build observational bird blinds and terraced nesting boxes out to the island,” says Barrett. “So the Fish and Wildlife Service asked the Connecticut Army National Guard for help, and they agreed to use their Chinook helicopters to deliver the material we needed to the island last April.”

Plans for the coming nesting season, which begins in the spring, include hand-pulling Bittersweet and Black Swallow-wort, as well as culling some of the Phragmites, a common reed found in wetlands. Because the invasive species are growing at the same time the terns are nesting, this labor-intensive work, which is provided by both student and adult volunteers, will be carefully orchestrated to assure that the nesting and rearing practices of the birds will continue largely undisturbed.

In addition to hands-on efforts to preserve this valuable habitat, Connecticut educators can use the project to help meet the objectives in their Next Generation Science Standards, which are designed to provide a foundation in science literacy for students in the state’s K-12 classrooms.

“With background material provided by Extension and Sea Grant, the work on Great Gull Island can be used to study such diverse topics as ecosystem dynamics, social interaction, and group behavior, and even the engineering challenges presented by the delivery of supplies to the island,” says Barrett.

She also hopes high school students from Ocean Classroom will come out to the island and learn by doing. “There’s nothing quite like hands-on experience to drive home the point that conserving our natural resources is really important,” she says.

Rubega, who has been visiting Great Gull Island since she was in high school, describes the location as a living laboratory for studying habitat management and bird conservation.

“What UConn Extension, Sea Grant, and CLEAR are contributing, both in the way of funding through grants and by helping to recruit the labor to go out and attack the vegetation, is crucial to the continued success of the project,” she says. “We have a national treasure right here in the [Long Island] Sound, and we just can’t afford to let it slip away.”

Assistant Extension Educator Joel Stocker spends a lot of his work and personal time documenting changes to the shoreline. In 2010 he contacted Helen Hays, asking if he could capture photographs over Great Gull Island with his homemade drone. She agreed. While on the island, Helen told him about the problem with invasive plants, and he connected her with Juliana Barrett.

Recognizing high-resolution aerials could be used to monitor vegetation management Juliana included experiments with aerial drone flights as part of a Connecticut Sea Grant proposal. In April 2013 the official Extension/Sea Grant flights took place, fully sanctioned by the FAA (Federal Aviation Administration). Over 370 photographs were captured from a small four prop multicopter quadcopter, later processed using two different software systems, Agisoft Photoscan and Pix4Dmapper. The result is a full high-resolution orthomosaic image of the entire island—a detailed tool for the habitat management plan. In addition the Pix4D software produced a full 3D topographic map, great potential for measuring erosion and the before and after effects of natural disasters like Superstorm Sandy.

(Photo above) Joel Stocker and his quadcopter get ready to take aerial photos of a controlled field burn at the Middlesex County Extension Center.
Most people do not realize that there is a desert in Connecticut. According to German Cutz, sustainable families and communities extension educator, there is one in Fairfield County, and he is trying to eliminate it. It is a food desert.

The USDA Agricultural Marketing Service defines food deserts as “urban neighborhoods and rural towns without ready access to fresh, healthy, and affordable food.” Cutz identified several food desert areas in Danbury, Bridgeport and Norwalk and noted that such conditions are common in urban cities. A 2012 community food security report by the College of Agriculture, Health and Natural Resources’ Adam Rabinowitz and Jiff Martin highlighted this issue. “Often, two factors are at work. They lack transport, which limits access to food, and the quantity of fresh food supplied,” said Cutz.

Connecting Urban People and Agriculture

Cutz is addressing food deserts while connecting urban people with agriculture. He wants to teach people to grow food, give them a hands-on agricultural experience and encourage local entrepreneurship. His new Extension program, called Urban Agriculture and IPM Training, works with Hispanic adults, who are living in the urban cities of Fairfield County.

The specific objective of the training is to produce fresh food locally and to sell it in the food desert areas of Fairfield County. In order to reach that goal, those receiving the training have access to one acre of land at Candlelight Farms, a partner in New Milford, Connecticut. In addition, Cutz will register the class as a Danbury farmers’ market vendor so that students can sell the produce they grow and gain a hands-on entrepreneurial experience. Cutz has plans to expand the farmers’ market effort to other cities later.

“We know that urban agriculture is a good venue to provide entrepreneurship opportunities to urban residents while, at the same time, allowing them to supply fresh food to their own neighborhoods.” Cutz said.
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Gaining Scientific Knowledge

The adult students gain scientific knowledge through four, 10-week training modules taught in Spanish. The first module, botany, started without funding and had 14 students enrolled. Twelve of those people completed the rigorous module that included testing on 200 plants. For the test, participants learned the scientific names of plants and how to identify the plants by their leaves, seeds and shapes. This included trees, flowers, fruits and vegetables representing 50 families of plants. The training uses sections of the existing UConn Master Gardener curriculum, which Cutz has customized and translated into Spanish.

Next, the participants will go through the remaining vegetable production, Integrated Pest Management (IPM) and entomology modules with Ana Legrand, an assistant extension professor in entomology and member of the UConn IPM team. The IPM module emphasizes lower-risk pest management techniques and organic production methods.

Partnering with Supporters

Cutz obtained outside funding for those three modules from the Northeastern IPM Center, that promotes and funds integrated pest management for environmental, human health and economic benefits. Financial support from the Crop Insurance and Risk Management Education Program for Connecticut Agricultural Producers goes toward translation of the curriculum into Spanish.

Further assistance is provided by Nuestras Raíces (Our Roots, in English), which will host the participants and interact with them about organic farming. According to their website, “Nuestras Raíces is a grassroots organization that promotes human, economic, and community development in Western Massachusetts, through projects relating to food, agriculture and the environment.”

Cutz plans to continue offering the urban agriculture program and expand it after the success of this class.

Learning in the Field and the Classroom

Students in the Urban Agriculture and IPM Training program completed 180 hours of classroom instruction, and volunteered 1,603 hours. Volunteer time was spent working on the farm preparing the land, building raised garden beds, planting and maintaining an acre of organic vegetables, and selling produce at the Danbury Farmer’s Market.

“We have learned to work as a team, and to grow organic vegetables. We learned to cultivate vegetables the right way,” says Juan Guallpa, a student in the urban agriculture class of 2014.

From April through October, students produced more than 10 different vegetables and herbs including spinach, cilantro, dill, basil, carrots, beets, tomatoes, peppers, eggplants, zucchini, squash, radishes, and cabbage. Through the program, more than 4,000 pounds of locally produced, organic vegetables were distributed among 150 low-income families.

The group of students is creating a non-profit organization to continue promoting urban agriculture among Hispanics.

(Photos above) Urban agriculture students review seed packets during class.
The People Empowering People (PEP) program is a personal and family development program with a strong community focus. Provided by UConn Extension, PEP builds upon individual life experiences and strengths to encourage growth in communication and problem solving skills, parent and family relationships and community involvement.

The PEP program was created by retired Extension Educator Cheryl Czuba and is coordinated by Cathleen Love, professor at UConn Extension. Over 1,000 people have graduated from the PEP program in the past 15 years.

UConn PEP offers participants the opportunity to set goals, develop relationships and make connections. Participants share their stories and find their voice and they begin to believe they can make a difference.

In the words of one of the UConn PEP graduates, “I learned so much from my participation in the UConn Extension PEP program. I learned from every UConn PEP participant in my wonderful group. I learned or rather re-learned things like trust in groups. I came to appreciate different lifestyles and different ways of thinking, living, caring, sharing and teaching. The UConn Extension PEP program helped me renew my faith in how wonderful people are. It has reopened my eyes to how important differences are in people, in every aspect, but yet in the end, how we really are the same and that we, each one of us, can make a difference.”

Another participant tells us, “I enjoyed every moment of our classes ... I loved the stories we shared, the tears we shed, the laughter, the trust within the group and the comfort we felt in sharing and speaking with one another. Our “PEP” talks empowered us to accomplish or obtain something. Every moment, every word, every tear, every laugh and every lesson will be a permanent tattoo, not only in my mind, but in my heart.”

During the UConn PEP program, one woman set a personal goal to go to college. She is now working on her bachelor’s degree. She believed she could do it, set her goal, and her passion and commitment gave her the courage to follow through on her dream to go to college.

The student says, “The opportunity to participate in UConn Extension PEP changed my life ... This program built and renewed my confidence in myself. For that I am so appreciative.”

PEP participants realize their leadership potential and take action to invest in themselves, in their families and in their communities.
The Center for Learning in Retirement (CLIR) became a UConn Extension program in 2013. CLIR’s mission is to provide meaningful intellectual activities for adults from all walks of life, which closely matches with Extension’s mission to provide the knowledge and expertise of the university through outreach and public engagement.

The Center for Learning in Retirement was created in 1991 based on a need identified in the community to offer educational programming for retired adults. UConn’s Board of Trustees approved it as part of the then Division of Extended and Continuing Education. The positive response of the community confirmed the appropriateness of this outreach effort. Historical documents show that from a mailing to 600 residents within a 15-mile radius of Storrs, 200 people attended the first meeting and another 150 were interested in learning more. The program “clearly tapped a nerve and opened an opportunity for the University to serve a population we have ignored in the past.”

There are currently over 280 participants in CLIR and new members are always welcome. CLIR members are engaged in meaningful and stimulating classes taught by university faculty, community members, government and nonprofit agencies, legislators, clergy and experts from business and industry.

Members of CLIR meet in a relaxed, comfortable atmosphere on the UConn Depot Campus. Ample parking is available and the cottages are handicapped accessible. There are no academic requirements to participate in CLIR and no tests, term papers or age limitations. CLIR staffing and teachers are volunteers.

All of the classes meet during the day, Monday through Friday from 10:15 am to 11:45 am or 1:15 pm to 2:45 pm. CLIR operates on a three-session schedule: fall, winter and spring. Each session offers up to a dozen single classes and approximately eight courses. A course may be as short as two weeks or as long as eight.

The program offers a buffet of topics. Classes have been offered on current events like Global Climate Change and School Reform or topics related to history, literature and the arts, science and religion. For those who enjoy writing, each session has a Memoir Club that meets every Thursday morning for nine weeks. Recent speakers have included the Presidents and several Deans from both Eastern Connecticut State University and UConn.

Membership in CLIR enriches the minds and broadens the horizons of all who participate. It also affords an opportunity to meet new people and form friendships. Participants in CLIR have the opportunity to discuss issues and concerns in a safe environment where everyone is welcome. This happens in the classroom and during the social time that is organized at each session.
The Connecticut Fitness And Nutrition Clubs In Motion (CT FANs IM) is a 4-H STEM after-school and summer program and integrated research project, educating third and fourth graders in nutrition, fitness and gardening. The program is presented in collaboration with area 4-H clubs.

CT FANs IM is supported by a five-year $2.5 million grant from USDA’s National Institute of Food and Agriculture (NIFA) and is an offshoot of the original 4-H FANS program, which also focused on fitness and nutrition for school-aged children and their families.

“We’re bridging community connections with Extension, by serving youth and families in underserved areas,” says Umekia Taylor, associate educator and project director. “With the startling statistics on obesity in our country, I find it exciting to promote healthy lifestyles by combining nutrition and fitness in programs that engage our youth.”

Taylor has assembled a team that includes German Cutz, extension educator in sustainable families and communities, Nancy Rodriguez, professor in the department of Nutritional Sciences (NS), Shawn Mogensen, NS graduate assistant, program administrator Rineicha Otero, and program assistant Linda Castro. 4-H Healthy Living Liaison, Wanda Hamilton, retired this year after fifteen years in the UConn 4-H program. She was instrumental during the 4-H FANs program development.

“Ms. Wanda was an inspiration to me and to other 4-H youth,” says Rineicha Otero, CT FANs IM program administrator. “She was always supportive and dedicated by encouraging us to step out of our comfort zones to reach our goals.” Otero joined 4-H as a teen mentor, and then became a supervisor while pursuing her degree at UConn. She graduated in 2012.

The CT FANs IM program kicked off at Meriden’s Roger Sherman Elementary School in October 2012, and has since expanded to include several additional schools in Meriden and Danbury. 4-H teen mentors
“With the startling statistics on obesity in our country, I find it exciting to promote healthy lifestyles by combining nutrition and fitness in programs that engage our youth.”

work with students to engage them in fun activities that promote health, including fitness games, healthy meal preparation and gardening. Special guests such as chefs, fitness experts, and master gardeners are brought in to work with the children and their families. Children prepare healthy snacks and learn how to make fitness part of their daily lives.

During the original 4-H FANs program, parents requested an opportunity to join in on program activities. They wanted to bring those healthy lifestyle changes to their entire family. In response, monthly 4-H family nights were created, where families spend an evening together exercising and creating healthy meals and snacks.

“The youth in the program absorb the material and are very receptive to the information and activities presented,” says Castro. “Parents are happy to see their children excited and motivated.”

The gardening program provides experiential learning where students engage in practical skills, while applying their lessons in nutrition and fitness. Several school gardens serve as an outdoor laboratory for the students. The youth maintain their gardens during the summer program. Produce is harvested and used in food demonstrations or taken home by students to cook for meals. Gardening gives them an opportunity to work together as a team, while providing fresh produce, exercise, and lessons in healthy meal planning.

“The program is promoting positive social change in the community by educating young children on essential skills,” says Otero.

4-H FANs IM Success Stories

Aaron is a Nutritional Sciences major at the UConn College of Agriculture, Health, and Natural Resources. In 2014, Aaron was an intern with the Danbury 4-H FANs IM program, mentoring high school students to become 4-H FANs IM teen mentors. He says, “4-H FANs IM gives a holistic view to health, by showing the students how to balance healthy eating with exercise.”

Cheyanne was a 4-H FANs IM teen mentor in 2013 and 2014. She says, “Being a teen mentor helped prepare me for college. This job has given me a good sense of the working world.”

Najeia served as a 4-H FANs teen mentor for two summers beginning in 2010. Najeia says, “It provided a real world experience, and allowed me to take a leadership role while learning many new skills.”

Angie’s two sons, as well as her nephew and niece participated in the 4-H FANs program. She soon began implementing many of the lessons in her family life. She says, “We started making little changes. I stopped riding the bus, and began walking. We bought a blender and started making smoothies. We switched from whole milk to one percent.” Angie replaced sugary snacks with fruits and vegetables. She took her family to the park to play games or walk around the grounds. These little changes made a big difference.
Commercial shellfish farmers who use the ocean to grow their crops off the nation’s coastline now have the same kind of protection against crop losses as do people who farm on land, due to a recent change in federal policy.

The new language providing coverage was added to the Noninsured Crop Disaster Assistance Program (NAP) as part of a recent Farm Bill and is a big deal for Connecticut’s $30 million aquaculture industry.

“We were thrilled to learn that after years of discussion with the United States Department of Agriculture (USDA), crops that have traditionally not been eligible for federal crop insurance have now been granted coverage under the NAP program,” said Tessa Getchis, a UConn aquaculture extension educator, who was instrumental in the policy change. “That’s a huge step forward for the aquaculture industry now that the program will cover losses due to named tropical storms and hurricanes.”

The program provides financial assistance to producers of what are normally considered non-insurable crops to protect against natural disasters resulting in crop losses or the prevention of crop planting. Before the new language, the law stated that commercial shellfish crops could be insured only if they were grown in containers or bags, but that’s not how it’s done in Long Island Sound.

Instead, the majority of local farmers seed their clams and oysters directly on the ocean floor, and conduct their transplanting and harvest by dredging. Seaweed farmers grow their crops on ropes, not in containers. Today, the cultivation of clams, oysters, and kelp provides more than 300 local maritime jobs.

During a press conference held at UConn’s Avery Point campus on December 30, 2014 to announce the expansion of the program to include Connecticut’s aquaculture crops, Connecticut Sea Grant director Sylvain DeGuise thanked the state’s congressional delegation for their support and staff in UConn Extension and Sea Grant—Getchis in particular—for their long-term efforts to achieve this goal.
"The farmers who use the Sound to grow their crops deserve the same kind of protection against crop losses as do people who farm on land."

"Tessa proved to be a gentle pit bull," he said. "She bit hard [on this issue] and wouldn't let go until the right thing had been done for commercial shellfish farmers."

Sea Grant provides science-based information to individuals and organizations that can benefit from programs that support the nation's marine resources, just as land grant programs support land-based agriculture.

In his remarks, U.S. Sen. Richard Blumenthal praised the cooperative efforts of Sea Grant, federal and state government officials, and various industry sources for their perseverance in getting coverage for non-traditional crops included in NAP.

"Weather disasters have become the 'new normal,' whether they are hurricanes or tropical storms or Nor'easters," Blumenthal said. "The farmers who use the Sound to grow their crops deserve the same kind of protection against crop losses as do people who farm on land. Shellfish farmers are no less courageous and entrepreneurial than farmers who till the soil."

Blumenthal noted that there is still work to do to expand the coverage, but said NAP is "a step in the right direction." Nor'easters, which can damage shellfish beds, are another peril the industry hopes to eventually have covered.

Connecticut has a long history of shellfish farming. Town records of early colonists in Groton mention experimentation with cultivation of oysters; and artificial beds in the Sound date from the 1820s. By the late 19th century, oyster cultivation had developed into a major industry.

Robert Rheault, executive director of the East Coast Shellfish Growers Association, which represents shellfish farmers from Maine to Florida, said he appreciates the decade-long effort it took to get insurance protection.

"Shellfish farming is inherently a very risky business. Like land farmers, we suffer losses from predators, diseases, theft, and storms," Rheault said. "While NAP insurance only covers a portion of weather-related crop loss, it could mean the difference between a farm's bankruptcy and survival after a hurricane has wiped out someone's crop."

"I sometimes think that we [here in Connecticut] overlook our locally produced shellfish," Getchis said, "while, to oyster enthusiasts, Connecticut's product is world renowned. We have an aquaculture industry to be proud of, and the role of Sea Grant is to help our constituents keep important issues like crop insurance in front of local, state, and federal lawmakers."

"[Crop protection has] been a long time coming," she added, "but the effort has definitely been worth it."
In recent years the UConn main campus has become a showcase for “green infrastructure,” stormwater management practices that use a variety of techniques to reduce runoff in an environmentally friendly way. Stormwater runoff is the nation’s leading source of water pollution, according to the Environmental Protection Agency (EPA). In urban areas like much of Connecticut, runoff from extensive paved areas creates flooding and pollution problems.

Although situated in a relatively rural area, the UConn campus is densely populated and developed. As a result there has been a history of water quality issues focused on campus, and the university is currently subject to a number of regulatory programs, including a Total Maximum Daily Load (TMDL) for Eagleville Brook, a tributary of the Willimantic River that drains about two-thirds of the campus. The Fenton River to the east, which supplies public drinking water to campus and surrounding communities, is also a concern. The challenge presented to UConn, which mirrors that of many Connecticut communities, is to protect local water resources while making use of new “low impact development” (LID) or “green infrastructure” (GI) practices. Quantifying the actual impact of these practices on local receiving waters is an important element of this initiative.

Since 2008, UConn Extension’s Center for Land Use Education and Research (CLEAR) has been leading efforts to reduce the impacts of stormwater runoff on campus. Green infrastructure practices like bioretention, green roofs and pervious pavements have been installed around campus to help restore a more natural hydrologic balance. Extension outreach efforts like the national award-winning NEMO (Nonpoint Education for Municipal Officials) program increasingly use the campus as a demonstration site for community leaders, publics works professionals, engineers and environmental nonprofits.

Extension is also taking advantage of the GI practices to conduct applied research. With all of the changes taking place on campus, keeping track of the
“Green infrastructure practices like bioretention, green roofs and pervious pavements have been installed around campus to help restore a more ‘natural’ hydrologic balance.”

actual impacts of the green infrastructure implementation is not an easy task. Traditional water monitoring could be done, but this is very expensive and time consuming. UConn Extension Educator Michael Dietz at CLEAR created a unique system to estimate the benefits of the green infrastructure on campus.

This tracking system uses real precipitation data from UConn and estimates the amount of stormwater treated by each practice installed, given how big the practice is, when it was installed and the condition of the practice. This allows for a running total of the volume of stormwater treated. Through 2014, more than 45 million gallons of stormwater have been treated. To put this in perspective, this is enough to fill more than 63 Olympic sized swimming pools! This was accomplished through the 444,000 square feet, or over 10 acres, of impervious surface that was disconnected from the stormwater system. That is about the equivalent of 7.6 football fields. Dietz also has an online sampling station in the area of Eagleville Brook immediately below campus, to investigate long term trends in water quality and how/ if they relate to the continuing GI emphasis. Real-time data can be found at: clear.uconn.edu/projects/eagleville.

This information is being used to track progress on the TMDL, along with other regulatory obligations between UConn and DEEP. And beyond the immediate practical use of the data, this type of long term tracking information is uncommon in the GI field, and will be of interest and use to efforts around the country.

Recent efforts of the UConn Extension Nonpoint Education for Municipal Officials (NEMO) program are helping to make Connecticut cities a little bit greener. In June 2014, NEMO partnered with Neighborhood Housing Services of New Haven and Community Solutions of Hartford to perform rain garden trainings at each location. These trainings were targeted at local landscape contractors and community residents, and consisted of a morning classroom session paired with an afternoon hands-on rain garden installation.

As a result of the rain gardens installed at these two workshops, 61,000 gallons of runoff from 1,920 square feet of urban rooftops will be kept out of the sewer system annually. Since the goal is to train others to install more gardens, this effect should grow as more rain gardens are installed around the state.

Build a Rain Garden Yourself!

The UConn Extension NEMO team has created a website and a smartphone app to help create your own rain garden. Learn more about both on the NEMO Rain Garden website at: nemo.uconn.edu/raingardens.
Patients at the Burgdorf/Bank of America Health Center, a community clinic for the underserved in Hartford’s North End, can get a side of fresh vegetables with their health care.

It’s possible because of a community garden planted on the Burgdorf grounds in 2011 that continues to thrive.

The Burgdorf, located at 131 Coventry St., is a collaboration between UConn Health and Saint Francis Hospital and Medical Center, staffed by UConn and Saint Francis clinicians as well as UConn medical, dental, and pharmacy students. The produce is provided to patients through the medicine and pediatric clinics, the Burgdorf’s emergency food bank, and through the Women, Infants, and Children program (WIC) at the Hartford Department of Health and Human Services.

“We've put roots down in the community, and we've been nurturing and strengthening those roots for four years now,” says Dr. Bruce Gould, associate dean for primary care at the UConn School of Medicine and medical director of the Burgdorf and Hartford DHHS. “It’s a metaphor for our presence here. We’re on the leading edge of community nutrition. What we have here is an opportunity to produce food for our patients and to teach them about healthy eating. It’s all part of primary care and community health.”

If healthy eating is a preventive medicine tool, communities like Hartford’s North End are at a disadvantage by being in a “food desert,” a term used to describe neighborhoods where access to healthy food choices is lacking. The expense of fresh and unprocessed foods tends to steer consumers toward cheaper processed foods, and local supermarkets are scarce compared to the suburbs.

“This garden helps me feed my family and other families in the neighborhood,” says local resident Robert Harris.

Saint Francis dietitian Jessica Sutton, who helps harvest and distribute the produce to patients, says the concept of fresh produce isn’t always familiar to a low-income population.
“Some people have never seen these vegetables,” Sutton says. “A lot of our patients don’t have yards or gardens, so to see them growing, it’s a learning experience. Fruits and vegetables are expensive, and our patients are more prone to buying junk food because it’s cheap. It’s nice to provide them with fresh produce that they normally couldn’t afford.”

Last year’s garden yielded about 350 pounds of produce. The garden’s caretakers expect to surpass that this year, perhaps tallying 500 pounds or more. They also have handed out potted tomato, eggplant, and pepper plants for patients to bring home and watch them grow.

Volunteers from the UConn Extension Master Gardener Program provide expertise and labor to keep the garden thriving. UConn undergraduates and medical, dental, and pharmacy students in the Urban Service Track also are pitching in, as well as participants in the UConn campus-community partnership Husky Sport.

“We can use this as a teaching space for the neighborhood,” says Sarah Bailey, the UConn Extension Master Gardener coordinator for Hartford County. “We’re planning to have tours, where folks can walk through the garden and learn more about vegetables.”

Gould says a majority of the produce comes by way of seedlings donated by Pickn’ Patch, a farm in Avon. The program has also received support from the Hartford Department of Health and Human Services, CIGNA, the Knox Park Foundation, the Hartford Food System, and Ecological Landscape Designs of West Hartford.

The Burgdorf was founded in 1970 as the outpatient service for what was then known as the UConn Health Center, which initially occupied the old McCook State Hospital on the corner of Coventry and Holcomb streets, a block away.

Growing Community Across the State

UConn Extension Master Gardeners work in communities across the state on gardening projects. Through the Gardening Initiative in Vegetable Education (GIVE) program, there are 19 schools with vegetable gardens in Stamford. The model community garden at Middlesex County Extension Center delivers fresh produce to community food banks and soup kitchens. New London County Master Gardeners work with adults with disabilities at Camp Harkness in Waterford. Master Gardeners in Tolland County are teaching students to garden at Natchaug Hospital. Windham County Master Gardeners work with People’s Harvest of Pomfret to donate produce from the garden to local soup kitchens. Six master gardeners helped create the new Burgdorf Clinic community garden, working in new soil and weeding.

A total of 31,350 hours were donated by Master Gardener volunteers in 2014 in communities across the state.

Many other community gardening projects are enhanced by UConn Extension Master Gardeners. To learn more about the program visit: mastergardener.uconn.edu.

(UConn Master Gardener Sarah Bailey offers guidance to local resident Robert Harris, as he harvests green beans from the Burgdorf Community Garden.)
Climate Adaptation Academy for Communities

The extension system model has historically been to assess the needs and concerns of the citizenry and tailor programs to meet their concerns. What once worked effectively for rural farm families is now being applied to help communities deal with climate-related issues.

The Climate Adaptation Academy is an innovative approach to studying the impact of climate change that is also firmly rooted in tradition. A partnership of Connecticut Sea Grant, NOAA, CLEAR (Center for Land Use Education and Research) and the College of Agriculture, Health and Natural Resources, the Climate Adaptation Academy was originally seen as a way to connect municipal officials and land use commissioners with Extension educators in the field and specialists at UConn and beyond. Over time it became clear that the model needed to be more flexible and inclusive and that input would be most useful when it came from a variety of sources.

The Academy was first suggested by Juliana Barrett, Associate Extension Educator with Connecticut Sea Grant, head of the Climate Adaptation Academy, as a way to apply the model developed in the Land Use Academy to the Connecticut coast. She and Bruce Hyde, Director of the Land Use Academy, talked with municipal officials and community leaders and asked what were the impacts of climate change on their communities. The feedback was not just flooding and storm surge, but issues including longer-term budget impacts and the need for planning.

“This is such a new and ever-evolving area that we need to identify and define all the impacts on both coastal and inland communities,” says Hyde.

The Climate Adaptation Academy uses a peer-to-peer system to exchange information and reaches out to municipal officials, non-profits and individuals involved in and concerned about climate change.

“From Juliana’s and my perspectives, what we do is talk to local people and ask them how we can help them find solutions to their issues,” says Hyde.
“This is such a new and ever-evolving area that we need to identify and define all the impacts on both coastal and inland communities.”

Hyde and Barrett use peer exchanges, geographic information systems and emergency response systems from disasters such as Hurricane Sandy. Last November they held a session to demonstrate how to use technology to create a record of where things have happened, such as flooding and fallen trees, that can be used by police and fire departments.

At a program entitled Living Shorelines, 70 Connecticut residents, all people working on the front lines of their communities’ responses to climate impacts, met to listen to experts and share their own experiences.

The Academy addresses legal issues related to climate adaptation and the impact of climate change on agriculture. Hyde noted that one of the biggest challenges for municipalities is flooding from inadequate storm water systems, which were built based on standards developed 50-60 years ago.

Hyde noted that now there are “rain bombs” such as one in the summer of 2014 that dropped 13 inches of rain in 24 hours on Islip, Long Island, while Central Park, 50 miles away, received less than an inch. This type of weather event requires new ways of looking at how municipalities respond.

Among possible solutions is the creation of green infrastructures through the use of green roofs and green swales. Michael Dietz, program director for Connecticut NEMO, is one of the leading experts in green infrastructure in the country (see page 18). Dietz brings his skills to the Climate Adaptation Academy roster.

The Climate Adaptation Academy website (clear.uconn.edu/climate) emphasizes flexibility and collaboration. “We don’t know all the answers. In some cases we don’t even know the questions,” the site states.

Bruce Hyde uses a Greek proverb at the end of his presentations on climate adaptation to emphasize the need for immediate action even though some of the impacts from climate change will be felt only by future generations: “A society grows great when old men plant trees whose shade they know they will never sit in.”

For the Climate Adaptation Academy, change, connection to more resources and people, idea exchanges and linking the knowledge base of the university to the needs of municipalities, communities and individuals is the core organizing principle. Its leaders are determined that it will be as dynamic as the topics it addresses.

Coastal Landscaping Guide for Long Island Sound
Riparian corridors (or buffers) are the segments of land along our rivers, streams and wetlands including plants and soil. These areas can provide multiple benefits, particularly as the first line of defense against the impacts of surrounding land uses. Corridors slow runoff from precipitation, aid in flood control, and filter or trap pollutants. These areas can also provide habitat and corridors for wildlife as well as scenic value and privacy.

Within coastal areas, vegetated corridors can also be of significance in reducing the impacts of waves and overwash on properties. Juliana Barrett, Mark Brand (UConn Dept. of Plant Science) and Julissa Mendez (former grad student in Landscape Architecture) developed an online tool to help coastal residents think about how to plant their coastal properties in ways that will help prevent erosion as well as reduce damage and loss of plantings due to salt spray from storm events by using native plants.

Check out the Coastal Landscaping Guide for Long Island Sound at: clear.uconn.edu/crlg.
Let one’s imagination go and the work of UConn Integrated Pest Management Coordinator and Senior Extension Educator Donna Ellis sounds like a script for a horror movie. Ellis is using the tools of science to encourage parasitic wasps to lay their eggs in the larvae of the lily leaf beetle. As the wasps develop, they eat the bodies of their hosts from the inside out. All the tiny drama is conducted inside the larvae, which are covered in the slimy ooze of the excrement they carry on their backs as they devour the leaves and stems of once-beautiful Asiatic lilies.

Ellis and her colleagues are working with a program funded by the USDA to use insect biological controls to thwart the decimation of lilies and other species of ornamental plants in the lily family by the lily leaf beetle (*Lilioceris lilii*). The insect, which is native to Europe, was first introduced in Canada in 1945. By 1992, they were confirmed in the Boston area. Former staff member Ed Marrotte and Ellis recorded the first beetles in Connecticut in Fairfield County in 1999. Now the insects are widespread and can be found across the state.

The beetles are particular in their requirements and choose *Lilium* and *Fritillaria* as host plants. They may also feed on other ornamentals, including Solomon’s seal, bittersweet nightshade, hosta and potatoes, but cannot reproduce on them. They overwinter in the soil as larvae and reproduce on their hosts, emerging in the spring as adult beetles to begin gorging themselves on the emerging Asiatic lilies that grace many gardens and are important crops for nurseries and garden centers.

In 2012, Ellis began a program to fight back without the use of pesticides. Through a collaborative effort with the University of Rhode Island (URI), Ellis obtained two different species of parasitic wasps that target lily leaf beetle larvae. The wasps came from the URI Biological Control Lab, where they are raised under the direction of manager, Lisa Tewksbury.
The adult wasps are shipped overnight in small vials. By the second year of the project in 2013, Ellis obtained 915 wasps that were released at 16 sites. In 2014 there were 21 sites in all of Connecticut’s eight counties.

Timing is important as the wasps are raised and released under specific conditions. Middlesex County Master Gardener Coordinator Gail Reynolds, who is working on the project and did five releases in the summer of 2014, often gets short notice as to when the wasps are available. They need to dispense them to gardeners who are willing to do their best to help the tiny insects survive. The gardeners also assist Reynolds with finding the lily leaf larvae that the wasps deposit eggs on, who collects them and mails them to URI for analysis.

“It’s a great natural control. As people choose to use less pesticide, they are interested in biological control ... It is another tool in the IPM tool box.”

A Sustainable and Viable Non-Pesticide Alternative

Release and monitoring of two distinct biological control agents (the parasitoid wasps *Tetrastichus setifer* and *Diaparsis jucunda*) for biological control of lily leaf beetle began in Connecticut in 2012. These beneficial insects have also been released in Massachusetts, Maine, New Hampshire, and Rhode Island.

In 2014, there were 15 new research sites. Five were release sites and eight served as control sites. A total of 1,257 wasps were released during an eight-day period in June in the towns of Haddam, Portland, Branford, New Haven and Middletown. In the three years of the project, control and release groups have been located in all eight counties.

Plans for 2015 include additional release sites and continued sampling. Gail Reynolds developed a presentation on the Lily Leaf Beetle research that has been given to an advanced Master Gardener class, a local garden club and others.

A fact sheet, an info-graphic on lily leaf beetles, and other educational materials are available at: www.ipm.uconn.edu.

Beetle image courtesy of M.E. Smirnov.
During the last couple decades the terms organic and local have gone mainstream. The power of these words on the marketplace is undeniable. A walk-through most grocery stores and supermarkets show the appeal of products sold under these labels. Whole sections of stores are set aside for organic and local products, with stores competing to be seen as the most organic and local.

However, these terms elicit a plethora of both positive and negative reactions from consumers. Our starting point to understanding these terms is the dictionary. Organic is defined as “grown or made without the use of artificial chemicals.” This definition is specific in nature. The true nature of organic is often more complex than this simple dictionary definition, given the requirements to be certified organic. But as has been noted in prior studies, consumers generally recognize the broad issues about organic but routinely do not put forth the energy to understand the complexities of producing organically.

On the other hand, local is defined as “relating to or occurring in a particular area, city, or town.” The specific geographic boundaries are laid out by particular states and the federal government. Connecticut General Statutes Section 22-38 defines that a product advertised as locally grown must be produced within Connecticut or within a 10-mile radius of the point of sale.

Local Perception

Perception is reality, and perception often does not align with what occurs on the farm or is regulated by state and federal governments. Case in point is the geographic boundaries consumers place on locally produced. When a business advertises produce as locally grown, the question must be asked does the retailer definition align with the consumer definition.

With respect to perceptions of production, consumers have both accurate and inaccurate perceptions of these terms. In a study that came out of collaboration from UConn (Ben Campbell), Texas A&M University (Charlie Hall), Michigan State University (Bridget Behe), University of Florida (Hayk Khachatryan) and Purdue University (Jennifer Dennis) using a
sample of consumers from the U.S. and Canada, researchers found consumers have both accurate and inaccurate views of local and organic terminology. Within a Connecticut context, Connecticut consumers share these accurate and inaccurate views of local and organic at nearly the same rate as the U.S. as a whole.

The underlying theme is that consumers understand the “dictionary” definition of local and organic, but often assign incorrect production practices to characterize the terms. Importantly, there seems to be a blurring of the line between local and organic with around 20 percent of consumers linking the terms as the same.

There tends to be an evolution occurring with respect to how people view local and organic. Since the inception of organic as a mainstream item, organic has been marketed to a large extent as helping the world through less pesticide use and more environmentally friendly production practices, while local has been viewed as helping the community and providing fresher product. Research from UConn (Lingqiao Qi, Ben Campbell, and Yizao Liu) shows that consumers that are altruistic (e.g., care about others) and biospheric (e.g., care about the environment) are more likely to purchase local over organic. This transformation seems to indicate that local seems to be expanding to fill the role of environmental stewardship, while also helping the community. The continued evolution of local and organic will be interesting over the next couple of years.

Impact on Purchasing

When we look at how the terms local and organic impact the purchasing decision, there is clear evidence that these terms do two things. First, they increase the likelihood of purchasing by the average consumer. Second, the average consumer is willing to pay a price-premium to purchase a local or organic product. Based on the previous studies mentioned above, produce retailers (whether on-farm, farmers market, or larger retailer) need to realize that the terms local and organic are powerful words that can and do influence a consumer’s purchase decision.

Normally, when talking about who buys local and organic product we talk about the average consumer. In reality, the market is made up of many different consumers but they generally coalesce into a couple of market segments, such as price sensitive, environmentally conscious, locality of production, quality and the “fuzzy group.” The price sensitive and environmentally conscious segments are also where the highest willingness to pay occurs. However, within these segments is where the highest potential for consumers to substitute between local and organic occurs. For instance, there are core purchasers of local and organic that will purchase no matter the price; however, there is a more moderate group within each segment that will switch from local to organic and vice versa depending on price. So exorbitant premiums may not cause consumers to switch out of the local/organic category, but may cause substitution between local and organic.

A common theme heard throughout the business and academic world is that consumers can and should be educated on the subtle points of local and organic. However, in order to educate we need to know what the consumer knows and does not know, along with what are the motivations behind the purchase decision. Even after gathering this information, successfully educating or changing behavior can be challenging given consumers are bombarded with information from various outlets.

Perhaps a more efficient mechanism is to recognize that consumers are different, but by in large fall into one of several market segments. Then by understanding which market segment shops at a particular retail location, marketing strategies (and even educational strategies) can be implemented to address issues consumers have on a more personal level.