

**ANNUAL REPORT**

# College of Agriculture, Health and Natural Resources

21

2021

**UCONN**

## EXECUTIVE SUMMARY

Fiscal year 2021-22 set many records for the College of Agriculture, Health and Natural Resources (CAHNR) in multiple aspects. We made substantial progress in each of CAHNR's five strategic priorities: Ensuring a vibrant agricultural industry and sustainable food supply; Enhancing health and well-being locally, nationally, and globally; Promoting diversity, equity, and inclusion through antiracist approaches; Fostering sustainable landscapes across urban-rural interfaces; and Advancing resilience and adaptation in a changing climate. Through 16 BS/BA, three Associate of Applied Science, 19 minors, and 18 graduate degree options, CAHNR continues to be a student-focused college providing life-transformative education to our students. We offered scholarships totaling ~\$900,000, the highest in our history, and increased the affordability and accessibility of a CAHNR education for our students and their families.

Our faculty continued to excel in research productivity, receiving \$37 million in extramural grant support and nearly \$28 million in research expenditures, the highest ever for CAHNR. Scholarly output included 397 peer-reviewed research articles, nine patents, three books, 22 book chapters, and more than 400 scientific presentations, abstracts, and posters. Our faculty continue to attract national and international recognition, with six faculty becoming fellows of prestigious professional societies, four faculty receiving national awards, and two faculty being named among the world's most cited researchers. We provided \$800,000 in seed and equipment funding through internal competitions to enable research excellence. Additionally, we initiated a program to increase the submissions of large, multi-disciplinary proposals.

The impactful work conducted by CAHNR Extension continued to reach every Connecticut town and city, strengthening communities in our state and beyond. CAHNR Extension educators understand the challenges faced by our communities and work collaboratively to co-create solutions for the critical issues they face. For example, our programs reached ~158,000 residents in 2021 through 462 unique programs and 733 learning events. Our Extension outreach programs enjoyed great trust and support from the community, as shown by 2,864 volunteers contributing more than 156,000 hours of their service.

We have initiated a multi-pronged approach to affirm our commitment to diversity, equity, inclusion, and justice (DEIJ). Approximately 38% of our undergraduate students are non-white and represent the highest racial/ethnic diversity in the last decade. Our faculty have received multiple training grants to increase the representation of minority students, including Native American students in STEM fields. We are one of the few colleges funded by the USDA to recruit Native American students to our two- and four-year programs. Our DEIJ efforts transcend beyond UConn and include the Connecticut communities we serve. For example, we worked closely with the Mashantucket Pequot leaders to create a Tribal Department of Agriculture.

Our challenges include inadequate infrastructure, lack of laboratory space to continue to recruit world-class researchers, strategically replacing a relatively high number of faculty and staff who retired in FY22, and an uncertain budget environment. We plan to work closely with UConn, state and federal agencies, and industry to address these and other operational needs to continue excellence in our teaching, research, and extension missions while creating a diverse, inclusive, and anti-racist College.

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# RESEARCH & GRADUATE EDUCATION

The cutting-edge research conducted by CAHNR faculty both stems from and reinforces our commitment to our strategic vision areas. Our researchers lead efforts locally, regionally, and nationally to address immediate and emerging needs faced by society in our changing world. Through our research strengths, our faculty are also training future leaders in all areas of human, environmental, and animal health.

## INVESTING IN FACULTY SUCCESS

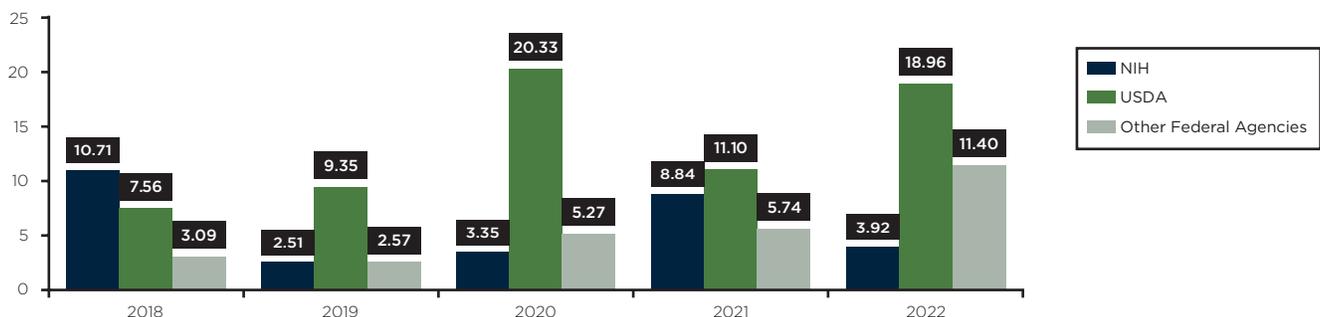
We are strategic in dedicating resources to help faculty succeed.

- Funded 23 seed projects amounting to approximately \$460,000 to assist faculty in generating data for subsequent submissions of proposals for external, competitive federal grants
- Funded six major equipment grants totaling approximately \$325,000 to strengthen CAHNR faculty research capabilities and enhance research training for students
- Continued Hanover Research Service’s proposal editing/reviewing service exclusively for CAHNR faculty to enhance grant success
- Initiated a support system to increase the submission of large, multi-disciplinary proposals (greater than \$1.5 million direct costs), including planning and preliminary research, reduced teaching load, if needed, and support from a newly hired grant development specialist to assist faculty with large proposal preparations and submissions
- Provided support that allowed CAHNR faculty to successfully compete for seed funding from the OVPR in 2021-2022

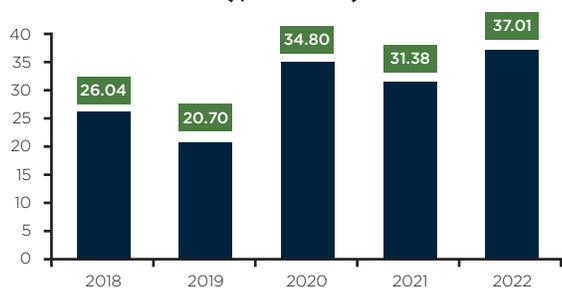
## AWARDS & EXPENDITURES

Thanks to our strategic investment in faculty success, along with the powerful research engine within CAHNR, we saw increases in awards and expenditures in FY22. Last year, each of our nine departments was successful in receiving competitive federal funding, with \$37 million in new extramural awards. This represents an increase of 18% over FY21, and an increase of 42% in the last five years. We received 125 new grant awards, an increase of 15% from the previous year. The major share of CAHNR extramural funding originated from federal agencies, with USDA being the largest source, with a 71% increase in new funding over FY21. Overall, CAHNR research expenditures totaled \$27.8 million in FY22, representing an increase of 51% in the last five years.

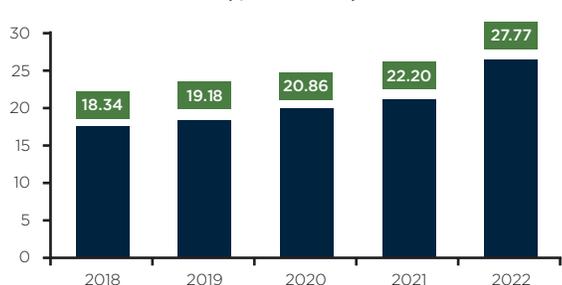
Awards by Federal Agencies (\$ millions)



### CAHNR Extramural Funding (\$ millions)



### CAHNR Research Expenditures (\$ millions)



**Paulo Verardi** received \$2.5 million from the NIH to further advance his research on emerging tickborne viral disease.



**Doug Casa** and **Elaine Lee** received \$1.5 million from the DoD to improve the lethality of female warfighters through heat acclimatization.

## RESEARCH HIGHLIGHTS

- **Sandro Steinbach** from Agricultural & Resource Economics was awarded \$650,000 from the USDA to investigate factors that influence preferential trade agreements using modern statistical modeling
- **Michael Copenhaver** from Allied Health Sciences received an NIH R01 on optimizing evidence-based HIV prevention targeting people who inject drugs on PrEP
- **Breno Fragomeni** in Animal Science received almost \$1 million in funding, focused on animal genetics
- **Jennifer Cushman** and an interdisciplinary team from UConn Extension received \$750,000 from the USDA to develop instructional biotechnology video games to cultivate an interest in biotechnology, while building public confidence in the safe use of biotechnology in agriculture
- **Tessa Getchis** from Extension's CT Sea Grant received funding from the National Sea Grant program to develop a sustainable shellfish bed management strategy to support Connecticut's shellfish sector, building off the work she conducted during the pandemic
- **Neal Glaviano** and **Lindsay DiStefano** from Kinesiology were awarded a \$1.5 million DoD award for optimizing outcomes for patients with patellofemoral pain
- **Doug Casa** and **Rob Huggins** from Kinesiology received \$1.2 million from the NFL to maximize sport and physical performance
- **James Knighton** from Natural Resources and the Environment received an award from USDA to study how insect infestation affects forest water use and resilience to future climate stressors
- **Morty Ortega** from Natural Resources and the Environment received CT DEEP funding to study black bear behavioral changes
- **Yangchao Luo** from Nutritional Sciences was awarded a USDA grant to study the mechanism to eradicate pathogenic bacterial biofilm on the surface of fresh produce; and to test nanotechnology-enabled washing practices to extend the shelf life of fruits and vegetables
- **Young-Ki Park** from Nutritional Sciences received funding from USDA to explore the health benefits of sugar kelp on the gut microbiome
- **Gerald Berkowitz** from Plant Science and Landscape Architecture received a ground-breaking USDA grant for hemp research, the first full award from USDA in the area of cannabis plant biology/molecular genetics
- **Mark Brand** from Plant Science and Landscape Architecture received funding from USDA to study Aronia berry sustainability, which led to a seminal publication in *Scientia Horticulturae*
- **Antonio Garmendia** from Pathobiology and Veterinary Science received funding to study multivalent, multi-epitope mosaic vaccine
- **Guillermo Risatti** from Pathobiology and Veterinary Science was awarded a USDA grant to study various assay techniques to detect African swine fever virus, with a goal to more rapidly detect virus and accelerate responsive care

## SCHOLARLY OUTPUT & LEADERSHIP

In FY22, CAHNR faculty actively disseminated their research findings through traditional academic channels. In addition to books, book chapters, and hundreds of conference proceedings, abstracts, and posters, our faculty also published 397 peer-reviewed journal articles – the highest in six years. Our faculty are also recognized as experts among their peers and other members of the scientific community. In 2021, two CAHNR faculty members were named to the World’s Most Highly Cited Researchers list as published by Clarivate and the Web of Science Index.

**3** books

**22** book chapters

**397** peer-reviewed articles

**412** conferences, abstracts, and/or posters

**Zhe Zhu** from Natural Resources and the Environment and **Yangchao Luo** from Nutritional Sciences named to 2021 World’s Most Highly Cited Researchers list



CAHNR faculty are also sought after for leadership roles within their academic and professional societies. This participation not only increases our connections with researchers from other institutions, it also positions UConn as a leader in the various fields of study related to CAHNR’s strengths.

**1**  
copyright issued

**6**  
fellows of national and international academic societies

**91**  
grant review panels

**9**  
patents awarded

## RESEARCH INNOVATIONS

At CAHNR, we believe that our discoveries should serve a purpose. Through the knowledge our faculty create, we seek to support the people, communities, and businesses of our state and beyond. In FY22, we saw continued growth in several long-standing CAHNR areas of research, as well as several emerging sectors that present opportunities for CAHNR and UConn to grow.

In collaboration with colleagues from the Department of Orthopaedic Surgery and physicians from UConn Health, faculty in the Department of Kinesiology developed the new **UConn Institute for Sports Medicine** in the spring of 2020. The Institute for Sports Medicine experienced significant progress during 2021-2022, including building the research infrastructure, establishing strong clinical partnerships, and refining cash-based services.

The collaborations between faculty in the Department of Nutritional Sciences and the School of Pharmacy led to the creation of the **Genomic and Mechanistic Metabolism Group (GMMG)**, which held its first mini-symposium in February 2022. The GMMG promotes innovative research in areas like metabolic diseases, obesity, nano-delivery systems, and more.

Faculty in the Departments of Plant Science and Landscape Architecture and Extension conduct research on soil health to improve understanding of chemical, biological, and agronomic factors affecting the soil and that directly impact plant production, human health, and climate change.

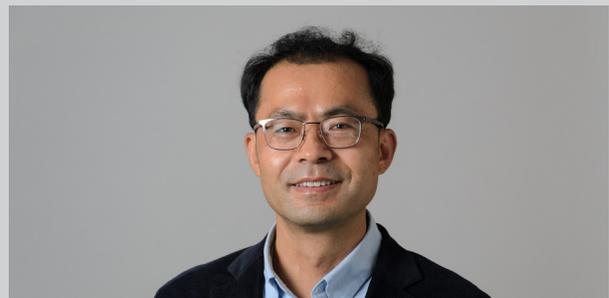
The **Zwick Center for Food and Natural Resources Policy (ARE)** is to expand its role for economic analysis broadly as related to societal challenges related to CAHNR's strategic vision.

Several faculty in the Department of Pathobiology and Veterinary Science conduct state-of-the-art vaccine research and development on novel vaccines, and delivery systems through the **Center of Excellence for Vaccine Research (CEVR)**.

An interdisciplinary team from the Departments of Natural Resources and the Environment and Extension are studying various aspects related to the **environmental impacts of road salting**. This research includes examination of amphibian physiology and habitat selection, as well as the effect on plant communities and biogeochemistry in wetlands. The Green Snow Pro program developed by the team also helps municipalities with eco best practices related to road salt application.



**Roman Shrestha** from Allied Health Sciences addresses pressing global health issues with a particular focus on **HIV prevention in vulnerable populations**. Most recently, his research uses mobile technologies (mHealth) to improve treatment outcomes in key populations, including persons who inject drugs, sexually diverse groups, and migrant workers.



**Young Tang** in Animal Science was awarded an international patent for Inhibitors of Porcine Reproductive and Respiratory Syndrome Virus with industry partner Atomwise.

## HONORS & ACHIEVEMENTS

Last year, CAHNR researchers were honored for their contributions to their fields in the areas of research, teaching, and extension outreach.

- **Charles Towe** from Agricultural & Resource Economics was elected President of the Northeastern Agricultural and Resource Economics Association
- **Ellen Shanley** in Allied Health Sciences was named President of the Academy of Nutrition and Dietetics
- **Steven Zinn** in Animal Science was named King Visiting Scholar at the University of Arkansas to meet industry challenges
- **Emily Wilson** from Extension was named UConn's representative to the newly formed Geographic Information Systems Advisory Council established by the Connecticut Legislature
- **Stephanie Singe** in Kinesiology received the Most Distinguished Athletic Trainer Award from the National Athletic Trainers' Association
- **Beth Lawrence** from Natural Resources and the Environment was awarded the Society of Wetland Scientists' 2022 Outstanding Educator Award
- **Michael Puglisi** from Nutritional Sciences and Extension received the Connecticut Educational Technology Award from the National Association of Extension
- **Sohyun Park** from Plant Science and Landscape Architecture received the Excellence in Service Learning Award from the Council of Educators in Landscape Architecture (CELA)
- **Steven Geary** from Pathobiology and Veterinary Science was elected as Chair of the International Organization for Mycoplasma



**Haiying Tao**, from Plant Science and Landscape Architecture, is PI or co-PI on grants totaling over \$4 million in her first year at UConn. Her pending grant submissions as PI or co-PI total \$65 million, including a \$52 million USDA proposal, the largest submission in UConn's history.

## NEW FACULTY SUCCESS

CAHNR continues to attract excellent faculty members, working closely with early-career faculty to help them achieve excellence in discovery, learning, and extension/outreach. Their efforts not only reinvigorate our scientific output, their areas of expertise also strengthen our ability to deliver on our mission and strategic vision implementation.

- **Cristina Connolly** from Agricultural & Resource Economics has considerable research, education, and extension activities, including serving as grant PI on CAHNR's New Beginnings Program for Students of the Tribes of Southern New England and co-PI on a \$1 million USDA grant to harness big data and AI in food production, processing, and consumption systems

- **Abhinav Upadhyay** from Animal Science had the most active research funding in the department, with more than \$11 million as PI or co-PI and more than \$1 million as the PI, respectively. His lab also has the highest number of graduate students, including two minority students
- **Cristina Colón-Semenza** from Kinesiology was accepted into both the Pepper Scholars Program at the prestigious Claude D. Pepper Older Americans Independence Center at UConn’s Center on Aging, as well as the UConn Pre-K Program
- **Oh Sung Kwon** from Kinesiology received a prestigious Robert E. Leet and Clara Guthrie Patterson Trust Mentored Research Award, as well as an NIH RO1 grant
- **Jessica Brandt** from Natural Resources and the Environment received funding from the US Geological Survey to quantify PFAS and biotransport in stream-to-riparian food webs, and received CAHNR’s Donald Kinsman Excellence in Teaching award
- **Sangyong Choi** from Nutritional Sciences received \$300,000 from USDA to study host-microbiota factor regulation zin bioavailability attenuated by phytate
- **Nicholas Goltz** from Plant Science and Landscape Architecture has successfully assumed responsibility of the UConn Plant Diagnostic Lab, including submitting for “large lab” status from the USDA-NIFA, which if granted, would essentially double its annual grant funding support

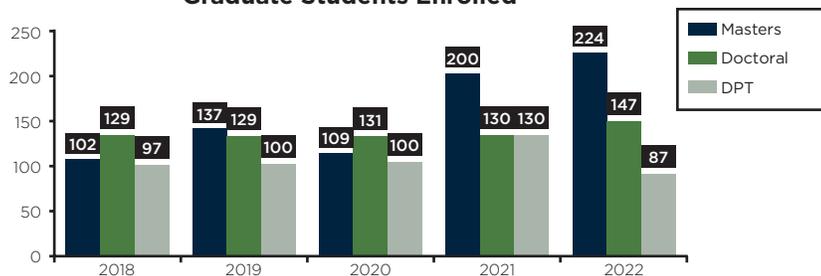
## GRADUATE EDUCATION

Preparing graduate students for fulfilling careers in academia, industry, or the non-profit sector is a cornerstone of CAHNR’s mission. In FY22, the total number of graduate students enrolled in CAHNR was 458, the second highest in the last five years. Doctoral enrollment (Ph.D.) has increased since 2017, totaling 147 in 2022. Masters’ student enrollment was also the highest ever in 2022, reaching a total of 224. In 2022, 61 MS and 16 doctoral candidates graduated from CAHNR.

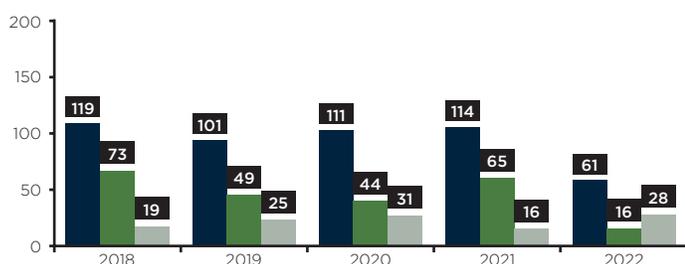
## GRADUATE STUDENT HONORS & ACHIEVEMENTS

- **Jared Goetz** from Allied Health Sciences received an NIH F31 training grant, the first NIH training award received by a student from AHS
- **Nicole Tillquist** from Animal Science was named Graduate Student Director of the Northeast Section of ASAS/ADSA
- **Soojung Ahn** from Agricultural & Resource Economics was awarded the 2021 Award for Excellence in Research and Communication by the Food Distribution Research Society
- **Raul Flamenco** from Natural Resources and the Environment was awarded an NSF GRFP to pursue dissertation research in aquatic ecotoxicology
- **Snehaa Ray** from Nutritional Sciences was awarded the 100 Years of Women Scholarship from the UConn Women’s Center
- **Brendan Noons** from Plant Science and Landscape Architecture was recognized for his oral presentation at the 2021 “tri-society” annual meeting co-hosted by the American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America

Graduate Students Enrolled



CAHNR Students Graduated



## UNDERGRADUATE EDUCATION

Exceptional undergraduate education is a key component of CAHNR's contribution to our tripartite Land Grant mission. Our majors extend beyond traditional agricultural topics to include human, animal, plant, and environment health and sustainability, all with the goal of preparing future leaders to tackle the major challenges of our time. CAHNR offers 15 BS, one BA, and three AAS majors through the Ratcliffe Hicks School of Agriculture (RHSA). CAHNR also offers 19 minors, plus one minor jointly offered with CLAS.

### UNDERGRADUATE ENROLLMENT & GRADUATION

Total CAHNR undergraduate enrollment remained relatively steady for AY 21-22, at 2,058 for all campuses, while CAHNR bachelor's degree enrollment increased slightly over the last five years. CAHNR is one of the few UConn schools and colleges to see an increase over the previous year. Undergraduate enrollments in Allied Health Sciences (776) and Animal Science (350) majors remain the highest in CAHNR.

Graduation rates in CAHNR have remained strong, with 77% of students graduating in four years and 86% in six years. This compares favorably with other UConn schools and colleges.

Enrollment in RHSA declined slightly in Fall 2021 but remained near-target at 73 students. RHSA offers an attractive point of entry for first-generation, non-traditional, and underrepresented students. The program provides excellent career opportunities in agriculture-related professional management positions important in Connecticut and the region, as well as the possibility of continuing in higher education. On average over the past three years, 68% of RHSA graduates have transferred to BS programs at UConn.

### ACCREDITED PROGRAMS

Diagnostic Genetic Sciences, Dietetics (CPD, and DPD), Medical Laboratory Science, Nutrition and Dietetics Internship, Doctor of Physical Therapy, Master of Athletic Training, and Landscape Architecture.



Starting at the Ratcliffe Hicks School of Agriculture allowed me to get the hands-on experience I wanted while being able to explore potential career opportunities.

— HANNAH COLONIES-KELLEY '22, AGRICULTURAL & RESOURCE ECONOMICS

## LIFE-TRANSFORMATIVE EDUCATION

Life-transformative education (LTE) has been a hallmark of CAHNR's mission for many years and is a natural part of our instruction. Our faculty are committed to directly advising and mentoring undergraduates, experiential learning in laboratories, fields, and workplaces, and exceptional hands-on teaching. Students take discipline-specific undergraduate research, independent study, and experiential global learning courses, and internships.

Most of CAHNR's experiential learning activities have returned to pre-pandemic implementation with only minor modifications, adhering to University Covid guidelines. CAHNR's Office of Academic Programs has provided consistent leadership in LTE. For example, former Associate Dean Sandra Bushmich has served as one of the Tri-Chairs of the University LTE Advising and Mentoring Subcommittee. This committee is charged with determining practical ways to enhance the quality of academic advising and mentoring for all UConn students.



**Landscape architecture students** won second place in the EPA's national Campus RainWorks Challenge. The four undergrads worked with Sohyun Park (PSLA) and other faculty and Extension educators to create a redesign of the Avery Point campus with sustainability and climate change in mind.

## UConn Polo team won National Women's Collegiate Polo Championship

## First study abroad for Kinesiology students in Dublin, Ireland

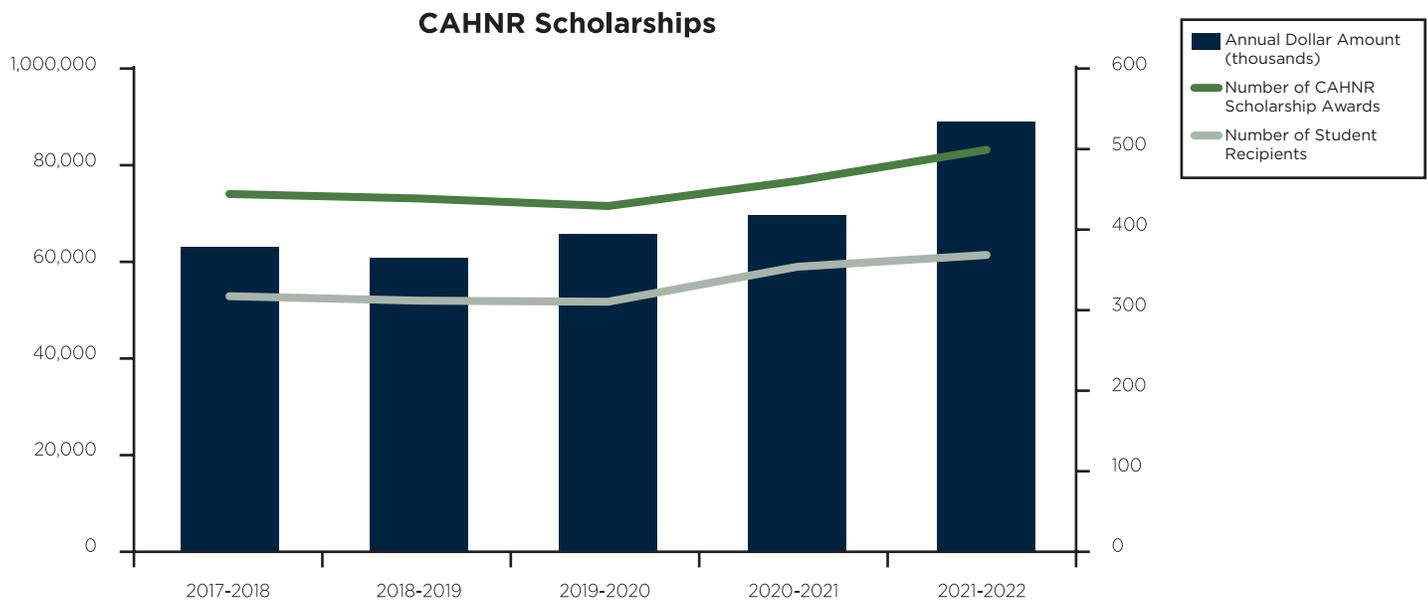
## Upper-level greenhouse tech course allowed students to interact with growers around the state

## ACADEMIC PROGRAMS HIGHLIGHTS

- The Dual College Environmental Majors Ad Hoc committee's final report resulted in the approval of an APIR faculty to teach in these majors, as well as other needed changes for the collaborative instruction of Environmental Science and Environmental Studies in CAHNR and CLAS
- Continued collaboration between CAHNR Academic Programs and CAHNR's Office of Communications to enhance and upgrade the CAHNR and RHSA undergraduate academic web content and quality. These changes should be implemented in the Fall 2022 semester
- RHSA Transfer Committee formed to examine the procedures and policies involved in RHSA course transfer to UConn BS programs. This committee determined key issues for consideration and is continuing in collaboration with the Registrar's office
- CAHNR Student Ambassadors continued service to the College, nimbly moving between online and in-person events

## SCHOLARSHIPS

In 2021-2022, CAHNR awarded nearly \$900,000 in student scholarships. Sustained development efforts at both the College and department levels have enabled us to increase the number of scholarship funds, awards, and student recipients over the past five years. Especially important are several large “Difference Maker” scholarships, which empower students and their families with significant financial support to complete their degrees.



## REGIONAL CAMPUS ENGAGEMENT

Providing access to life-transformative education across the state is an integral part of our efforts. We continue to increase our reach in Waterbury through majors in the Department of Allied Health Sciences. With strong community support, AHS’ Waterbury enrollment has grown to 72 students. The Department of Animal Science has also increased regional campus engagement, with 45 students now enrolled. Leadership within the department continues to meet with student advisors and administrators at the regional campuses to ensure student success for those who transition to Storrs.

## MODERN CURRICULA

We work continually to redesign and modernize curricula and course offerings to support our students and meet their educational needs. In 2021-2022, several aspects of CAHNR’s majors, minors, and coursework were updated across departments:

- Several departments (AHS, ARE, PVS) developed combined 4+1 BS/MS programs, allowing students to become career-ready quickly and effectively

- Online courses are being developed in Animal Science to supplement offerings related to data science, and will support students in multiple majors
- An advanced course in cannabis horticulture was launched last summer after the success of the existing course. The advanced class was offered online and was open to both degree and non-degree students
- Three CAHNR departments (ARE, KINS, PVS) engaged in major curriculum revision last year to better incorporate experiential learning and give students a competitive advantage in the job market post-graduation

## WORKFORCE DEVELOPMENT

We strive to prepare students for fulfilling high-potential careers in an inclusive environment that encourages curiosity and discovery. We have targeted workforce development efforts on our eight Pre-Professional Programs, as well as several opportunities in existing areas of need and emerging fields with significant job opportunities:

- Several of our professional programs addressed critical workforce shortages in the state and beyond in the field of allied health
- CAHNR expanded opportunities related to cannabis horticulture through a vigorous undergraduate education and research program
- In response to a survey from veterinarians and industry professionals, CAHNR developed a new minor in Equine Sports Rehabilitation to prepare graduates entering the equine rehabilitation field
- Coursework within Market Planning and Survey Research in the Food Industry was redesigned, incorporating a real-world market plan for a local business in this sector

In addition to for-credit courses, CAHNR and the Center for Career Development helped connect students with potential employers through various job and internship fairs, networking nights, and workshops throughout the year. We also held 17 CAHNR-specific career events.

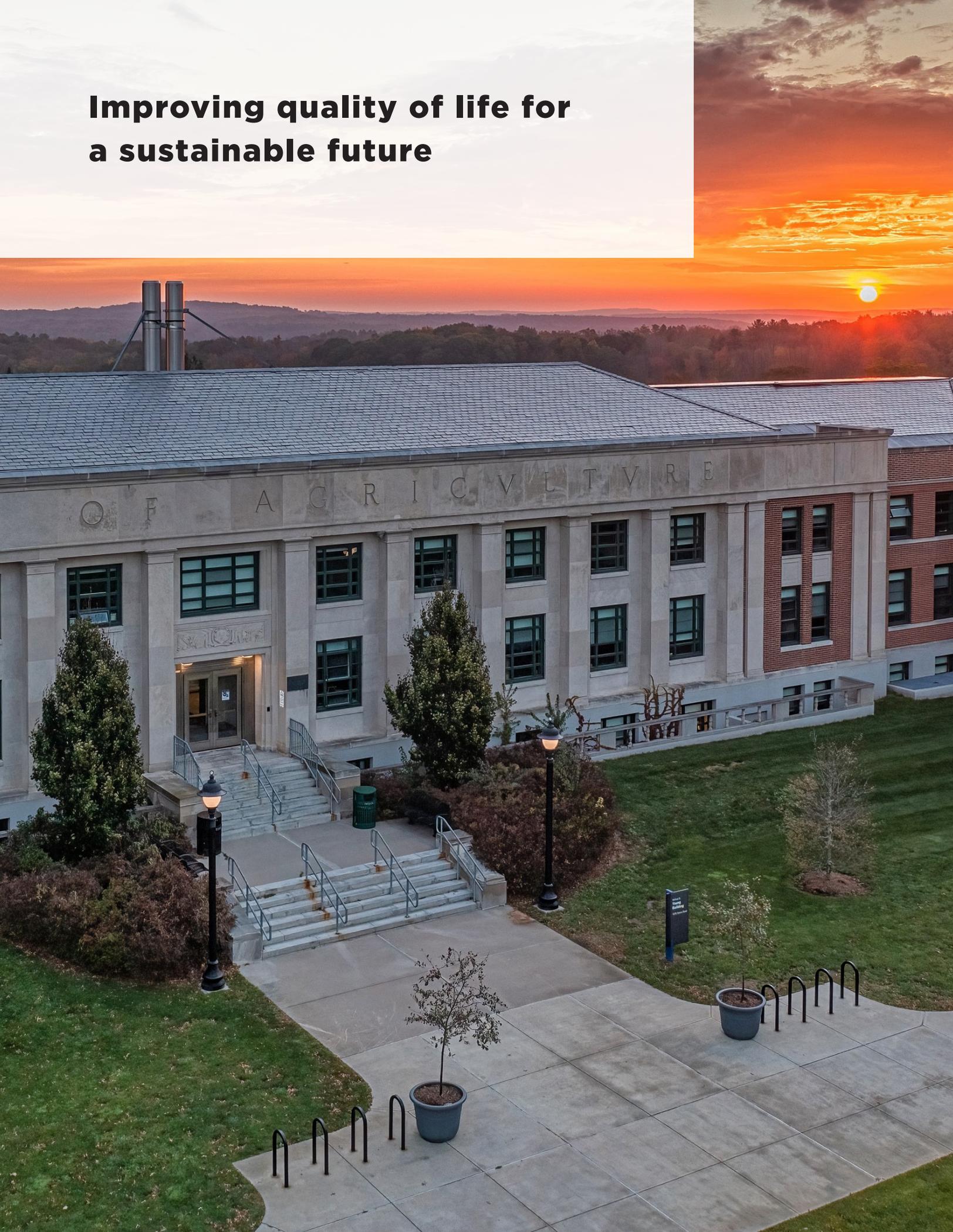
## AGRISCIENCE EDUCATION INITIATIVE

In collaboration with the Neag School of Education, Agriscience teachers in Connecticut, the CAHNR Office of Communications, the UConn Foundation, and interested donors, we led efforts to enhance the visibility and relevance of Agricultural Education preparation in Connecticut. The retirement demographic of Agriscience instructors in Connecticut and the region have made this a key workforce need in our state. Accomplishments for 2021-22 include:

- Formation of an Ag Education committee consisting of CAHNR faculty and Academic Program personnel, Neag instructors and administrators, and Connecticut HS Agriscience instructors. Key educational needs for current high school Agriscience instructors, and enhancement of undergraduate preparation for future teachers were discussed and prioritized
- The CAHNR minor in Agricultural Outreach and Learning was promoted to CAHNR undergraduates wishing to pursue careers in Agriscience and Extension
- The CAHNR Agricultural Mechanics course curriculum, considered critical for HS Agriscience teachers, was updated and new adjunct instructors selected from current HS Agriscience teachers who are also CAHNR alumni
- The CAHNR Office of Communications produced promotional brochures, web content, and a recruitment video describing the combined CAHNR undergraduate preparation and Neag Master's program in Agricultural Education that is offered to prepare students for a career as HS Agriscience instructors



# Improving quality of life for a sustainable future



## EXTENSION

UConn Extension has over 100 years of experience strengthening communities in Connecticut and beyond. Programs delivered by Extension reach individuals, communities, and businesses in each of the 169 municipalities across the state, with no fewer than seven programs in each municipality and some having 33 programs or services. Extension outreach covers the full spectrum of topics expressed in CAHNR's strategic vision initiatives.

By leveraging Extension's unique place-based approach, CAHNR Extension educators understand the particular challenges that Connecticut faces and co-create solutions for critical issues within those communities. As a result, CAHNR Extension programs reached 157,653 residents in 2021 through 8,859 hours – the equivalent of 369 days – of instruction by Extension specialists across all program areas.

**462**  
programs  
provided

**733**  
learning  
events

**220**  
Extension  
publications

CAHNR Extension expands our outreach far beyond expectations thanks to \$24.4 million in additional support from state and federal grants, government contracts, and foundation funds. Extension's ability to serve all 169 municipalities is also augmented by 2,864 active volunteers. These volunteers contributed 156,597 hours – the equivalent of approximately 18 years – across all Extension programs in 2021-2022, with a value of \$4.4 million to the communities served, according to the Independent Sector.

**\$24.4** million in active grants and contracts

**\$4.4** million value of **156,597** volunteer hours across programs

The impact of CAHNR Extension is also expanded thanks to collaborations with state agencies, non-profit organizations, businesses, and municipalities. CAHNR Extension augments and enhances the services our partners provide to find solutions to the critical issues facing our state through innovation and cooperation.

## STRATEGIC VISION ALIGNMENT

Extension's programming is thoughtfully aligned not only with the needs of our state, but also with CAHNR's strategic vision.

### Agriculture and Food

Extension programs work with urban and rural farmers, on land and sea, to help expand production of a sustainable and abundant local food supply. We have over 42 Extension programs focused on this strategic vision area that work to close the gap between the need for a vibrant agricultural economy and address food insecurity:

- 208 plant samples diagnosed at the UConn Plant Diagnostic Laboratory
- 1,644 participants in the Solid Ground Program since its inception have produced \$1.3 million in crop value
- 1,268 participants in our Artisan Cheese course, a collaboration with the Innovation Center for U.S. Dairy, University of Wisconsin-Madison, Cornell, and NC State



Seven schools in **Litchfield County** were gifted hydroponic growing systems through UConn 4-H. Students learned about the importance of agriculture, growing your own food sustainably, and incorporating STEM concepts in food production. Local 4-H club members also mentored the 140 learners through afterschool, 4-H-based enrichment programs.



In partnership with **Connecticut Sea Grant**, Extension programs supported 300 jobs through 46 aquaculture companies involved in shellfish restoration work.

### Sustainable Landscapes

With 33 related programs, Extension and our partners are informing environmentally aware residents who seek to improve our landscapes statewide.

- 37,461 visitors to the CT Trail Finder website to explore over 100 trails around the state
- 58 towns conducted Green Snow Pro training to reduce road salt use and improve environmental water conditions
- 391 virtual attendees participated in the UConn Native Plants and Pollinators Conference
- 51 participants completed the redesigned and online Ornamental and Turf Short Course



**UConn CLEAR** (Center for Land Use Education and Research), with over \$8.9 million in active and newly awarded grant funding, created a suite of online certificate training at the request of the CT Department of Energy and Environmental Protection to increase awareness and expand access to state resources. Over 150 participants took advantage of courses on topics like hazardous waste management, 21st century resilient chemical management for businesses, municipal inland wetlands, and aquifer protection.

## Enhancing Health and Well-Being

Extension uses interdisciplinary approaches to enhance health and well-being locally, nationally, and globally. With 23 related Extension programs, our work strives to prevent disease in humans, animals, and the environment.

- 26,875 low-income families received community nutrition programs through multiple initiatives, including Smith-Lever, EFNEP (Expanded Food and Nutrition Education Program), and SNAP-Ed funding sources. In one project, 80% of children who participated were willing to try and make the recommended healthy behavior change
- 2,679 hours were contributed by 16 undergraduate summer interns across all our program areas
- 2,279 clients served in 138 Connecticut municipalities and 23 states/territories by the Connecticut Veterinary Medical Diagnostic Laboratory (CVMDL), the lab responsible for detecting early cases of avian influenza, SARS-CoV-2 in domestic animals, and other zoonotic diseases



Undergrad intern **Jillian Bowen, '25 (ANSC/PVS)** supported CAHNR's One Health initiative to develop informational materials on tick- and mosquito-borne disease that are accessible for the general public.

## Climate Adaptation and Resilience

CAHNR Extension programs promote resilient and well-adapted coastal Connecticut communities and economies. We have 19 Extension programs actively providing climate adaptation and resilience activities and services in the state.

- 8 independent study students completed 1,008 hours on climate adaptation and resilience projects
- A 198-acre forest preservation plan is in development for a preserve in Stonington to improve forest health and adapt to climate change



Extension offered over 300 activities related to **invasive plants** in 50 Connecticut municipalities, reaching 9,153 residents, including agency and municipal staff. We provided at least 17,350 hours – about two years – of intensive invasive plant training sessions and management activities, as well as technical educational outreach.



Three **Master Gardener** volunteers spent a combined 200 hours and facilitated work for 60 other volunteers for projects at Sherwood Island State Park in Westport, Connecticut's first state park. These volunteers donated a combined 768 hours – about one month – of work at the 238-acre park and its beaches, wetlands, and forest and worked with 515 residents and visitors on the project.

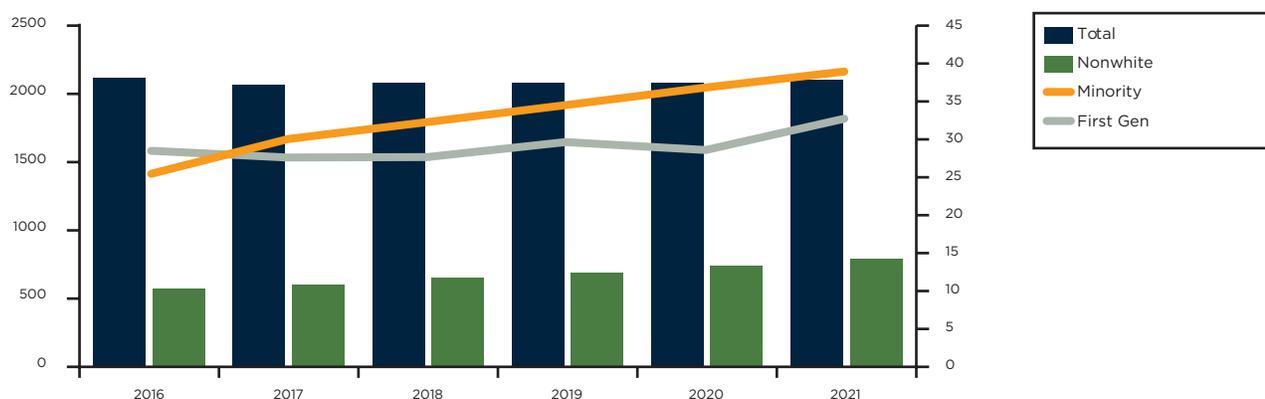
# DIVERSITY, EQUITY, INCLUSION, AND JUSTICE INITIATIVES

In CAHNR, we firmly believe that our institution is enriched by the diversity of our community, and our commitment to actively fostering inclusion and equity is founded on a deep respect for the experiences, challenges, and realities of individuals. We continue to commit time, energy, and resources through our strategic vision implementation to this important area.

## INCREASING DIVERSITY

CAHNR has demonstrated steady growth in undergraduate racial diversity over the past five years, with 38% of current undergraduates self-identifying as non-white. Hispanic/Latino is the most prominent minority. The percentage of first-generation college students has also increased over the past six years, with 32% of our undergraduates currently identifying as first-generation college students.

Diversity Trends, CAHNR Undergraduate Students



Non-white category was compiled from CAHNR and RHSA students who self-identified as one of the following groups: Black/African American; American Indian/Alaska Native; Asian; Hispanic/Latino; Native Hawaiian/Pacific Islander; Two or more races

Non-white races self-identified in 2021 were Hispanic/Latino (349), Asian (194), Black/African American (149), and two or more races (80)

- **Kristen Govoni** in Animal Science participated in mentoring and program development to racially and ethnically underrepresented individuals along the biomedical science pipeline through the Young Innovative Investigator Program (YIIP)
- The **Department on Animal Science** implemented specific strategies to support minority/first-gen students with enhanced chances to receive scholarships
- The **Department of Nutritional Sciences** hosted the first cohort of Bridging the Gap II, a program that exposes underrepresented students from UConn's regional campuses and community colleges to hands-on research experiences
- **CAHNR** competitively awarded two graduate assistantships to faculty for recruiting graduate students from underrepresented and minority groups

Within our faculty and educator ranks, we continue to seek out new hires from diverse backgrounds whose work makes connections between our areas of expertise and efforts in DEIJ. We also encourage faculty members to explore opportunities both within and beyond the College to support DEIJ initiatives.

- **Anna Legrand** from Plant Science and Landscape Architecture was invited to represent UConn on the CT Department of Agriculture's DEI Working Group
- **Mary Anne Amalaradjou** from Animal Science serves on several DEIJ related committees, including the University's Strategic Planning Executive Steering Committee, University Senate, Asian American Faculty and Staff Association, Faculty Affiliate to ODI, and a mentor for the ASM Future Leaders Mentoring Program
- **Michael Puglisi** from Nutritional Sciences partners with UConn's College Access Program, which exposes first-gen high school students to college through nutrition lessons around the state

## RESEARCH

Much of the impactful research conducted by our faculty members supports our efforts to promote diversity, equity, inclusion, and justice through anti-racist approaches. In all thematic areas of our strategic vision, CAHNR discoveries seeks to raise awareness of challenges and provide possible solutions for underrepresented and marginalized communities.

- With funding from the Collaborative to Advance Equity through Research on Women and Girls of Color through UConn's Africana Studies Institute, the team at the **Korey Stringer Institute** will develop and validate a new tool to assess occupational heat illness vulnerability in girls and women of color
- **Kristen Cooksey-Stowers** in Allied Health Sciences conducts research on reducing diet-related health inequities by improving food environments through innovative policy, systems, and environmental solutions
- **Loneke Blackman Carr** in Nutritional Sciences shared research findings related to COVID-19 and obesity disparities among black adults, which established a series of recommendations for behavioral weight loss interventions to address the unmet needs of this population
- **Valerie Duffy** and **Tina Dugdale** and their SNAP-Ed team in Allied Health Sciences collaborate with community agencies across the state to promote healthy diets and healthy weights of children and their families, particularly those from economically disadvantaged backgrounds



It wasn't until I attended UConn that I was truly able to appreciate how broad animal science can be.

— **JASMINE MORRIS '23**, ANIMAL SCIENCE, PLANS TO SEEK A MASTER'S IN SOCIAL WORK FOCUSING ON HUMAN-ANIMAL INTERACTIONS

## WORK WITH TRIBAL NATIONS

CAHNR support for local tribal nations in the areas of food, sustainability, and forest management have also been strengthened over the last year. CAHNR Extension’s work with Tribes through a USDA grant focused on food production expanded to include the establishment of the Mashantucket Pequot Tribal Nation Department of Agriculture. A recently funded USDA grant, “New Beginnings for Students of the Tribes of Southern New England,” will also launch this fall with the first cohort of two students. The program provides financial and academic support to tribal students interested in agricultural topics that are important to tribal communities. Enrolled in RHSA, the students receive customized curriculum and academic advising that integrates hands-on learning with tribal-specific content. All costs of attendance are covered through the program.



Since 2017, CAHNR has worked with the Mashantucket Pequot Tribal Nation to address food and nutrition security, health, and workforce development challenges. The partnership expanded in 2021 with the New Beginnings Program for Students of the Tribes of Southern New England.

## EXTENSION

Extension is actively working with community members, stakeholders, and advisors to increase diversity, equity, inclusion, and justice initiatives, as well as access and accessibility across all our program areas.

Financial literacy is one of our programs working to increase equity across populations. Participants in a high school workshop used a simulation to experience what it is like to be a young adult making spending decisions. Teens in Danbury imagined their future lives as young working adults making financial choices about how they would manage their expenses.

UConn 4-H, Extension’s youth development program, also works to increase diversity, equity, inclusion, and justice through mentoring, workforce development, civic engagement, and leadership. 4-H programs provide youth with hands-on, engaging STEM experiences that build excitement around STEM topics and careers. STEM education is offered through 4-H clubs, afterschool programs, Science Saturdays, mini-camps, workshops, conferences, and competitions. Programs included engineering through robotics and mechanics, 4-H summer library programs, and virtual escape rooms.

**13,177**

4-H participants

**2,193**

individual STEM and  
computer technology  
4-H projects

**1,925**

volunteers

## STRATEGIC VISION

As part of our strategic visioning process, CAHNR identified five critical areas where our expertise can significantly impact the quality of life for Connecticut residents through our teaching, research, and Extension programs. The five interdisciplinary Strategic Vision Implementation Committees (SVICs) have continued to make progress, working collaboratively to achieve the outcomes identified, and foster connections between members of the CAHNR community. At the College level, we are continuing to reinforce the importance of our strategic vision to further strengthen our collective efforts. For example, we introduced new language into job postings requiring that all faculty applicants identify one or more SVICs related to their work. Going forward, all new faculty are expected to join at least one of the existing SVICs to ensure we have fresh perspectives and ample team members to carry out our ambitious plans. The accomplishments below describe some of the SVICs' achievements in the past year.

### **Ensuring a Vibrant Agricultural Industry and Sustainable Food Supply**

With a focus on producers, processors, regulators, and consumers, this SVIC:

- Developed a framework for the Connecticut Food Innovation Center and surveyed Connecticut businesses, in conjunction with the School of Business, to determine statewide needs. There were 83 responses to the survey. We are working with a consultant to further refine the white paper and develop a proposal for the State
- Increased local food production and consumption through agricultural education and collaboration with partners and stakeholders through programs such as Put Local on Your Tray and the Connecticut Farm to School Collaborative

### **Enhancing Health and Well-Being Locally, Nationally, and Globally**

There are six sub-committees actively advancing the work of this SVIC, which included the following activities last year:

- One Health website was created, as well as a complementary podcast
- Search launched to hire a Director for One Health Initiatives in CAHNR
- Submitted proposals for an online professional master's degree in Exercise Science and a One Health minor for undergraduates

### **Promoting Diversity, Equity, Inclusion, and Justice (DEIJ) Through Anti-Racist Approaches**

This SVIC was formalized this year and combines efforts of several CAHNR committees focused in this area.

Last year, this SVIC:

- Hosted ODI Search Committee Training for faculty and staff with Dr. Frank Tuitt
- Created a new College-wide award recognizing commitment to DEIJ
- Initiated a search for a Senior Faculty with DEIJ expertise related to CAHNR disciplines
- Established a community agreement and best practices for authentic community engagement

## Fostering Sustainable Landscapes Across Urban-Rural Interfaces

In 2021-2022, this SVIC focused efforts on internal communications and increased connections between research faculty and municipalities, organizations, and regional planning entities. Some accomplishments include:

- Partnered with the Northeast Regional Center for Rural Development to conduct a workforce development and skills gap survey between businesses and communities in agriculture, outdoor recreation, and rural support services. Survey results are informing future initiatives
- Launched a Lunch and Learn seminar series that fostered collaboration and participant discussions

## Advancing Resilience and Adaptation in a Changing Climate

Team members focused on internal communications and building capacity as the changing climate presents challenges across all CAHNR's disciplinary areas:

- Created web-based networking trees for each SVIC; launch scheduled for Fall 2022
- Created a climate and resilience minor for undergraduates
- Added three new faculty positions: one on climate change science and two on sustainable and resilient communities

Looking forward to FY 2022-2023, SVICs will add new faculty hired in the past year. As we embark on our third year of implementation, each of the SVICs will assess their progress to date and establish updated goals and objectives for the next two years.

## FACULTY & STAFF DEVELOPMENT

Providing faculty and staff with effective opportunities to grow professionally and increase their skills is integral to CAHNR's continued success. As a result, we sought to provide ample options for members of our College to receive training and support, including the following:

- Four internal virtual workshops were organized and presented
  - Media Training, February 2022
  - Web Managers Round Up, March 2022
  - Improving Your Phone Photography/Videography Skills, April 2022
  - Payroll Training, April 2022
- Two major leadership trainings from Missouri Training Institute (MTI) were organized and presented for CAHNR faculty and staff, as well as colleagues from other UConn schools and colleges:
  - January 2022, attended by 20 CAHNR staff
  - May 2022, attended by 21 CAHNR faculty/staff and four additional UConn faculty/staff

- 
- For the 16th consecutive year, **Mary Margaret Smith**, **Mary Kegler**, and the team at the **Kellogg Dairy Center** in Animal Science received the Progressive Breeders Registry Award from Holstein Association USA

- **Stacey Stearns** received the national Engagement Scholarship Consortium Award for Staff Community Engagement

## ADVANCEMENT INITIATIVES

### DEVELOPMENT AND ALUMNI RELATIONS

In FY22, CAHNR exceeded its \$4 million fundraising goal with over \$6.1 million in gift commitments contributed by almost 1,500 donors. This concludes one of the College's most successful fundraising years to date. This success was driven by a combination of long-time relationships resulting in generous bequests, new commitments from individual donors, and principal-level corporate philanthropic gifts. We also continued to engage with alumni in meaningful ways, such as UConn Gives, virtual and in-person events, and digital outreach.

Notable achievements included:

- \$100,000 addition to the Delfavero Chair in Agricultural & Resource Economics
- Over \$4 million for the Eversource Energy Tech Park Initiative (CAHNR's share of \$15 million joint undertaking with the Schools of Engineering and Business)
- Over \$100,000 in outright and planned gifts by an alumna to add to the existing Smey Scholarship endowment in Physical Therapy
- \$125,000 to fund the non-endowed Julia Wasserman Scholarship for students enrolled in the College
- Approximately \$300,000 in gifts for UConn Extension and programs operating under that unit
- \$102,000 gift to support additional full scholarships for Animal Science students from the Andrus Foundation created by late alumna Kaye Andrus
- \$54,955 additional gift from the Waltz Family to continue the Waltz Family Difference Maker Scholarship
- Increased engagement with alumni through a redesigned quarterly newsletter
- Launched an alumni page on the College website
- CAHNR teams topped the UConn Gives leaderboard in 2022

### COMMUNICATING CAHNR SUCCESS

CAHNR's Office of Communications has realigned resources, increased storytelling, and engaged new audiences to better communicate the College's value, vision, and victories in 2021. These efforts also prioritized diversity, equity, and inclusion in initiatives and deliverables. Communications and marketing achievements include:

- Development and implementation of the CAHNR brand, including a unified messaging platform, brand identity document, and visual toolkit
- Increased views of CAHNR stories on UConn Today from 73,000 in CY20 to 142,000 in CY21
- Gained significant external news coverage in outlets like USA Today, the BBC, Associated Press, and National Public Radio
- Increased CAHNR's social media presence across all platforms, including significant gains in our newly launched LinkedIn account (over 1,000 followers within the first year)
- Increased pageviews on cahnr.uconn.edu by over 40,000 for a total of 129,000 pageviews; launched websites focused on DEIJ, alumni, and cannabis expertise
- Enhanced existing collaborations with internal and external partners (e.g., University Communications, UConn Foundation, the Office of the Vice President for Research, the CT Department of Agriculture)

## CHALLENGES

### SPACE

As UConn's original college, many CAHNR facilities are outdated and do not meet our current needs of teaching, research, and extension. Many of our departments need renovating and new space to continue to provide life-transformative education, maintain research excellence, and serve the residents of our state with impactful extension programming. CAHNR also lacks suitable laboratory space for new research and new researchers. A lack of adequate lab space currently limits our ability to recruit talented faculty to UConn.

One of our top priorities is the renovation of the **Jones Annex**. This project was initially approved but has now been put on hold. Through this project, the Department of Plant Science and Landscape Architecture's **Home & Garden Education Center** would be relocated from the Ratcliffe Hicks Building to the Jones Annex to allow for operational growth, increase access for the public, and improve the critical services we provide to the state. The **Plant Diagnostic Lab and Soil Nutrient Analysis Laboratory** will also be co-located in this renovated space. Currently, the Soil Lab is located at the Depot campus at a facility at the end of its functional life, which is not ADA compliant. The renovation would

accommodate state-of-the-art laboratory space that would further enhance collaboration with other schools and colleges, increase research output, and augment our ability to attract talented researchers to UConn. Furthermore, this renovation would allow existing space in Ratcliffe Hicks to be converted into studio and lab spaces that are needed to meet the accreditation requirements for the Landscape Architecture program.

Also located in the Jones Building, the College needs to update the **Foods Lab**, the only teaching kitchen on the Storrs campus, which is used for classes offered by Nutritional Sciences, Allied Health Science, and Animal Science. The Foods Lab also supports various CAHNR activities, including Extension education, student club activities, Future Farmers of America career development events for high school students, and courses in the pre-college summer programs. Furthermore, faculty in several departments use the Foods Lab for their research activities. The facility is essential for CAHNR's teaching, research, extension, and community engagement activities. To remain competitive with peer and aspirant universities that have modernized their teaching kitchens, UConn needs to update the Foods Lab to offer the most relevant courses and recruit high-caliber faculty and students.

The **greenhouses** used for teaching and outreach in CAHNR are over 70 years old, and demand for training and expertise on greenhouse-produced plants continues to increase. The green industry is the leading agricultural economic driver in Connecticut, and approximately 300 commercial greenhouses have eight million square feet of production. There is consistent demand, and UConn is a regional hub for industry needs:

**R.E. JONES BUILDING** Photo from 1950-1960



- CAHNR offers over 100 training sessions annually to wholesale and retail businesses and trains students for the workforce through coursework, including greenhouse technology
- CAHNR is sought-after to provide specialized horticulture training for the emerging cannabis market, with more new and prospective producers in the state seeking skilled graduates and science-based advice from Extension. These elements enable businesses to launch in the state and capitalize on this booming market
- CAHNR actively supports greenhouse-produced vegetables, horticultural trees, and biofuel crops, which are areas of economic growth for the state

Despite the demand, it is difficult to achieve excellence in research and workforce development for the 21st century using technology from the early 20th century currently in our existing greenhouses. The availability of state-of-the-art greenhouse facilities for teaching, extension outreach, and research will be essential for UConn to position itself as the leading source of information, an educated workforce, and scientific expertise for the state and region.

Many of our **buildings and labs** are among the oldest on campus and need immediate attention. CAHNR is continuously faced with the challenges of deteriorated basic facilities. For example, the Quonset hut at Spring Manor is in significant disrepair and is not a secure storage space for field and laboratory equipment. The lab space in Temporary Building 2 does not meet current code. The building supports the research space of five current faculty from Natural Resources and the Environment and will likely accommodate one of our new FY23 hires.

Acquiring and renovating the **UConn Field House** space is a priority for the College. This critical need would allow the College to collaborate with the Department of Athletics. It would also create needed space for an Exercise Science teaching laboratory, classrooms, clinical examination space, and sports performance training for the UConn Institute for Sports Medicine, a partnership between UConn Health and Kinesiology.

## RETIREMENTS

As of the end of FY22, 20% of CAHNR's faculty and staff have retired. These retirements have resulted in a significant loss of expertise and institutional knowledge, and they present unprecedented challenges in meeting the College's teaching and extension needs. We are thankful to have received approvals to replace many of these positions. While recruiting several new faculty and staff is exciting, the time commitment for faculty and staff to manage these searches is significant. It severely constrains the time available for their normal responsibilities. In addition, new faculty will need time to establish their research programs at UConn, and staff need time to acclimate to the University systems. We hope that our significant forward momentum in research productivity, innovative teaching, and engaged extension outreach will continue despite these challenges.

## BUDGET

Providing excellent teaching, research, and extension outreach in the face of past budget cuts has been challenging. Uncertainty in future budget rescissions poses significant risk to planning for the long-term success of the College.

## GOALS

Despite the challenges outlined above, we are committed to actively pursuing our mission and delivering impactful outcomes related to our strategic vision. To achieve this, the College will collectively:

- Work with UConn leadership to identify resources for renovating facilities, including the Jones Annex, and other research labs
- Continue to implement CAHNR's strategic vision, and track and report progress on each goal
- Continue to provide structural support to enhance funding opportunities for research and increase the extramural funding base for the College by utilizing both disciplinary and interdisciplinary teams
- Work with the Provost, Vice President for Research, Innovation & Entrepreneurship, industry, state and federal agencies, and agricultural producers to capitalize on new opportunities related to technology-driven agriculture innovations, including the establishment of a **Food Innovation Center**, research and outreach related to the production of hemp/cannabis, and position CAHNR to meet the state and regional needs on high-tech agriculture and food production, as well as economic and workforce development
- Enhance our efforts to recruit and retain diverse faculty, staff, students, and volunteers





# UConn

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