Rhode Island (University of Rhode Island)

Plan of Work for 2023-2027

Status: Final (Approved 9/26/2022)

Executive Summary Overview

The URI College of the Environment and Life Sciences (CELS) is the home of Rhode Island's Agricultural Experiment Station (AES) and Cooperative Extension (Extension). URI's land grant programs address a wide range of national and international issues, with an emphasis on the needs of our state. The research conducted through the AES is broad based, spanning disciplines from the natural to the social sciences, capitalizing on the specialized knowledge of our faculty. Our Extension programs seek to improve Rhode Islanders' quality of life, their livelihoods, and the health of our natural environment, with special attention to local problems. We emphasize close integration of research and extension in our programs to create the greatest value from URI's land-grant funding.

A recent CELS Strategic Plan for 2019 – 2023 identifies the following goals for research - 1) Respond and adapt to local, regional, and global environmental changes; 2) Sustainably grow, harvest, market and consume food from terrestrial and aquatic species; 3) Recognize and manage emergent human and environmental health challenges; and 4) Understand (a) biodiversity at multiple scales from genomes to ecosystems and (b) how the evolution and ecology of organisms affects environmental and ecosystem health.

In addition, the following goals were identified for Cooperative Extension - URI Cooperative Extension will have strengthened the capacity of Rhode Islanders to: 1) Grow, process, and provide safe and nutritious food, and to better manage wild fisheries; 2) Take actions that promote healthy lifestyles; 3) Be strong stewards of the state's urban, suburban, rural and coastal landscapes; 4) Assess water resources and apply management practices to restore and protect those resources; and 5) Address current and future energy challenges related to sustainable energy consumption and production.

Accordingly, CELS has selected the following four critical issues to be the focus of AES and Extension programs over the next five years: 1) Agriculture and Food Systems, 2) Human and Environmental Health, 3) Local to Global Environmental Change, and 4) Youth, Family and Community Development.

Merit and Scientific Peer Review Processes

AES-funded research projects undergo institutional peer review prior to submission to NIFA for review and approval. In this multi-step process, the Experiment Station Director assesses the project's fit and relevance to URI's critical issues, a member of the CELS faculty with relevant expertise evaluates the technical merit of the proposed work, and the Experiment Station Director evaluates how well the proposer subsequently responds to the peer reviewer's comments. Once those steps are completed satisfactorily, the proposal is finalized and submitted to NIFA. Proposed multi-state projects are evaluated by the Experiment Station Director for relevance to URI's critical issues, by the leader of the relevant multi-state project for relevance to the goals of the project, and for technical merit by a relevant member of the CELS faculty. We seek NIFA approval after these steps are completed.

Extension programs are evaluated for progress toward goals and sub-goals described in the 2018 – 2023 Cooperative Extension Strategic Plan by reporting to the Director on program-identified metrics. Evaluation results will be used to guide resource allocation and future programming decisions.

Stakeholder input: Action Taken to Seek Stakeholder Input

Stakeholder input is captured through a variety of mechanisms throughout the year. Stakeholder feedback is sought after most Extension workshops and meetings to ensure that our programs are meeting their needs. Research faculty routinely present the results of their work to interested government, industry, and community groups (as well as the academic community) and use feedback from those groups to inform their future research directions. Primary actions used by our faculty and staff to seek stakeholder input include inviting the public and/or stakeholders to a meeting, listening session or other stakeholder event; and inviting stakeholders to complete a survey about research or extension needs. They also form advisory committees and participate on committees and/or working groups with various stakeholder groups when that is appropriate.

Agriculture and Food Systems

Our food safety program seeks input from individuals invited to food safety workshops using Facebook, direct emails, and on-farm visits. Stakeholders of this research and extension program include consumers, food manufacturing personnel, seafood processing personnel, retail foodservice personnel, growers, and farmer's market managers. State partners include the RI Department of Health, RI Department of Environmental Management, RI Food Policy Council, and the RI Food Safety Task Force. State partners include the East Coast Shellfish Growers Association, RI Coastal Resources Management Council, RI Raised Livestock Association, and the RI Department of Environmental Management.

Primary stakeholders of our vegetable production program include commercial vegetable producers in Southern New England. State partners include the RI Fruit Growers Association, RI Nursery and Landscape Association, RI Farm Bureau, Northeast Organic Farmers Association of RI, and Southside Community Land Trust

Human and Environmental Health

Nutrition-related programs hold quarterly advisory meetings. The mosquito advisory board meets weekly from June to October to discuss research progress and the mosquito-borne disease threats in the state and region. Stakeholders are engaged through our on-line platforms TickEncounter and TickSpotters, as well as our social media program. We hold in person and on-line meetings for the general public and specific affinity groups like school nurse teachers. We conduct in-person, virtual, and survey-based listening sessions.

Stakeholders and partners include organizations that work with families who have young children. These include Ready to Learn Providence, WIC, SNAP-ED/EFNEP, YWCA, and Providence Community Health Clinic. They also include the RI Department of Health and RI Department of Environmental Management, the CDC, tick bite victims in Rhode Island and throughout North America (private citizens), veterinary clinics, Master Gardeners, outdoor workers (especially landscapers, pest control professionals; arborists, utility workers); school nurse teachers (i.e. Northeastern School Nurse Teachers Assoc); outdoor recreation and camping groups, and pet owners

Local to Global Environmental Change

Rhode Island Geographic Information System (RIGIS) encourages stakeholder input through targeted emails to previous workshop participants and follow up with personalized emails to further discuss suggestions. In addition, stakeholder input is actively provided via quarterly RIGIS Executive Committee and working group meetings. A URI RREA program contact is listed on virtually all data distributed by RIGIS and is prominently listed on the RIGIS website, making it very easy for our stakeholders to provide feedback to us.

Biological Control: We use email to invite participation in biological control projects for emerald ash borer, knotweed, and swallow-wort. We also invite prior participants of our swallow-wort biological control projects to undergraduate research poster sessions where Coastal Fellows show the results of their work on swallow-wort.

Master Gardener program: We hold virtual exploratory meetings and site visits with stakeholder groups to better understand their needs. Recent efforts have focused on the Narragansett Indian Tribe to learn about their food sovereignty initiative.

Watershed Watch: We share workshop and other opportunities hosted by our partners and the university for participation by our volunteers via our listserv and website. We invite our volunteers and supporters to participate in public forums and workshops such as the TMDL public hearings or other relevant agency efforts.

Home*A*Syst: We primarily solicit stakeholder input during workshop events. We accomplish this by asking participants questions during programs and in program evaluations. These questions include: What is their primary question about well water protection that they would like answered? What was the most important/least important thing you learned during the program? We then follow up with participants using an online survey to determine what, if any, actions they took to protect their private well water quality as a result of our programmatic efforts.

Energy Fellows: We invite mentor organizations, our traditional stakeholders, to individual meetings to gather input and feedback on the Energy Fellows Program activities and to understand how to better engage with their organizations. This group is also emailed several times over the course of the year and sent a signed letter to encourage continued participation in the program and inform about program activities. Over 50 traditional and nontraditional stakeholders are invited to attend the Energy Fellows Symposium to watch student presentations and provide feedback.

Youth, Family & Community Development

Researchers invited the general public to meetings, invited targeted individuals to meetings, and conducted open ended interviews with stakeholders. Personalized correspondence with stakeholders also encouraged their participation.

4-H makes phone calls, corresponds through emails, conducts online surveys and participates in face to face meetings with program stakeholders, including potential and current agency staff to solicit their input on ways the program can better suit their needs.

Research programs in this critical issue area involved a wide variety of stakeholders and partners including coastal residents to understand how coastal/fishing identities inform environmental attitudes, policymakers, practitioners and researchers in the field of health and personal finances.

4-H program stakeholders are youth age 5-18, parents and adult volunteers. Partner organizations include youth agencies (e.g. Navy Child and Youth Programs, East Providence Boys and Girls Club), school systems (e.g. Central Falls and Cranston), and libraries (e.g. Loutit Library in West Greenwich and Manton Library in Glocester).

Stakeholder input: Methods to Identify Individuals and Groups

CELS hosts three committees that play a role in identifying individuals and groups who are stakeholders and in collecting input from them. Two of those committees, the Research Committee and the Cooperative Extension and Outreach Coordinating Committee, are responsible for advising and assisting the Dean and Associate Deans in planning and reviewing programs for the college. A combination of faculty/staff and external partners serve on these committees and are expected to consider the needs of a broad set of stakeholders in formulating their recommendations. The third committee, the Agricultural Industry Advisory Group, advises the Dean on a wide range of issues related to CELS, including its land-grant programs. The College also utilizes Rhode Island's CARET representatives for stakeholder input. Primary methods used by our faculty and staff to identify individuals and groups include surveys of groups or individuals; consultation with advisory committees; and holding public meetings or listening sessions. Programs relying heavily on technology to engage with their audiences assess demographics of website visitors to identify stakeholders.

More information is provided below for selected programs within each Critical Issue.

Agriculture and Food Systems

Our food safety research and extension program consults with an advisory committee and conducts needs assessments. Our animal based programs identify stakeholders by engaging with members of the producer community, which is small in RI, and by participating in meetings of the East Coast and Pacific Coast Shellfish Growers Associations, the RI Food Policy Council, the Tri-State SARE advisory council, and the Southern New England Livestock Conference. Our vegetable production team networks with urban agriculture service providers and farmers, has regular in-person, email, and telephone contact with growers, and engages with the New England Vegetable and Berry Growers Association.

Human and Environmental Health

In our nutrition programs, we contact organizations that work directly with families and children and include them in a community advisory board. For the vector-borne disease work, we are active on the RI Mosquito Advisory Board through which we identity state and regional partners in vector-borne disease research and management. We actively participate in the Northeastern Center for Excellence in Vector-borne Disease, which includes collaborators at the Connecticut Agricultural Experiment Station. We also employ public crowd-sourced tick surveys, public meetings and listening sessions, and surveys that assess needs and gaps.

Local to Global Environmental Change:

Stakeholders include natural resource managers and local decision makers, typically representing municipal and state government agencies, community volunteer and non-profit organizations, businesses, and private forest landowners. Biocontrol stakeholders include land managers, environmental organizations, farmers, nursery growers and home gardeners. Forestry stakeholders include state and local non-profit conservation organizations, government agencies, and advisory groups interested in coastal zone management and private citizens who are interested in contributing to a citizen science project. Master Gardener stakeholders include demonstration garden/consultant project hosts, schools receiving school garden mentor assistance, organizations receiving seedling donations, organizations who schedule MG speakers, and farms where volunteers glean food. Watershed Watch works with 53 local organizations interested in water quality issues, stream continuity, fish migration and habitat, and community sense of place. Home*A*Syst stakeholders include private well owners, scientists and researchers, educators, federal, state, and local policymakers, and non-profit organizations. Energy Fellows stakeholders include businesses, organizations, and URI faculty/staff working in the sustainability and clean energy sector in Rhode Island.

Youth, Family & Community Development

Research programs use advisory committees, committee meetings, planning meetings and conferences to identify stakeholder groups. The 4-H program considers all RI youth and adult 4-H volunteers to be stakeholders. We use past demographic and statistical data to analyze geographic areas of the state where more resources and effort are needed to reach underserved youth.

Stakeholder input: Methods for Collecting Stakeholder Input

As was stated previously, stakeholder input is captured through a variety of mechanisms throughout the year. These include discussions and surveys of participating stakeholders at Extension workshops and meetings, as well as discussions before, during, and after faculty presentations of their research to interested industry and community groups. Input is also collected through the discussions and work of the Research Committee, the Cooperative Extension and Outreach Coordinating Committee, and the Dean's Agriculture Industry Advisory Group. Primary methods used by our faculty and staff to collect stakeholder input are meetings with traditional and non-traditional stakeholders, including those held specifically to learn about needs of non-traditional stakeholders; meetings with the public; and surveys of traditional stakeholders. Individual interviews with stakeholders are also conducted for some program areas.

Stakeholder input: A Statement of How the Input Will Be Considered

Stakeholder input is used to inform several decisions throughout the year, including priority setting and action planning. Our researchers and extension experts incorporate stakeholder input into their thinking, planning, program/project development and implementation over time. The Dean and Associate Deans use stakeholder input to inform decisions related to budget development and staffing. All parties use stakeholder input to identify emerging issues, which can result in the redirection of research and extension programs, and the acquisition of extramural resources when possible.

More information is provided below for selected programs within each Critical Issue.

Agriculture and Food Systems:

Our food Safety program uses stakeholder input to plan and modify program priorities. Our animal-based programs use it to identify emerging issues regarding animal performance and health (such as disease outbreaks) and determine traits to be targeted in genetic and epigenetic research. Our vegetable production program uses it to decide which vegetable crops to trial each year and what varieties to include in the trails. More generally, the program uses it to identify emerging issues and determine whether they are specific to certain farms or are common to many farms. This information allows the team to shift their efforts into areas of current importance for the state's vegetable producers.

Human and Environmental Health:

Stakeholders provide input on research materials, help develop recruitment strategies, and ensure that the research addresses the needs of the community. For example, in a project involving healthy food incentives, information from focus groups and surveys with community members helps refine the user interface of the program and helps identify which foods to incentivize.

Stakeholder input is also critical to the advancement of our vector-borne disease research and Extension. Our stakeholders work with us to identify public health research priorities and sometimes fund additional research. We use geo-referenced, crowd sourced TickSpotters submissions to track trends in tick encounter risk for people and pets and to identify regions of new tick infestations.

Local to Global Environmental Change:

Stakeholder input is used to make a variety of decisions about content of program delivery, mechanisms of program delivery, formation of new partnerships, research, etc.

Other stakeholder input is used to define research priorities, modify research methods, determine how best to communicate results, and to generally improve the research. Stakeholder input is used to set extension program priorities and make decisions related to program level investment of resources such as volunteer/staff effort, operating budget funds and volunteer training topics.

We also engage with local, state and national organizations and agencies so that we can inform our audiences about emerging issues in the state's water quality protection efforts and concerns. Stakeholder input is used to identify emerging issues and workforce development needs for the clean energy sector in Rhode Island.

Youth, Family & Community Development

Research programs use stakeholder input to design or to improve the design or to adapt a project from inception through completion. Input sets priorities, identifies issues, modifies plans, and informs activities.

4-H program stakeholder input is used to determine which communities need or receive additional resources, and to modify existing and new programs to better fit the needs of the community. Stakeholder input is used to help prioritize which of the 30+ national 4-H project areas we should focus on. In Rhode Island we make sure that stakeholders are fully invested in all aspects of the 4-H Program, because we rely on their full participation and volunteer services to extend the reach of our small program team.

Critical Issues

Agriculture and Food Systems

Initiated on: Nov 26, 2019
State: Rhode Island

Term Length: Long-term (>5 years)

New England aims to produce 50% of its food by the year 2060. Rhode Island's AES and Extension programs will support this effort through a systems-based, interdisciplinary approach to agriculture, aquaculture, fisheries, food policy and economics, food safety, and food innovation. Through our research and Extension programs, we will work toward economically, socially, and ecologically sustainable production, management, and consumption of land and water-based plant and animal species.

Research Goal: CELS researchers will increase our ability on local, regional, and global levels to sustainable grow, harvest, market and consume food from both terrestrial and aquatic species.

- Sub-goal 1: Create innovative approaches within the food system for local, national, and global sustainable agriculture, aquaculture, fisheries, and food processing and innovation.
- Sub-goal 2: Understand how natural products and live microbial supplements can be used to prevent and mitigate disease outbreaks and contribute to healthy internal and external environments.
- Sub-goal 3: Enhance our understanding and communication of the global benefits and potential impact of genetic approaches to agriculture and aquaculture, including selective reeding informed by genomics, gene editing and other forms of genetic modification.
- Sub-goal 4: Maximize the capacity of managed environments to provide ecosystem services such as nutrient management, water quality and habitat.

Cooperative Extension Goal: Strengthen Rhode Island's food and agricultural systems by increasing Rhode Islanders' capacity to grow, process and provide safe and nutritious food, and to better manage wild fisheries in Rhode Island and abroad.

- Sub-goal 1: Increase the capacity of Rhode Island producers to adopt innovative techniques for agriculture and aquaculture to achieve commercial viability and environmental sustainability.
- Sub-goal 2: Increase the capacity of Rhode Island food producers, processers, and service sectors to improve food safety practices and to meet federal and state regulatory expectations.
- Sub-goal 3: Educate Rhode Islander's youth population and consumers about food production, safe food handling, gardening, and ecosystem value.
- Sub-goal 4: In cooperation with the Coastal Resources Center at the Graduate School of Oceanography, we will engage with fisheries management officials and extension professionals locally and internationally to develop more robust fisheries management and aquaculture protocols.

Science Emphasis Area

Environmental Systems, Food Safety, Sustainable Agricultural Production Systems

Human and Environmental Health

Initiated on: Nov 26, 2019
State: Rhode Island

Term Length: Long-term (>5 years)

Understanding how environment affects health is critical to curbing the rise of diseases associated with environmental exposures and lifestyle choices. Rhode Island's AES and Extension programs work toward improved management of human and environmental health challenges by studying the molecular basis of infectious and noninfectious human, animal, and plant diseases; mechanisms of antibiotic resistance; and the design of new vaccines and probiotics. Our programs also address the distribution and impacts of health challenges across communities, including factors affecting nutrition and physical activity, and those associated with tick-borne illness.

Research Goal: Increase our ability to recognize and manage emergent human and environmental health challenges.

- Sub-goal 1: Encourage development of interdisciplinary teams of researchers with the capacity to understand the underlying biological and social mechanisms that contribute to human, animal, and plant health threats.
- Sub-goal 2: Develop innovative strategies to prevent and mitigate the threats posed by new and/or resurgent infectious diseases through the development of new vaccines and probiotics.
- Sub-goal 3: Harness the power of big data and bioinformatics to implement improved preventative, diagnostic, and therapeutic approaches to human and environmental health challenges.
- Sub-goal 4: Understand and address the distribution and impacts of human and environmental health challenges across communities, which have implications for social sustainability.

Cooperative Extension Goal: Strengthen the ability of Rhode Islanders to take actions that promote healthy lifestyles and result in improved nutrition and physical activity, reduced risk of vector-borne diseases, and improved physical, social, and emotional health.

- Sub-goal 1: Contribute to reduction of obesity-related disease in Rhode Island by teaching behavior-change techniques that increase intake of nutrient-dense foods and increase physical activity.
- Sub-goal 2: Increase tick literacy among Rhode Island residents to promote behaviors for disease prevention using education and technical assistance programs targeted especially to community members of high-risk towns, outdoor workers, health professionals, children, and pest managers.
- Sub-goal 3: Improve the physical, social, and emotional well-being of Rhode Island's youth population by expanding activities, events, and educational experiences related to healthy living, especially those supporting the 4-H Healthy Living mission mandate.

Science Emphasis Area

Family & Consumer Sciences, Human Nutrition, Sustainable Agricultural Production Systems

Local to Global Environmental Change

Initiated on: Nov 26, 2019
State: Rhode Island

Term Length: Long-term (>5 years)

Environmental change presents significant challenges to natural systems and the societies that rely on them. Rhode Island's AES and Extension programs enable communities to cope with changing hazards associated with sea-level rise; stronger coastal storms; increasing water temperature; impacts to water quality and availability; ocean acidification; changing disease patterns; invasive species; and biological invasions. We also seek to mitigate global environmental change by understanding the social and biological consequences of transitioning to renewable energy technologies.

Research Goal 1: Increase our ability to respond and adapt to local, regional, and global environmental changes. Sub-goals are: 1) Understand how environmental change may alter the biology and ecology of species and habitats on local through global scales; 2) Improve our understanding of human-natural systems, how they are coupled, and how to enhance their resilience to environmental change; 3) Expand our knowledge of the ecology of disease and of biological invasions, and how global change affects their prevalence and spread; 4) Understand how the linkages between hydrology, energy, food, and policy impact our environment and society; and 5) Facilitate transitions to renewable energy technologies by better understanding their impacts on humans and the environment.

Research Goal 2: increase our understanding of (a) biodiversity at multiple scales from genomes to ecosystems, and (b) how the evolution and ecology of organisms affects environmental and ecosystem health. Sub-goals are: 1) Promote interdisciplinary and collaborative research that integrates multiple levels of scientific inquiry and co-produces knowledge; 2) Utilize big data and bioinformatics to enhance our understanding of structural and functional diversity; 3) Understand the fundamental biological properties of genes and proteins, cells, organs and organ systems, organisms, populations, communities, and ecosystems, and their collective responses to environmental change; 4) Develop solutions to protect and restore biodiversity and the ecosystems that support our planet; and 5) Understand how the coupling between human and natural systems can enhance and preserve biodiversity, enhance resilience, improve the management of aquaculture, fisheries, and wildlife populations and habitats, and promote a vibrant, sustainable environment.

Cooperative Extension Goal 1: Provide leadership, information, and guidance on the stewardship of land to achieve ecosystem resilience, water resource protection, forest management, and economic and agricultural viability. Sub-goals are: 1) Increase implementation of best management practices to support sustainable agriculture; 2) Increase capacity to apply best stewardship practices to achieve coastal resilience, ecosystem resilience, and increased use of effective green infrastructure; 3) Ensure ready access to essential geospatial information for decision makers and landowners; 4) Increase awareness of how land-use decision-making affects economic viability, quality of life, environmental health, and food security; and 5) Increase the capacity of urban planners to improve development by addressing climate change and native wildlife enhancement.

Cooperative Extension Goal 2: Expand the capacity of Rhode Islanders to assess water resources and apply management practices to restore and protect water resources. Sub-goals are: 1) Increase capacity for assessment of RI water bodies; 2) Increase RI's capacity to implement storm water controls and

green infrastructure practices; 3) Build capacity to protect drinking water; 4) Implement best management practices for agricultural, aquacultural, forestry, and other related industries to enhance water resources; and 5) Enhance the capacity of the private sector to upgrade onsite wastewater treatment systems.

Cooperative Extension Goal 3: Strengthen the capacity of Rhode Islanders to face current and future energy challenges related to sustainable energy consumption and production. Sub-goals are: 1) Increase awareness of contemporary energy challenges and promote best practices that increase sustainable energy consumption and production; and 2) Strengthen Rhode Island's energy sector through workforce development.

Science Emphasis Area

Environmental Systems, Family & Consumer Sciences, Sustainable Agricultural Production Systems

Youth, Family, and Community Development

Initiated on: Nov 26, 2019
State: Rhode Island

Term Length: Long-term (>5 years)

Numerous social, environmental, and economic challenges affect the health and success of Rhode Island's youth, families, and communities. Rhode Island's AES and Extension programs use a variety of approaches to address these issues, including economics, social science, historical analysis, and information technology. Our faculty study the social context of teaching and learning as it pertains to at-risk and under-represented minority populations; barriers and motivators influencing family financial decision-making; the history of gender and development; tourism and development; and community disaster planning. We also advance positive youth development through 4-H with an emphasis on science and technology, leadership, life skills, and healthy living.

Research Goal: Increase our ability to understand, respond, and adapt to social, environmental, and economic challenges facing Rhode Island's youth, families, and communities.

- Sub-goal 1: Understand and address the distribution and impacts of human and environmental challenges across communities, which have implications for social and economic sustainability
- Sub-goal 2: Increase the capacity of planners to improve urban, farm, park, coastal and open space development by addressing community needs within the context of climate change.

Cooperative Extension Goal: Improve the physical, social, and emotional well-being of Rhode Island's youth population by expanding activities, events, and educational experiences related to science and technology, leadership, life skills, and healthy living.

- Sub-goal 1: Youth increase their knowledge and skills related to science and health.
- Sub-goal 2: Youth increase their commitment to and understanding of their communities.
- Sub-goal 3: Youth improve leadership skills to make a positive difference in their schools and communities.

Science Emphasis Area
Education and Multicultural Alliances, Family & Consumer Sciences, Youth Development