



# 2019 ANNUAL REPORT

UNIVERSITY OF MAINE COOPERATIVE EXTENSION  
YORK COUNTY

*Information you can use. Research you can trust.*

**[extension.umaine.edu](https://extension.umaine.edu)**

15 Oak Street Unit 302 | Springvale, ME 04083

800.287.1535 (in Maine) | or 207.324.2814

E-mail: [extension.york@maine.edu](mailto:extension.york@maine.edu)

## OFFICE OF THE DEAN

*Welcome to the University of Maine Cooperative Extension! We are located across the state in 16 county offices, research farms, 4-H camps and learning centers, and online. We are the largest outreach component of the University of Maine and reach more Maine people than any other entity within the seven campus University of Maine System. Our work is focused on helping Maine communities thrive and we do so focusing on two areas of excellence--the Maine Food System and 4-H. UMaine Cooperative Extension conducts the state's most successful out-of-school youth education program through 4-H, empowering young people to reach their full potential. Extension also helps support, sustain, and grow the food-based economy across the entire state of Maine. In addition, we partner with other organizations and programs to provide additional educational opportunities to a diversity of audiences across this state.*



*UMaine Cooperative Extension is determined to make a positive difference in our areas of excellence and beyond for the citizens of Maine. Explore our website, visit a county office, and contact our enthusiastic workforce.*

— Hannah Carter, Dean

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Frank Wertheim, Extension Educator, Agriculture  
Sally Farrell, 4-H Youth Development Professional  
Diane Qualey, Community Education Assistant, EFNEP  
Susan Tkacik, Community Education Assistant, Horticulture  
Donna Flint, Administrative Specialists and Community Education Assistant, 4-H  
Elizabeth Clock, Administrative Specialists  
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***Putting university research to work in homes, businesses, farms,  
and communities for over 100 years.***

*Our annual report features highlights of recent accomplishments  
and the difference we make in the lives of Maine citizens and their communities*

## STATEWIDE HIGHLIGHTS —MAINE FOOD SYSTEM

### Supporting Maine's Wild Blueberries

**Relevance** – Wild blueberries are a \$250 million industry in Maine. Mummy berry and Botrytis flower blight can be serious diseases in wild blueberries that can greatly decrease yield when they occur. Mummy berry can result in complete crop loss if not effectively controlled. Botrytis can kill off 30% of flowers during bloom, and frost during bloom also can greatly decrease yield. Maine's 510 blueberry growers need accurate weather and disease risk information, and those who use fungicides need timely information on when they should apply fungicides for optimum efficacy. Timely applications of fungicides provide improved control of mummy berry and Botrytis. Avoiding unnecessary fungicide applications also saves growers' money and prevents adding unnecessary pesticides to the environment.

**Response** – Extension has a network of 15 Internet connected weather stations in low bush blueberry fields. From the weather data and field conditions, we provide growers with biweekly reports on infection risk during mummy berry season and make recommendations on effective times for fungicide applications. In 2019, Extension provided growers with a new weather app developed with AgriNet. This web-based app is available on mobile phones and provides current information for each weather station, and indicates when disease events have occurred. Future additions to the app will include alerts for frost events and inclusion of growing degree day models for important blueberry life stages or pests.

**Result** – As a result, more growers can quickly obtain information about their fields for weather conditions and disease risks. Growers report substantial savings by avoiding unnecessary applications of fungicides to control mummy berry disease.

### Supporting Maine's Potato Industry

**Relevance** – The \$500 million potato industry is the largest agricultural sector in Maine, encompassing over 500 businesses generating over \$300 million in annual sales, employing over 2,600 people, and providing over \$112 million in income to Maine citizens. The management of insects, diseases, weeds, and other pests is integral in sustaining a healthy Maine potato crop. Potato growers are increasingly relying on a multidisciplinary Integrated Pest Management (IPM) approach to ensure that Maine's potato crop is pest and damage free while attempting to minimize the amount of pesticides that are applied.

**Response** – UMaine Extension's Potato IPM Program impacts Maine's 300 commercial potato growers and 48,000 acres of potatoes and has become an integral part of the Maine Potato Industry. The program also broadly impacts national and international growers who rely on the state's seed crop. The project maintains nearly 100 specialized insect traps, coordinates a statewide network of electronic weather stations, and surveys 75 potato fields on a weekly basis for weeds, insects and diseases. IPM scientists track potential pest outbreaks to provide growers with current information on treatments to minimize the number of pesticide applications and maximize potato yield.

**Result** – The economic impact from Extension's pest monitoring and educational programs for the 2019 season is estimated at over \$19 million.

## **Supporting Food Producers with Food Safety**

**Relevance** – The 2011 Food Safety Modernization Act (FSMA) was a significant change to food safety regulations, introducing a proactive rather than reactive approach to outbreaks. Two major rules impacted farmers and food businesses in Maine, and throughout the U.S. They are the Produce Safety Rule (PSR) and the Preventive Controls for Human Food Rule (PC). The overall goal of these rules is to make our food system safer. For produce farmers, the impact of the changes are the greatest, since this industry has not been regulated before. These farmers remain uncertain of how the regulations affect their work.

**Response** – In 2019, Extension provided three-day PC trainings to over 30 food producers in Maine and three seafood Hazard Analysis Critical Control Point (HACCP) courses with 60 seafood processors and one Meat and Poultry course with 23 participants. We have scheduled PSR training to over 200 farmers. In addition to these trainings, Extension provided one-on-one consulting and education for over 30 food producers, providing services ranging from facility design, sanitation, thermal process design/validation, and food safety plan guidance.

**Result** – As a result of participation in these FSMA trainings, over 60 food producers have implemented food safety plans. One company exemplifies the implementation of knowledge gained by participating in all three trainings and receiving one-on-one consulting. In the six years that Extension has been working with this company, they have grown from producing 200 units a week to over 8,000, and grown from 2 employees in 2012 to 12 full-time and 5 part-time employees in 2019. In 2020, they are planning to build a new building capable of producing over 20,000 units a week.

## **AgrAbility...Supporting Farmers of All Abilities To Remain Active on the Farm**

**Relevance** – The average U.S. farmer is 58 years old, and farming is the sixth most dangerous job in America. An estimated 5,700 farmers, farm family members, or farm workers in Maine have a chronic health condition or disability, such as post-traumatic stress disorder, traumatic brain injury, or aging-related issues, such as arthritis or hearing loss. In addition to farmers, fishermen, forest workers, and migrant workers face similar challenges for remaining successful in production agriculture.

**Response** – Funded through USDA/NIFA, Maine AgrAbility helps Maine farmers, loggers and fishermen facing physical or cognitive challenges, to enhance their ability to farm and live independently, which improves their quality of life and economic sustainability. AgrAbility specialists assess issues and offer adaptive recommendations. They provide education about safe work methods and connect people with other resources through this nonprofit partnership between Extension and Alpha One. The program supports the capacity of health and agricultural professionals to provide assistance and services for farmers and farm workers with disabilities.

**Result** – Since the project began in 2010, Maine AgrAbility has provided technical information to over 800 farmers and conducted on-site assessments for over 100 agricultural workers. The diverse agricultural operations include dairy and livestock operations, Christmas tree farms, fruit orchards, agritourism, vegetable and maple syrup production, hay sales, managing woodlots and lobstering. A 2019 program evaluation suggests that participants experienced an increase in economic viability and sustainability, and that AgrAbility suggestions made their farm business more accessible, or using their existing resources differently allowed them to start building up their farm again into a viable and stronger business.

## Supporting the “One Health and the Environment” Initiative (OHE)

**Relevance** – Crossover diseases affect both livestock and wildlife can be a problem in a state like Maine. Likewise, with diseases that affect both animals and humans (zoonoses). These diseases are spread by contact, by shared resources, or by “vectors” such as ticks. Improving detection and prevention of these diseases, such as Lyme Disease, is dependent on education and communication about risk reduction.

**Response** – To assist in this effort, the UM Veterinary Diagnostic Laboratory (VDL) offers diagnostic assistance for wildlife cases, works with the Extension Insect Control team, and reports on “One Health” topics such as infectious diseases of moose. UM VDL is one of a group of laboratories that “link” regional wildlife agencies with local diagnostic assistance for wild animals, the Northeast Wildlife Disease Cooperative. As well, UM VDL collaborates with the wildlife agencies of Maine, New Hampshire and Vermont in moose health studies.

**Result** – Participation in the NWDC has been helpful for Maine’s wildlife agencies, and brings expertise both to the region (via NWDC) and to the UM VDL (via collaborations with other labs). UM students benefit from opportunities to work with wildlife disease researchers, and biologists benefit from improved safety in the field due to NWDC workshops. Regionally acquired information provides better disease surveillance, helping wildlife managers. As well, vigilance regarding infectious disease in wildlife helps protect livestock owners. For instance, as the prevalence of *Parelaphostrongylus tenuis* (“brainworm”) increases, sheep producers should change pasture management to avoid snails on pastures, or to reduce white-tailed deer presence in pastures. Similarly, as farmers understand more about Lyme Disease risks, they can reduce their risk of exposure to ticks. The OHE facilitates communication and funding to support surveillance, research and training to reduce these “crossover” and vector-borne diseases.

During 2019, an NSF REU (Research Experience for Undergraduates) 10-week summer program based on One Health projects was held at the University of Maine, and a graduate student began work on a project to reduce the risk of brainworm infections in livestock.

## Protecting Maine’s Dairy Industry

**Relevance** – Maine currently has 8,200 farms, and many have dairy animals. Maine’s dairy industry generates more than \$570 million a year for the state’s economy and contributes more than \$25 million in state and municipal taxes. Dairy farms employ more than 1,300 people statewide, and the industry provides more than 4,000 jobs for Maine people. As well, organic and small ruminant dairies are producing a diverse collection of artisanal cheeses and alternative milk products. For public safety and quality control reasons, all dairy producers must keep pathogenic bacteria out of their dairy animals and their dairy products. It is important for them to identify and cull these chronically infected animals to protect the public, and to avoid spreading this disease on their dairies.

**Response** – The UMaine Veterinary Diagnostic Laboratory (VDL) offers a local, responsive resource for culturing milk samples (bulk tank or individual animal samples), along with water samples, thus providing a key piece of information for producers, Extension staff, and milk processors. The VDL helps protect Maine’s dairies, both large and small. In 2019 cultured over 1,600 milk samples for mastitis.

**Result** – Effective responses to animal illnesses are only possible when the disease is identified. Maine’s dairy owners benefit from local, responsive mastitis diagnostic service. At the VDL, Extension staff screen both large and small dairies for mycoplasma, one of the most problematic pathogens for producers of milk or beef. Farmers avoid antibiotic use by culling

animals with incurable infections, such as *Staphylococcus aureus* or *Mycoplasma bovis*. This protects public health, jobs, and this sector of the state's economy.

### **Recipe to Market Program: Growing Successful Food Entrepreneurs**

**Relevance** – There has been a growing interest in value-added food production in Maine. From farmers looking to add value to their raw products, to Maine families interested in turning their favorite recipes into viable food businesses. In response to this growing demand, the University of Maine Cooperative Extension developed the *Recipe to Market* program in 2007, and has been offering it to statewide audiences annually ever since. The goal of the program is to help potential and existing food entrepreneurs acquire food science and business knowledge and skills to successfully bring a value-added food product to market.

**Response** – Since its inception, Extension has conducted 28 programs in 9 counties reaching 350 participants across the state. The program is offered in both multiple and single session formats and is designed to help participants understand licensing/regulations, processing/packaging, the specialty food industry and acquire business management knowledge and skills. The program is conducted by a multidisciplinary team of Extension faculty and covers topics such as: Introduction to Specialty Foods; Developing Your Product and Process; Business Realities; Marketing and a resource panel discussion.

**Results** – As a result of attending these educational programs, more than 90 percent of the participants surveyed indicated they improved their knowledge and skills and plan to adopt business and food processing/safety practices they learned during the program. Long-term survey results indicate that participants used the new knowledge they gained from attending *Recipe to Market* to make more effective business decisions, develop new food products, and write and revise business and marketing plans. The survey results also indicate that 27% of the *Recipe to Market* multi-session participants subsequently started food businesses. We estimate that 60 new value-added food businesses, generating \$2.1 million in direct sales and employing 102 workers were started in Maine by the 221 people attending our *Recipe to Market* multi-session programs since 2007.

### **Conducting Variety Trials to Support Craft Brewing and Distilling**

**Relevance** – The rapid expansion of the craft brewing and distilling industries in the Northeast has created demand for locally grown and malted barley. In Maine, two craft malthouses opened in 2015 to fill this need. Historically, Maine has grown between three and ten thousand acres of malt barley a year for export to an industrial-scale malthouse in Canada, and the variety of choice has been Newdale. But the craft malting process requires different grain quality characteristics than industrial malting. Craft brewers and distillers seek new and interesting varieties.

**Response** – In 2015, Extension began conducting annual malt barley variety trials in central and northern Maine, as part of the Eastern Spring Barley Nursery (ESBN) project involving 9 other institutions. The ESBN is coordinated by North Dakota State University and funded in part by the Brewer's Association. Each year 25 varieties are evaluated for agronomic, grain quality, and malting quality characteristics. Using four years of results, Extension worked with Maine's two malthouses and the ESBN coordinator to identify promising varieties for Maine.

**Result** – As a result of Extension's trials, Maine farmers and maltsters can now use region and state-specific information to select malt barley varieties based on agronomic and malting performance. Extension publishes annual research reports on our Grains and Oilseeds website. Several European varieties have shown greater sprout resistance and equal or better yields and

malting quality as Maine's current standard variety, Newdale. Inspired by these results, Maine Malt House received a Northeast SARE Farmer Grant to conduct at-scale evaluations of two of the new varieties. During the 2019 season, they grew replicated 10-acre blocks of KWS Tinka, LCS Genie, and Newdale. Both new varieties yielded about 10% more than Newdale. Maine Malt House conducted malting evaluations and distributed malted samples to collaborating breweries for their assessment.



## STATEWIDE HIGHLIGHTS — 4-H YOUTH DEVELOPMENT

### Reducing Summer Learning Loss

**Relevance** – The U.S. has an identified need to improve student proficiency in STEM disciplines and to better prepare young adults for the workforce. Low-income students are particularly in need, as they tend to lose grade equivalency in summer due to lack of learning opportunities.



**Response** – To increase science proficiency for Maine youth and to prevent summer learning loss, Extension created and delivered the 4-H Summer of Science (SOS) curricula, exposing youth to informal science, technology, engineering, and math in a fun and meaningful way. The program occurs where youth already are, focuses on reducing barriers to STEM learning, and uses teens and college interns as teachers and mentors. The teen teacher position is often the first paid position for many of the teens.

**Result** – In 2019, over 3,600 youth and 700 volunteers participated in 50 community sites in 10 Maine counties, and curriculum included ocean literacy and engineering. Eleven undergraduate interns, 41 teens and 12 4-H staff provided program delivery of the weekly activities. 4-H Summer of Science not only helped grade school youth in Maine enjoy STEM learning in the summer, it also fostered career development, leadership, resiliency, and responsibility in the Maine teens who delivered the program in their neighborhoods. The teens and college interns identify many skills they gain in SOS, including responsibility, time management, communication, leadership skills, and career development.

### Fostering Positive Science Identities in Youth

**Relevance** – Educators in the United States, and in Maine, are continuing to work toward fostering interest and positive science identities in youth. They are also searching for ways to engage youth in local, place-based STEM activities, while using best practices for science learning and meeting local state and national standards. Youth enjoy and learn from experiential learning activities, particularly activities that have local and personal relevance and applicability. University researchers continue to explore ways to communicate research to public audiences, including K-12 age youth.

**Response** – As a way to bring UMaine research to youth audiences, Extension in 2014 developed 4-H Science Toolkits - curricula with associated materials available for loan from Extension offices. These toolkits are available to formal and informal educators at no cost, and the curriculum can be downloaded online. New toolkits have been recently developed or are being developed in mineralogy, meteorites, data science, forestry, solar energy, and aquaculture. Toolkits are standardized so that each serves a classroom group of 25 youth.

**Result** – The toolkit lending library has nearly 200 individual kits in almost 50 unique STEM subjects. In 2019, over 150 adults borrowed the 4-H Science/STEM toolkits, reaching over 2,000 youth with free hands-on STEM learning. This number is expected to grow with the availability of new toolkits and their use by 4-H STEM Ambassadors, UMaine researchers, and with many faculty adding funding for the creation of 4-H toolkits to their grant proposals. Outside sponsors have also sponsored 4-H toolkits, and the program is also part of a \$20 million National Science Foundation grant to UMaine. By reducing a significant barrier for 4-H volunteers, club leaders, 4-H staff, and other educators, these STEM toolkits are bolstering STEM learning to Maine youth.



#### 4-H Ambassadors Sparking Student Interest in STEM Careers

**Relevance** – Developing Maine youth's STEM literacy is vital to ensuring that our state continues to thrive economically and socially. Given the remote and diverse communities where Maine youth live, informal education can help minimize inequities in rural youth STEM education and career pipelines. Future career opportunities in Maine will depend heavily on STEM skills, whether in the growing fields of healthcare and engineering, or in positions requiring technical skills, such as in construction and maintenance of transportation and energy systems.

**Response** – In 2019, the 4-H STEM Ambassador program staff trained 116 college students to develop and deliver informal STEM-based educational experiences. These volunteers committed 1,740 hours of time including training, preparation and program delivery. Through this program, youth ages 8-14 come to view these Ambassadors as mentors and leaders in their community while also developing skills in STEM through hands-on activities.

**Result** – The 4-H STEM Ambassador program continues to grow to reach more youth, and engage more UMaine System college students as we engage more partners in our efforts. In 2019, over 850 youth were engaged in at least 6 hours of hands-on science, engineering and mathematics. Youth participants agree they want to learn more about science and feel they are good at science, and feel college could be for them. Our 4-H STEM Ambassadors quickly develop confidence in their abilities as teachers and leaders in STEM education. Over the next twelve months we will extend the program to other higher education institutions in Maine. As part of a successful NSF grant to UMaine, expansion to select Maine Community Colleges will begin in 2020.

#### Childhood Obesity and EFNEP

**Relevance** – Nationally, 4.8 million (15.5%) children aged 10 to 17 are obese. Comparatively, Maine's youth obesity rate is similar to the national rates at 14.9%. Annually, the United States spends \$14 billion to treat childhood obesity, and obese children are almost three times more expensive for the health system than the normal weight child. Rising childhood obesity rates will continue to put a strain on current health promotion programs and continue to raise health care costs for the nation.

**Response** – In an effort to stop rising childhood obesity rates, UMaine Extension EFNEP implements direct education to Maine's low-income children to improve their knowledge, behaviors, and attitudes related to improving diet quality, increasing daily physical activity, and using food resources management practices to learn how to plan and shop for healthy meals and snacks. Program outcomes are measured for all youth ages 5-18 using validated pre/post program surveys.

**Result** – In 2019, 2,056 youth participated in Maine EFNEP. Youth participated in an average of 6 classes over 2 months. Of the 2,056 youth that participated in EFNEP, 1,936 completed a pre and post survey. As a result of participating in EFNEP:

- 77% of youth improved their abilities to choose foods according to current Dietary Guidelines or improved nutrition knowledge.
- 38% of youth improved their daily physical activity practices.
- 53% of youth used safe food handling practices more often.
- 46% of youth improved their ability to prepare simple, nutritious, affordable food.

## **Early College Helping Rural Youth Transition to College**

**Relevance** – There is compelling research that shows high school students who are exposed to higher education while still in high school, more successfully transition to college, and are more likely to persist to a degree. Furthermore, studies show that rural youth are less likely to aspire to higher education than their peers in more urban or suburban districts.

**Response** – In 2017, the Maine State Legislature appropriated over \$2 million to support an Early College Initiative through the University of Maine System, from which Extension received a grant to implement an Early College program in rural Oxford County. We began implementing an Early College Outdoor Leadership Pathway in 2018.

**Result** – In 2019, 24 high school students participated in Early College courses in Outdoor Leadership at UMaine's Bryant Pond site. All participants had a chance to visit the University of Maine, and many report increased aspirations for college and have goals to pursue outdoor leadership as a career path.

## **4-H Summer Camp-Building Community and Connecting Youth to the Outdoors**

**Relevance** – Research has shown that positive social and emotional learning experiences can significantly impact youth development and connecting youth to a positive adult role model decreases the risk for making unhealthy choices or engaging in risky behaviors. With youth spending more time connected to social media and other digital platforms resulting in isolation and sedentary indoor time, many youth suffer from obesity and/or ADHD, and some lack opportunities to develop positive interpersonal communication skills.

**Response** – UMaine Extension 4-H Camp and Learning Centers provide programs and opportunities for youth ages 4-17, many from underserved populations, with transformational experiences designed to develop a sense of place and belonging, and confidence in the outdoors. Our programs provide the opportunity to spend each day in a positive learning environment or to live for a week or more alongside trained adult educators, mentors, and caring peers. Our summer camp programs provide youth a wealth of opportunities of programs to choose from, focusing on ecology education, the arts, and outdoor skills, youth can create meaningful experiences that fit their needs.

**Result** – In 2019, the 4-H summer camps served 2,454 youth from all 16 counties in Maine, 22 states, and 6 countries. Through living and working together, campers and staff became part of an interconnected community committed to a sustainable future. Youth and program alumni report that the 4-H Camp and Learning Center experience has helped them develop greater self-confidence, civic engagement, and personal and academic success.

## STATEWIDE HIGHLIGHTS — COMMUNITY AND ECONOMIC DEVELOPMENT

### Helping Entrepreneurs in Pricing Skills

**Relevance** – Small businesses are very important to the economic vitality of Maine's rural economy. More than 20% of the jobs in rural Maine are created by small-scale entrepreneurs. However, many of these entrepreneurs lack the business skills needed to successfully start-up and grow their businesses. Research shows that helping rural entrepreneurs improve their business skills will improve their chances for success. One of the most important business management skills is pricing. Yet, many small-scale entrepreneurs lack the knowledge and skills necessary to develop a profitable pricing strategy that can help ensure financial success.

**Response** – During the past year, the UMaine Extension conducted pricing workshops across the state, presented a pricing webinar in collaboration with the Maine Food Strategy, and taught a pricing seminar at a statewide conference for Maine entrepreneurs. The goal of this program was to help existing and aspiring Maine entrepreneurs improve their pricing knowledge and skills so they could develop profitable pricing strategies for their businesses. The program was conducted by Extension faculty and covered topics such as: key elements of pricing, pricing methods and models, pricing strategies, price elasticity of demand, profit margin and cost analysis.

More than 70 rural entrepreneurs from across Maine participated in this highly successful training. They included specialty food producers, farmers, craft artists, food retailers, environmental consultants, bookkeepers and other small rural businesses.

**Result** – As a result of attending these educational programs, Maine entrepreneurs improved their knowledge and skills of pricing, plan to adopt the pricing techniques they learned, and to set profitable prices for their products and services moving forward. Eighty-seven percent planned to set a new, more profitable, price for their product or service, and 97% planned to adopt the pricing techniques learned during the training. The average participant reported a 157% increase in their knowledge of pricing as a result of attending the workshops. Changes they plan to make within six months of the training included: incorporate the value of their time and profit into their pricing, conduct a thorough cost analysis, research the market before setting prices, and restructure their current pricing structure. Several workshop participants who attended follow-up one-on-one consultations said they subsequently created pricing strategies that led to increased profitability for their businesses.

### Master Gardener Volunteers

**Relevance** – Successful school and community gardens are an important tool for enhancing public health and providing meaningful community engagement opportunities by increasing access to locally grown food, providing a safe space to connect with neighbors, and offering learning opportunities outside the classroom. Extension supports volunteer leaders and provides educational resources, which are key contributors to the success of these projects.

**Response** – The Master Gardener Volunteers (MGV) Program provides participants with a minimum of 40 hours of in-depth training in the art and science of horticulture. Trainees receive current, research-based information from our educators and industry experts and are connected with service projects that match their interests, skill set, and availability. MGV coordinators facilitate relationships between MGV and community partners; assisting with needs assessment, program planning, risk management, and problem solving.

**Results** – The MGV program provides opportunities for gardeners with all levels of experience to connect with meaningful service projects in their community. Of the 937 active MGV, 144 were trained in 2019. In total, they donated 33,500 hours to a variety of educational and food security projects throughout the state including support of: 53 community gardens 50 school gardens 57 demonstration gardens, and 66 youth programs involving 4,129 youth in horticulture activities this year. MGVs reported that they: increased community partnerships, assessed community needs and assets, engaged positively in their community, increased consumption of home-grown food, and developed new or expanded gardens. Many volunteers enter the MGV program with the goal of improving their gardening skills for their own personal benefit and leave surprised by how deeply involved and passionate they become about community projects.

### **Maine Harvest for Hunger: Mobilizing to Support Food Insecure Citizens**

Maine has the highest rate of food insecurity in New England, and ranks 12th in the U.S. The USDA estimates 13.6 percent of Maine households, over 182,000 individuals, are food insecure. Twenty percent of children are food insecure. Twenty-three percent of seniors have marginal, low, or very low food security. Thirty-seven percent of food-insecure people do not qualify for food stamps or other government programs. It is especially challenging for food insecure people to afford high quality, fresh, nutritious food, and donations of fresh produce to Maine's emergency food system has declined significantly in recent years.

Since 2000, UMaine Extension's Maine Harvest for Hunger (MHH) program has mobilized gardeners, farmers, businesses, schools, and civic groups to grow, glean, and donate quality produce to distribution sites (pantries, shelters, community meals) and directly to neighbors in need, to mitigate hunger, improve nutrition and health, and help recipients develop lifelong positive nutritional habits. In addition, educational programs such as Hancock County's Eat Well Volunteers, have focused on engaging food pantry recipients in learning appropriate methods of cooking and using fresh produce, and state-wide Extension programs help teach Mainers to grow more of their own fresh garden produce.

Since 2000, MHH participants have distributed over 3 million lbs. of food to citizens grappling with hunger. In 2019, donations of over 193,000 lbs. of fresh produce from over 120 Maine farms went to 207 hunger alleviation distribution sites. A corps of 365 volunteers and 8 corporate partners from 12 counties logged over 6,000 hours, and the value of the produce is estimated at over \$327,000. Now in its 20th season, MHH has continued to improve the efficiency of supplying fresh produce to food pantries across Maine through building partnerships. For example, through MHH volunteer planning and communications, several food pantries are now sending trucks and vans directly to the farm where gleaning is taking place. Maine has approximately 130 community gardens and many of them are supported by Extension staff and Master Gardener Volunteers. As a result, more than 30 of them now have added an MHH area to their community garden and have contributed almost 20,000 lbs. of our 2019 totals. In Penobscot County, volunteers anonymously sponsor food insecure families by collaborating with the Maine Family Institute to distribute fresh produce to the families, which has resulted in their increased consumption of fresh fruit and vegetables.

### **Signs of the Seasons: A New England Phenology Program**

**Relevance** – Average New England air temperature increases are among the highest in the continental United States, and sea surface temperatures in the Gulf of Maine have increased faster than 99 percent of the rest of the world's oceans. Little is known about how marine and upland biota respond to these environmental changes. Climate scientists, resource managers, economists, and others need reliable information about the effects of climate change, and the

process of collecting phenology data is a simple, reliable method to ground-truth climate models and understand local-scale biological changes.

**Response** – Since 2010, UMaine Extension and Maine Sea Grant have worked with state and regional partners to develop and coordinate Signs of the Seasons (SOS), a monitoring program that engages citizens of all ages in observing the timing of seasonal plant and animal life cycle events (phenology). The data are publicly available through the National Phenology Network, and the program offers climate and phenology seminars, webinars, and field-based learning opportunities for participants and the public throughout Maine and New Hampshire. SOS volunteers help scientists document the local effects of global climate change.

**Result** – In 2019, we trained 78 new adult volunteers, and hundreds of volunteer observers made more than 1,090 site visits and recorded over 43,000 observations of the program's 22 indicator species in Maine and New Hampshire, including rockweed and common loon. Of participants surveyed, 72% reported an increase in their knowledge of climate science, 78% reported taking action regarding climate change and 88% reported a better understanding of phenology as an indicator for climate-related biological change. SOS continues volunteer engagement with increased K-12 programming, and through opportunities for species-specific research seminars

### **Online Presence**

In 2019, UMaine Extension's website at [extension.umaine.edu](http://extension.umaine.edu) – a composite of 58+ interconnected websites – received over 2.4 million pageviews. Nearly 37,000 followers followed or were subscribed to UMaine Extension's 56 county and program-specific social media accounts on Facebook, Twitter, YouTube, Pinterest, and Instagram. More than 230 educational videos were available to visitors on our YouTube and Kaltura channels or embedded in our web pages. More than 2,700 clients used our online registration system to register for classes, workshops, events, and more.

## FINANCIAL

### University of Maine Cooperative Extension Support for York County

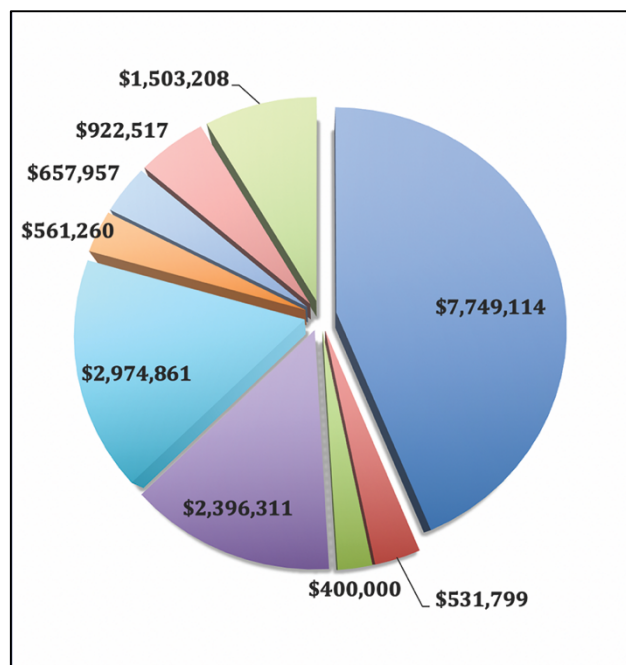
Without statewide support, UMaine Extension would not be present in your county. Funds for projects are provided through the University of Maine, Federal Formula Funds, grants, contracts, and fees. Dollars from other sources support salaries and benefits for Extension specialists, county educators, Extension administration, computer equipment and networking, publications, postage, telephone, and travel.

### Statewide Extension Funding

As a unique partnership among federal, state and county governments, UMaine Extension uses funding from Maine counties and the University to match and leverage support from the United States Department of Agriculture, other federal grantors, state agencies and private foundations. Each county UMaine Extension office is also part of a statewide organization and the national Extension system.

This pie graph illustrates the financial resources for programs offered, supported and managed out of the York county office. Each year, York county tax dollars support the UMaine extension with physical office space, support staff salaries, office supplies, equipment and some programming expenses.

York County	CY2019
Local Salaries and Benefits	\$255,962
Prorated Support from UMaine*	\$431,143
Computer Equipment and Networking	\$705
Statewide Animal Diagnostic Lab	\$16,648
Marketing, Publications, Video	\$1,906
Local Programming Supplies & Expenses	\$7,713
Postage	\$997
Telephone	\$432
Travel	\$10,254
<b>TOTAL</b>	<b>\$725,760</b>
* Prorated support from UMaine reflects travel, postage, telephone, computer equipment & networking, salaries & benefits for administrative and state-wide staff.	



Univ. E & G
MEIF
State of Maine - Diagnostic Lab
Grants & Contracts
Federal Capacity Funds
Gifts and Fundraising
County Funds
Income from Operations
4-H Camp Operations



## COUNTY HIGHLIGHTS —MAINE FOOD SYSTEM

### York County Farmers' Network

The **York County Farmers Network**, a farmer-to-farmer organization created by UMaine Extension, promotes, supports and strengthens local agriculture through informal gatherings, demonstrations, information and resource sharing. Visit [www.ycfn.org](http://www.ycfn.org) for details on recent and upcoming activities of the network.

### York County Extension Agricultural Specialists

UMaine **Extension Agricultural Specialists** provided research-based information and educational programs for York County's 800+ farms, nurseries and greenhouses which gross approximately 35 million dollars in sales annually, and employs 3000+ residents part and full-time.

UMaine Extension provided **Integrated Pest Management and Soil Test Services** for 2,200 farmers and home gardeners: diagnosing insect and disease problems, providing control recommendations, with applicator safety, protecting water quality, and the least toxic approach to control emphasized; diagnosing soil deficiencies and providing corrective recommendations to improve soil quality and increase productivity.

### York County Maine Harvest for Hunger

112 York County families and local farms in 2019 **grew and donated 49,623 pounds of fresh produce** to local food pantries, shelters, and soup kitchens through the **Maine Harvest for Hunger** Program. 58 Master Gardener Volunteers harvested, weighed, and delivered the produce to 35 food pantries, shelters, senior centers and other agencies servicing low-income residents.

### York County Master Gardeners'

In 2019, 162 active **York County Master Gardener Volunteers** engaged in over 6,500 hours of volunteer time, a \$142,556.00 value. They provided educational outreach workshops teaching others how to grow their own food, and community service projects, reaching 6,800 York County residents.

UMaine Extension in **York County gardening programs in 2019** included: Youth gardening education; gardening support for senior citizens and people with physical disabilities; invasive plant eradication; educational support for 12 school gardens, coordinating community gardens in 8 communities; and teaching people to grow/produce more of their own food.

### Universities Fighting World Hunger

**Universities Fighting World Hunger** – UMaine Extension hosted the 14<sup>th</sup> annual Universities Fighting World Hunger Summit March 14-16, 2019. This collaborative event convened 435 faculty and students from 67 of colleges and universities from throughout the world (including 14 Maine colleges and universities). During the Summit participants were provided with the tools and inspiration needed to develop action plans and Hunger Alleviation Projects to address hunger on campuses and in communities across Maine.

Through our corporate and foundation fundraising, 20 campus teams were awarded \$500 mini-grants to implement Hunger Alleviation Projects back in their home campuses and communities. The projects focused included: establishing or maintaining campus food pantries; re-invigorating campus-based community gardens cultivated for local food pantries; and establishing food recovery networks to redirect cafeteria surplus to local food security organizations.



## COUNTY HIGHLIGHTS — 4-H YOUTH DEVELOPMENT

### York County

In 2019, York County 4-H Youth participated in short term interest and camp programs in robotics, Wildlife Habitat Education Program (WHEP) and youth agricultural enterprises. As 4-H representative to the Maine Wildlife Habitat Education Program (WHEP), UMaine Extension Professional Sally Farrell reports how youth grow significantly as individuals as part of the WHEP program experience.

Exposing youth to adults employed in the field of wildlife and forestry management opens their eyes to educational and career opportunities in natural resources.

Four youth participated in Citizen Washington Focus (CWF). This is a weeklong opportunity for 4-H'ers to visit Washington, DC. 4-H'ers learn how to be citizen leaders and make a difference in their communities.

CWF participants -

- Enjoy a behind-the-scenes look at our nation's capital and the chance to meet members of Congress
- Develop communication, leadership and citizenship skills through hands-on learning and group activities
- Build new and lasting friendships.

**Club Programs:** Traditional 4-H clubs continue to thrive in York County. In 2019 there were 14 active clubs serving 158 youth members and 45 trained volunteers. Volunteers in various programs provided over 6865 hours of volunteer time. York County youth, ages 5 to 18, were enrolled in over 60 different learning projects, including animal (horse, beef, goat, sheep, poultry, rabbit, and more), arts & crafts, environmental science, communications, health, and more. Club volunteer leaders working with the 4-H program sponsored a Fall Festival recognition and workshop program with 31 4-H participants, 25 adults, and 12 4-H Volunteers.

### 4-H Summer of Science

In an effort to increase science proficiencies in local communities and prevent summer learning loss, UMaine Extension created and delivered science curricula at community sites. *Maine 4-H Summer of Science* has been held at more than forty unique sites, including free-or-reduced lunch sites, libraries, summer school programs and summer camps.

During the 2019 summer, community sites were in ten Maine counties. A map of 2019 [4-H Summer of Science locations](#) is posted here. **397 youth from York County participated in this program.**

2019 Summer of Science activities were based in ocean literacy and engineering, specifically related to local Maine issues. Eleven undergraduate interns, forty-one teens and many 4-H staff provided program delivery of the weekly activities.

Not only does this program help Maine youth in elementary school during summer months, it also fosters career development, leadership and responsibility for the Maine teens which are trained to deliver educational content in their neighborhoods.

### Partnership with the Portsmouth Naval Shipyard

University of Maine Cooperative Extension 4-H has partnered with Portsmouth Naval Shipyard to expand STEM education and opportunities for youth. A workshop for interested PNS employees was well to increase awareness of positive youth development, experiential education and introduce volunteer opportunities to bring workforce development and skills from the shipyard to surrounding communities

## COUNTY HIGHLIGHTS — COMMUNITY AND ECONOMIC DEVELOPMENT

### Food Safety and Food Preservation

UMaine Extension has 8 trained Master Food Preserver volunteers who are active in York County. These volunteers helped to extend our reach to 150 York County residents in 2019. These residents participated in four food preservation workshops and two demonstrations that were held in Arundel, Buxton, Kittery, Shapleigh, and Wells. Presenters taught up-to-date canning, drying and freezing methods to preserve food safely. Topics included: Preserving Salsa/Tomatoes, Preserving Applesauce and Chutney, and Drying Vegetables.

### Expanded Food and Nutrition Education Program

During 2019, one Community Education Assistant (CEA) delivered nutrition education in York County through the Expanded Food and Nutrition Education Program (EFNEP). EFNEP is the first national nutrition education program and is currently delivered nationally through Cooperative Extension programs. The audience for EFNEP is limited-income adults with children in the household and limited-income youth.

EFNEP has created and maintained strong community partnerships with York County agencies and schools to deliver EFNEP. As a result of those partnerships, EFNEP delivered nutrition and food safety education to 28 adults and 127 members of their families, and 261 youth aged 5-18 last year. Of the adults that completed the program, 71% reporting improving their dietary intake and 64% increased their skills in planning meals, using a shopping list, and cooking more meals from home. Of the youth that completed the program, 65% of youth improved their ability to choose healthier, low cost meals and 42% of youth demonstrated proper food safety practices.

### York County Extension Homemakers

Extension Homemakers belong to local community groups involved in assisting with many different community projects. During 2019, Extension Homemakers from York County volunteered over 3,120 hours in service to their communities, with an estimated value of \$54,600.00. Also, these Extension Homemaker Volunteers raised and donated \$674.00 toward various community agencies.

Currently, York County has three Extension Homemakers groups. They are located in Limington, Parsonsfield, and Wells. The Extension Homemakers are growing older and slowing down somewhat yet they still manage to get to the statewide meetings held twice a year. In addition, local group members come together to form a county group. The York County Homemakers group coordinates spring, summer, and fall meetings for the membership and works in cooperation with the University of Maine Cooperative Extension to offer public educational programs.

York County Extension Homemakers membership is open to anyone who is interested in learning new information to improve their personal, family, and community life or who is interested in educating and serving members of the Extension Homemakers groups and their communities.

## Maine Sea Grant Highlights

### **Beaches Conference 2019 motivates action**

The Beaches Conference was launched in 2000 and 2019 marked the 12<sup>th</sup> event with Maine and New Hampshire field trips on June 13 and the conference on June 14 in Kittery. The event provides continuing opportunities for exchange of the most current information among beach and coastal stakeholders with diverse interests in order to facilitate informed decision-making, as well as celebrating beach monitoring and stewardship, building strong partnerships, and taking informed action on coastal issues.

The 2019 event was attended by a sold-out crowd of 220 beach and coastal stakeholders including recreational beach users, government officials, non-profit organizations, coastal property owners, beach monitors and researchers from 108 different organizations. Sessions took a wide array of formats from lightning talks and a multimedia session to interactive theater and short films. Topics were equally diverse covering climate uncertainty, flooding and erosion, coastal regulation, marine litter, and much more. Months after the conference, 100% of respondents had shared information they gained at the conference with others including elected officials, property owners, and students. Similarly, 95% had applied information from the conference at home or at work in ways such as referencing it for local and state level decision-making and policy development, and taking action to address coastal hazards. Planning is already underway for 2021.

### **Valuing the Marine Economy in Maine's Coastal Communities**

Working waterfronts are the lifeblood of Maine's 3500-mile coastline. From 2015 – 2017 American lobster was the country's most valuable single species. Stonington, Maine with roughly 1,000 year-round residents continues to be the state's top commercial port with nearly \$60 million in landings in 2018. The dependence of these communities on lobster poses a clear economic, social and environmental threat.

Communities like Stonington need access to accurate data about their local marine economy to inform decision-making, such as the Town's work with The Maine Center for Coastal Fisheries to plan for fishing community resilience and sea level rise adaption. While NOAA's Economics: National Ocean Watch (ENOW) economic framework provides access to data at the national, state, and county-levels, it did not provide needed local-level data. This gap initiated a partnership between Maine Sea Grant and NOAA's economists at the Office of Coastal Management.

This partnership led to the development of a [method of estimating the value of marine economies](#) by pairing the ENOW framework with local knowledge and Atlantic Coastal Cooperative Statistics Program (ACCSP) data. Application of this new method in Milbridge by the Washington County Council of Governments highlights the need for this combined approach as the ENOW framework alone only captured about 5% of the contributions from the Living Resources and Marine Transportation sectors. Without the addition of local knowledge and information from the ACCSP, these contributions would have been vastly underestimated in local decision-making.

Outreach efforts have clarified that communities' need for this economic data currently outstrips the capacity of communities to access it. To address this next gap, Maine Sea Grant and the Margaret Chase Smith Policy Center at the University of Maine are collaborating to develop a network of trained data analysts to work directly with local communities.

### **New Partnerships to Provide Housing for All**

As the demand for coastal and island property grows, increasing home ownership and rental prices have left year-round residents unable to live where they work, resulting in a range of

community and economic impacts. To explore options, Maine Sea Grant partnered with Island Institute and GrowSmart Maine to hold ILEAD Housing on September 25 and 26 in Rockland, Maine. Thirty representatives from Midcoast and Downeast islands and coastal communities including Monhegan, Vinalhaven, North Haven, Isle Au Haut, Islesboro, Chebeague, St. George and Mount Desert joined discussions with peers seeking to address the challenges of providing housing that is affordable to year-round residents. The workshop also brought in housing professionals including architects, engineers, real estate agents, funders and Maine Housing to demonstrate a community design workshop in which concepts for affordable housing were developed. The workshop has led to cooperation with the Town of Saint George to conduct a design workshop there, as well as engagement training in Yarmouth.

For over ten years, Maine Sea Grant has worked with communities to hold design workshops to explore opportunities to create housing affordable to year-round residents and workers. These prior workshops have resulted in significant next steps in 2019, including the development of the Heritage Housing Trust in Kennebunkport which has a goal of creating 25 new affordable homes by 2025. In York, voters approved a ballot question that expands the areas in town where affordable housing can be built and allowed homes to be built on smaller lots. Kittery is engaging Route 1 and Bypass property owners in conversations about affordable and workforce housing, and raising awareness of potential zoning changes to encourage this kind of development in those areas. And in Berwick the 12-acre site of a former tannery has a new owner that is conducting public meetings to finalize site plans for redevelopment that will include commercial, residential and park elements, following \$1.4 million in federal and state environmental grants for site clean-up.

# The County Extension Act

The County Extension Act explains the role of county government in funding local Extension offices.

Cooperative Extension work shall consist of the giving of practical demonstrations in agriculture and natural resources, youth development, and home economics and community life and imparting information on those subjects through field demonstrations, publications and otherwise. For the purpose of carrying out this chapter, there may be created in each county or combination of two counties within the State an organization known as a “county extension association,” and its services available to all residents of a county. The county extension is viewed as a unique and important educational program of county government. The executive committee of each county extension association shall prepare an annual budget as requested, showing in detail its estimate of the amount of money to be expended under this chapter within the county or counties for the fiscal year. The executive committee shall submit to the board of county commissioners on a date requested by the county commissioners, and the county commissioners may, if they deem it justifiable, adopt an appropriate budget for the county extension program and levy a tax therefore. The amount thus raised by direct taxation within any county or combination of counties for the purposes of this chapter shall be used for the salaries of clerks, provision of office space, supplies, equipment, postage, telephone, a contribution toward the salaries of county educators and such other expenses as necessary to maintain an effective county extension program.<sup>1</sup>

<sup>1</sup>Excerpted from Title 7, Chapter 7 of the Maine Revised Statutes, §191–§195.

## For more information contact:

University of Maine Cooperative Extension York County  
15 Oak Street Suite 302  
Springvale, ME, 04083  
Phone: 207.324.2814 or 800.287.1535 (in Maine)



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