Annual Report 2016

University of Maine Cooperative Extension
Androscoggin and Sagadahoc Counties

1865 The University of Maine Cooperative Extension

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.

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Androscoggin and Sagadahoc Counties Extension Association

Officers
Michael Coon, *President*
Bethany Tatro, *Vice President*
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Cory Gardiner
Anne Marie Bartoo
Jo-Jean Keller
Scott Roberts
Stella Doyon

Faculty Members
Tori Lee Jackson, *Associate Extension Professor*
Kristy Ouellette, *Associate Extension Professor*

The ASCEA is actively recruiting new members. In partnership with UMaine Extension staff, the members of each County Extension Association assist with providing input on local educational programming needs and oversee the county budget appropriations that support UMaine Extension educational programs for county residents.

Androscoggin and Sagadahoc Counties Staff

Maisy Cyr, *4-H Community Education Assistant*
Ruth Cyr, *Nutrition Associate, Eat Well Nutrition Education Program*
Lynne M. Holland, *Home Horticulture Community Education Assistant*
KymNoelle Hopson, *Administrative Specialist CL3*
Tori Lee Jackson, *Extension Educator, Associate Professor of Agriculture and Natural Resources*
Kristy Ouellette, *Extension Educator, Associate Professor of 4-H Youth and Family Development*
Laura Personette, *Community Central Site Coordinator – Lewiston*
Dana Rickman, *Project Professional*
Sarah Sparks, *4-H Professional*
Eric Thoreson, *Nutrition Associate, Eat Well Nutrition Education Program*

Local Partnership

The partnership between the University of Maine, County Governments and the county Extension Associations has endured for over a century. *As the needs of the people of Maine have changed, so has Cooperative Extension. We are committed to helping Maine succeed across our spectrum of programming. However, success is best achieved by collaboration with the people, businesses, organizations and communities that we work with.* ***Extension is a reflection of the locally identified needs that form the basis for the educational programs that are offered statewide.***

The county report is an important way to share the work that has been happening locally and statewide. This report is also an important way that the county Extension Association documents accountability for the investment of funds from County Government. We are very pleased to share this report with you and encourage you to contact your local office with questions or for more information on anything in this report.

— John Rebar, Executive Director

COUNTY HIGHLIGHTS

Tori Lee Jackson
Associate Extension Professor
Program Highlights

Marketing Farm Products (and Extension) Through Social Media

The ever-evolving market landscape impacts even the most traditional of businesses. In 2016, requests to present to various agricultural organizations about how to market farms and farm products using social media skyrocketed. I was invited by the Maine Alpaca Association, the Pork Producers Association, the Boer Goat Breeders of Maine and the Maine Grass Farmers' Network to speak about marketing through Facebook.

Facebook is a very accessible tool for most farmers and many are already familiar with it from their own personal use. There are some key differences in using it to promote a business, and after an introduction on the basics of marketing (and market research) in general, I presented some best practices and case studies to give those new to the idea of marketing via social media some ideas on how to start. I also work one-on-one with farms and non-profit organizations to create or enhance their individual Facebook pages.

UMaine Extension also spent more time on its Facebook presence this year with Lynne Holland, a Community Education Assistant in the Androscoggin-Sagadahoc office, taking the lead. Every day, there are posts about timely topics and links to further information or workshops to go to about everything from beekeeping and tapping maple trees to 4-H camps and gleaning to feed Maine's food insecure. Keeping our work with youth and the Maine food system in our clients' daily Facebook feeds is an easy way to remind people that we are here, offering useful and practical solutions.

Preparing Maine's New and Beginning Farmers

Much of my work is focused on training aspiring and beginning farmers in sustainable business practices. In 2016, I met with more than fifty producers one-on-one throughout the state to examine in-depth their farm business plans and make recommendations for improving them.

I also chair the Beginning Farmer Resource Network of Maine, a group of about twenty agricultural service providers which maintains a website and offers dozens of workshops annually at the Maine Agricultural Trades Show in Augusta. These tools allow hundreds of farmers and those exploring farming as a lifestyle to learn more without having to scour the internet or make dozens of phone calls to find what they need. Our regular meetings provide professional development for all of those serving Maine's farmers and allow us to provide better customer service to those we work with.

Meeting regularly allowed BFRN members to identify a gap in the knowledge of most agricultural service providers. We know that the average age of Maine's farmers is approaching sixty years old. Many will be retiring and transitioning out of farming over the next ten years. It is critical that new farmers take over those farms and start up their own so that we can support Maine's growing food system. Using our own experience and data from the National Agricultural Statistics Service, it became clear that many start-up farms were failing after 5-7 years of operation. This is due to a number of factors, including using up initial capital investments, fierce competition, market fluctuations, and simple burnout, but we did find one other reason: miscommunication with farm partners (often leading to divorce). While we all have technical expertise in specific areas, very few feel comfortable offering assistance with relationships on farms. Extension Specialist, Leslie Forstadt; farmer and consultant, Abby Sadauckas of Bowdoinham; and I received funding from Northeast Sustainable Agriculture Research and Education (NE SARE) to conduct focus groups with farmers, create materials to teach about farm relationships, and offer training to ag service providers about how offer assistance. If we are better able to detect when communication issues may be causing stress on the farm, it is our hope that we can effectively work with farmers to solve these problems and keep new farmers farming. Much of this work will be completed in 2017.

The beginning farmer workshop series, *So, You Want to Farm in Maine?* is being offered in several locations in early 2017. Additionally, a professional development grant proposal to offer a train-the-trainer for every agriculture educator and professional at UMaine Extension about how to offer this training was funded by NE SARE. Availability of the funding is pending the federal budget, but we expect to begin offering this to our colleagues in late 2017. We worked with the USDA Farm Service Agency (FSA) to gain borrower

training credit for this training as well. This is a significant certification that adds a lot of value to our workshop series and makes earning this borrower training credit much easier for those wishing to obtain a loan from FSA.

Elderberry Update!
Building on the favorable results of the study done in 2015 to determine whether Tomato Ringspot Virus (ToRSV) may threaten Maine's emerging commercial elderberry industry, we have moved forward with efforts to establish a full-scale, replicated elderberry variety trial at Highmoor Farm in Monmouth. Funds were secured through the Maine Food and Agriculture (MFAC) to purchase plants from a grower in Vermont and soil preparation began in September, 2016. The trial will be installed in the early summer of 2017. While yield data and other fruit-specific evaluation will not be collected for several years, commercial growers are interested in winter hardiness as well as best practices for establishing a new orchard. Initial outreach efforts will focus on these aspects.

Growing Elderberries: A Production Manual and Enterprise Viability Guide for Vermont and the Northeast, which includes contributions from and was reviewed by UMaine Extension educators and specialists, was published in 2016 and is available as a free PDF download or through the UMaine Extension publications catalog.

Master Gardener Volunteers
The 2016 Master Gardener Volunteers training was held at the UMaine Cooperative Extension office in Lisbon Falls, twenty-three people completed their training at the end of May. These trainees had done 1000 hours of volunteer work by the end of the year.
2016 was really busy for the MGV program. We began partnering with several organizations to create new projects and develop current projects even further.

Several new programs began in 2016 including the Merrymeeting Gleaners which is part of the Merrymeeting Food Council's Food Security Work Group. Colby College students made a short film about this group at its Apple Gleaning in late fall. The film is available at https://www.facebook.com/UniversityofMaineCooperativeExtension/videos/10158000243010417/

New gardens at the Westrum House and Plante Home-both are elderly low income housing were created and will be projects in the coming season. Several cooperative projects with Maine Gleaning Network in the area of food security including "Pop up" gleans netted over 4000 pounds of food that otherwise would have been wasted.

Collaboration with the City of Auburn, the National Parks Service, the Androscoggin Land Trust and St. Mary's Nutrition Center has also been instrumental in formation of a new community garden at 61 Webster Street in Auburn. The garden opened in Spring 2016 and was a success story for the neighborhood. A second garden in another at risk neighborhood in Auburn is being considered.

In total, 72 Master Gardener Volunteers from Androscoggin and Sagadahoc Counties volunteered 2176 hours (an estimated in-kind value of these volunteers is $50,200 based on Independent Sector's 2014 valuation of volunteer hours at $23.07 per hour). Additionally over 18,500 pounds of produce was collected and donated to UMaine Extension initiative, Maine Harvest for Hunger via gleaning and Master Gardener Volunteer and community gardens.

Kristy Ouellette, Associate Extension Professor 4-H Youth Development

4-H supports young people from elementary school through high school with programs designed to shape future leaders and innovators. Fueled by research-driven programming, 4-H'ers engage in hands-on learning activities in the areas of science, citizenship and healthy living. Extension Educator, Kristy Ouellette and Community Education Assistant Maisy Cyr work with youth, volunteers, teachers and afterschool providers to strengthen and support the 4-H Youth Development program locally. 4-H Community Central Professional Laura Personette works specifically with the 4-H Community Central program in Lewiston.

The 4-H Youth development program in Androscoggin and Sagadahoc counties currently serves youth in traditional club programs and in school or community based programs in both counties.

Local Impacts 4-H Youth Development has on youth:

- 86% of 4-H teens that have graduated from high school have gone on to higher education. Teens reported the information

learned through 4-H assisted them in being better prepared for college.
- 52% of 4-H youth have annually participated in 2 hours of community service. This time is equivalent to value of over $3,800.00 based on *Independent Sector's* valuation of volunteer hours ($21.61 per hour).
- 85% of 4-H youth participated in programs focused on expanding Science life skills.

Long Term Impacts:
- In reviewing data from 2009-2016, 15% (25) of youth have been enrolled in the 4-H program for 4 or more years. 30% (50) of youth have been enrolled for 2 or more years.
- Nationally, Youth in 4-H Science programming reported having high educational aspirations. When asked how far they want to go in school, half of youth surveyed want to finish college.
- Nationally 4-H youth have higher educational achievement and motivation for future education than non 4-H youth.

Local Impacts of 4-H Volunteers
- In 2016, 30 volunteers collectively provided over 11,000 hours of annual service to this program, an investment of over $237,710.00* in high-quality, hands on, positive interactions with young people in Maine (*an estimated in-kind value of these volunteers is $237,710.00 based on *Independent Sector's* valuation of volunteer hours at $21.61 per hour).
- 75% of volunteers have been engaged in the county 4-H program for over 4 years. These volunteers have provided leadership, educational programs and support to over 400 youth members.

Selected Program Highlights:

Maine Community Central: Integrating 4-H Science and Life Skills with Schools, Communities and Families
UMaine 4-H is reaching new audiences and investigating innovative practices through the 4-H Community Central project in Lewiston, and Portland. 4-H history is at the heart of Community Central. UMaine 4-H received funding through the USDA's Children, Youth, and Families At-Risk (CYFAR) program for a pilot project to identify the best practices of establishing 4-H in public housing sites.

Our program model is to place UMaine Extension staff in public housing sites to 1) provide out of school time education and 2) to link crucial ecological entities (family, elders, school, after-school, and faith community) in the lives of school age youth in order to reduce learning loss, increase science literacy and improve critical life skills of youth. Through applying the ecological systems framework (Bronfenbrenner 1969) to Maine neighborhoods, UMaine 4-H is on the cutting edge of serving an important and vulnerable population.

In year three of this project in Lewiston, 389 youth in grades 3-6 and 11 Teen Leaders participated.

Expanding Science Programming
Youth in Androscoggin/Sagadahoc counties are not alone in their science deficiency. Prior to 2008, youth who wanted to enroll in 4-H in Androscoggin/Sagadahoc Counties were limited to animal science projects. In 2016, Science programming including programs in Robotics, Wind Energy and Environmental Science was offered in Androscoggin/Sagadahoc counties, serving over 300 youth.

4-H Summer of Science
The United States has a need to improve the proficiency of our students in the Science, Technology, Engineering and Math (STEM) disciplines. Maine Education Assessment testing (2014-15), found more than 1/3 of 5th graders are not proficient in science and that figure drops to more than 45% by 11th grade. In 2014-15, the Maine Department of Education reports that, "about 38 percent of students who are allowed to graduate actually aren't proficient in math and reading".

The issue is made worse by documented understanding that low-income students have less than average access to science education. The achievement gap is perpetuated during summer months for low-income students, who lose more grade equivalency due to lack of out-of- school and summer learning opportunities. In addition an increase in STEM education can lead to better employment opportunities and increase the likelihood of youth furthering their education.

Extension volunteers and staff created and delivered 4-H Summer of Science curricula to youth in grades 3–8 at 21 free- or reduced-lunch sites, 2 libraries, and 6 summer camps in 4 Maine counties. Participants included 3550 youth, of whom 33% were minorities and almost 50% were girls.

COUNTY HIGHLIGHTS

Eat Well Nutrition Education Program

The Eat Well Nutrition Education Program improves the health and well-being of limited income families and youth by positively impacting their skills in nutrition, food purchasing, food safety and food preparation. Two Eat Well Community Education Assistants involve participants in activities such as, cooking, menu planning and food budgeting to help them gain knowledge and skills to improve their self-sufficiency skills.

In the past year, Eat Well Nutrition Associates have provided educational programs to a variety of community groups including Head Start Parent groups, public schools, Summer Food Service Program Sites, Boys & Girls Club, DHHS, various group home settings, local housing authorities, local food pantries and Two Bridges Regional Jail. A quarterly newsletter, Eat Well, is provided to potential, current and graduated clients featuring low cost recipes and current nutrition and food safety topics.

Evaluations of the program have shown that participants' scores for both dietary adequacy and food and nutrition knowledge increased significantly. Graduates also showed improvements in their knowledge of food handling and storage to reduce their risk of food borne illness.

Behavior Change Highlights:

- 92% of adults improved their diet (i.e. positive change in one or more food groups including grains, fruits, vegetables, milk, meat and beans).
- 79% of adults showed improvement in one or more food resource management practice (i.e. plans meals, compares prices, does not run out of food,uses grocery lists).
- 79% of adults showed improvement in one or more nutrition practices (i.e. plans meals, makes healthy food choices, prepares foods without adding salt, reads nutrition labels or has children eat breakfast).
- 80% of adults improved food safety practices (i.e. thawing and storing foods properly).
- 69% of youth improved their nutrition knowledge.
- 50% of youth improved their food safety practices.
- 28% of youth improved daily physical activity.

Eat Well Educational Impacts

- Number of Program Families: 161 (representing 675 family members)
- Number of Children in Groups: 521 (representing 16 groups)
- Number of Newsletters distributed: 3000

** WEBNEERS FY16 Summary Report*

Food Preservation and Food Safety

In the past several years interest and demand for food preservation has grown due in part to current economics and the public's interest to support a local food system. UMaine Cooperative Extension Home Food Preservation efforts seek to create a social shift towards a more educated and skilled public that will revitalize our local food system and positively impact the local agricultural economy through an increase in safely preserving local Maine foods at home to eat year round. As the "go-to" resource for food preservation and food safety education UMaine Extension has responded to meet the needs of the public.

- **Home Food Preservation Education**: Through twenty-six hands-on workshops and educational displays, over 196 people learned skills and gained confidence in the area of preserving food safely through freezing, canning and drying.
- **Master Food Preserver Volunteer Training**: Annually, 12 volunteers complete the training that includes over 40 hours of direct food preservation experience through 10 kitchen lab sessions, on-line course, independent study and meeting a minimum knowledge competency. Currently there are 6 trained Master Food Preserver volunteers from Androscoggin and Sagadahoc Counties helping to extend the reach of UMaine Extension within the community.
- Food Safety Training for Volunteer Quantity Cooks: **Cooking for Crowds** workshops provided volunteer quantity cooks with the practical skills to improve their food handling practices to reduce the incidence of food borne illness. Over 50 participants attend this event from various community groups, churches, local food pantries and soup kitchens. This workshop meets the Good Shepherd Food Bank Food Safety Training requirement for partners.

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.

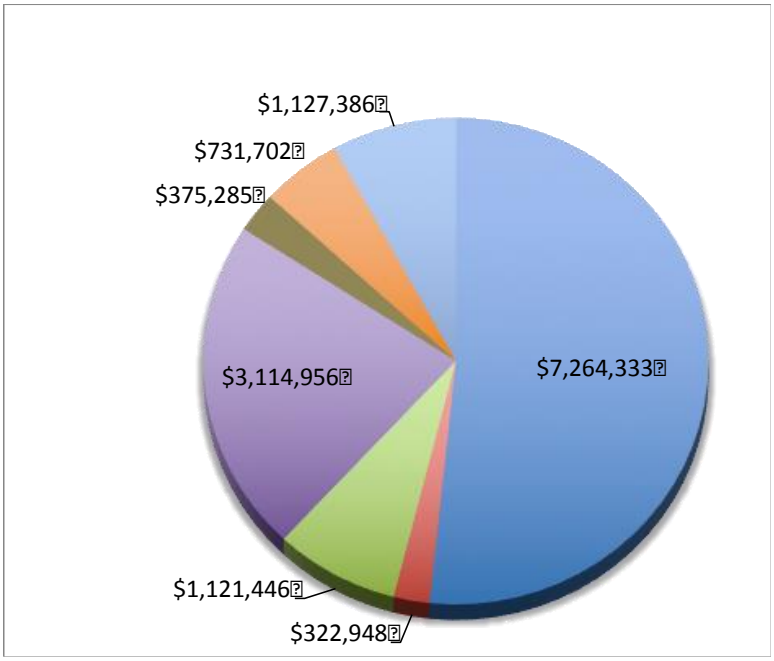
Local Salaries and Benefits	$496,464
Prorated Support from UMaine*	$459,323
Computer Equipment and Networking	$92
Statewide Animal Diagnostic Lab	$2,620
Marketing, Publications, Video	$1,258
Local Programming, Supplies & Expenses	$3,461
Postage	$1,534
Telephone	$68
Travel	$26,046
Total	**$990,867**

Prorated Support from UMaine reflects travel, postage, telephone, computer equipment & networking, salaries & benefits for administrative and state-wide staff.*

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 Androscoggin and Sagadahoc Counties office. Each year, Androscoggin and Sagadahoc Counties tax dollars support the UMaine extension with physical office space, support staff salaries, office supplies, equipment and some programming expenses.



Funding Sources 2016

- University of Maine
- Maine Economic Improvement Fund
- Grants and Contracts
- Federal Capacity Funds
- Gifts and Fundraising
- County Funds
- Income from Operations

STATEWIDE HIGHLIGHTS

MAINE FOOD SYSTEM

AgrAbility… Supporting Farmers of All Abilities to

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. Without reliable and sustainable pest management strategies, Maine's potato industry faces the potential of severe crop losses resulting in significant reductions in profits and threats to long-term viability.

In 2016, UMaine Extension engaged in a robust potato IPM program to ensure that Maine's potato crop is pest and damage free while attempting to minimize the quantity of pesticides that are applied.

The economic impact from Extension's pest monitoring and educational programs for the 2016 season is estimated at over $12.8 million, with a 135:1 return on investment by the Industry for each dollar invested into the UMaine Extension Potato IPM program.

Controlling Fungal Disease in Maine's Wild Blueberry Industry

Wild blueberries have an economic impact of over $250 million to Maine's economy. Since 1945, Maine's blueberry growers and processors have provided financial support for research at the University of Maine, which in turn has developed improved cropping practices such as Integrated Crop Management (ICM) and Best Management Practices (BMP).

Valdensia leaf spot disease can be devastating to wild blueberry crops. First identified in Maine in 2009, the fungus causing this disease, can cause complete leaf drop that affects flower bud formation and subsequent yield.

UMaine Extension responded by providing growers with information on this disease and how to mitigate its spread. Most wild blueberry growers are now aware of *Valdensia* leaf spot and scout their fields for this disease. By eradicating this disease, growers save hundreds of dollars per acre in fungicide treatments required once this disease is well established in a field. Grower awareness of this disease has greatly limited its spread and impact on this $250 million industry.

Connecting Grain Growers to High Value, Diversified Markets

The expanding interest in locally grown grains among consumers and food businesses represents

a new economic opportunity for grain growers looking for higher value and diversified markets. UMaine Extension plays a unique role in our emerging local grain sector by connecting growers with buyers, as well as providing the production information needed to help growers succeed in growing for these high value markets.

In 2015, Extension was contacted by a Danish food company seeking help in developing a Maine supply of two heritage Nordic grain varieties for their New York City's restaurant. To evaluate whether the varieties, Øland spring wheat and Svedje winter rye, would grow well in Maine, the UMaine Local Grain project planted large plot trials at UMaine Rogers Research Farm. Both varieties yielded well and had good grain quality. Extension identified growers who could successfully grow the grain and networked them with the buyer.

In 2016, Maine growers produced over 80 tons of Øland spring wheat (65 acres) and 5 tons of Svedje rye (5 acres) for this buyer. In this initial year, this new market for Maine grown grain represented over $65,000 in increased revenue for Maine growers.

Supporting Local Poultry Product Sales and Creating Jobs for Immigrants

Until 2015, Maine did not have a USDA or State inspected poultry slaughter facility and that prohibited local sales of poultry products in Maine. A 2014 University of Southern Maine survey found that nearly 80 percent of Mainers said they want to buy local meats, but that it is not always readily available. By providing a federally inspected poultry facility in the state could increase supply and allow more Maine meat to be sold locally and across state lines.
In 2015, UMaine Extension responded by helping to facilitate Commonwealth Poultry to become a USDA inspected facility. Extension assisted the company with their initial Food Safety Management Hazard Analyzes and Critical Control Point (HCCAP), and continued to assist as they expanded. In 2015, Commonwealth Poultry became Maine's only USDA inspected poultry slaughter and processing facility. The facility is now slaughtering and processing up to 250,000 birds per year, sold locally and in Boston and other broader markets. Most of the company's 15 employees are immigrants of Somalia and other African countries, and Commonwealth Poultry has become a major employer for this underserved Maine population.

Maine Food Corps: Connecting Kids to Real Food and Reducing Obesity

In the last 30 years, the percentage of overweight or obese children in this country has tripled and 1 out of 3 American children are on track to develop diabetes in their lifetime.

According to a 2012 University of Maine study, the medical costs of obesity associated with the cohort of Maine children and adolescents will be an estimated $1.2 billion over the next 20 years. Studies show that children and adults who suffer from diet-related diseases score lower on tests, miss more days of school, advance less in their careers, and raise children who are likely to repeat the same cycle.

UMaine Cooperative Extension has responded by acting as the state partner for FoodCorps in Maine. The goal is to connect kids to healthy food in school, so they can lead healthier lives and reach their full potential. As a result of the partnership between UMaine Extension and FoodCorp, long-term change in schools and the include more:

- demand for local fresh food in school and home meals,
- volunteer resources to support school garden and nutrition initiatives,
- knowledge of resources UMaine Extension and other service providers can offer,
- educators trained in garden-based nutrition programming, and food service staff requesting bids from local farms.

Providing Access to Capital: $14.5 Million Invested in Local Communities

Entrepreneurs need capital to start, improve, and expand their businesses to create high quality jobs for Mainers. Many business owners are challenged to secure adequate funding from traditional lenders to start or expand a business. However, by partnering

with a regional economic development organization, traditional lenders such as banks are able to increase access to capital for Maine businesses that otherwise would not be eligible for financing.
UMaine Extension responded by collaborating with a regional economic development agency that provides Small Business Administration loan guarantees for prospective borrowers. As an active member of the Loan Review Committee, Extension provides guidance and oversight on credit and lending strategies, reviews loan applications, and along with other business and community leaders, makes loan recommendations.
In fiscal year 2016 the Loan Review Committee approved 51 loans totaling $6.8 million, and leveraged an additional $7.7 million in private funds. Through this loan program $14.5 million was invested in local communities, 129 jobs were created or retained, and thirteen of Maine's sixteen counties benefited.

Maine Harvest for Hunger: Mobilizing to Support Food Insecure Citizens

Maine has the highest rate of food insecurity in New England, and ranks twelfth in the United States. The USDA estimates that:

- over 15 % of Maine households, or more than 209,000 individuals, are food insecure,
- 24%, or 64,200 Maine's children, are food insecure,
- 23% of senior citizens experience marginal, low, or very low food security, and
- 43% food-insecure people do not qualify for food stamps or any other government program.

It is especially challenging for food insecure individuals 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, with the goal of mitigating hunger, improving nutrition and health, and helping recipients develop lifelong positive nutritional habits.

Since 2000, Maine Harvest for Hunger participants have:

- Distributed over 2,444,040 pounds of food to citizens grappling with hunger.
- In 2016, donations of 257,195 pounds of fresh produce went to 142 hunger alleviation distribution sites.
- Over 620 volunteers in 14 counties logged over 5,000 hours and the value of the produce was over $434,660.

Helping Lobstermen Adapt to Warmer Gulf of Maine

Changes in climate are placing pressure on fisheries and on the economies of many coastal communities, especially those that rely on a single fishery such as lobsters. In 2012, historically warm water in the Gulf of Maine during the winter contributed to lobsters shedding their shells as early as March rather than July. The resulting volume catches of soft shell lobsters throughout Maine and Canada produced a glut and plummeting prices, creating uncertainty and economic vulnerability in Maine communities.

In Maine, the economic diversity of the state's fisheries is at a 50-year nadir, with lobsters generating over 80 percent of the landings values. The resilience of the coastal lobster ecological-economic system depends on management strategies that can adapt to a changing climate.

Since 2014, UMaine Extension, Maine Sea Grant and other partners have explored how climate change is impacting the lobster fishery in order to identify potential resilience management strategies. The goals of the three-year project are (1) to improve knowledge of how a changing climate will affect fishing communities' abilities to maintain marine fisheries and dependent local economies; and (2) to investigate the role of a participatory modeling process to help decision makers in fishing communities address

consequences, vulnerabilities, and adaptive strategies related to climate stressors.

These decision-making tools and other resources for Maine lobstermen have helped help create flexibility in the industry, which is crucial in adapting to the warming Gulf of Maine.

Protecting Maine's Coastal Tourism Industry and Beaches

Visitors to Maine beaches contributed $1.61 billion to the southern coast and tourism contributed $735 million to the mid-coast economy. This industry and the coastal environment they depend on are vulnerable to pollution and climate change. Maine coastal residents and visitors value work that protects public health, reduces pollution, and keeps Maine's tourism industry resilient and strong.

UMaine Extension coordinates Maine Healthy Beaches, the state's only quality-assured program to monitor water quality and protect public health on coastal beaches. MHB builds local capacity to identify, eliminate, and prevent pollution sources, to help improve water quality on Maine's valued coastal beaches. This work helps protect against water-borne illnesses and protects the state's coastal tourism.

4-H YOUTH DEVELOPMENT

4-H Ambassadors Sparking Student Interest in STEM Careers

Despite its consistently high rate of high school graduation, Maine's college attendance and success rates are low by comparison. In 2010, the Maine STEM Collaborative estimated that in the next decade one in seven new Maine jobs will be in STEM-related areas and will offer wages that are 58 percent higher than those of other occupations." It is critical that Maine youth have the knowledge and aspiration to access higher education, particularly in STEM fields. 4-H can be a conduit for youth to higher education and careers, especially in STEM.

In 2016, with the support of the UMaine System Chancellor and Board of Trustees, the 4-H STEM Ambassadors program expanded to six of the seven UMaine campuses. Ambassadors are trained college students who act as caring mentors to youth, facilitate STEM activities with them, and help them learn about college and career options. As a result, ambassadors reported increases in their knowledge of STEM and comfort facilitating STEM activities. One said, Youth participant surveys suggested they want to learn more about science, feel they are good at science, and feel college could be right for them. Youth were extremely excited that UMaine students came to share STEM activities.

Students "Follow a Researcher™" on Expeditions in the Field

Maine needs to graduate an increasing number of science literate and proficient students to meet the growing demands of our workforce and society. Studies show that youth may have an interest in science, but dislike science class, lowering their intentions to pursue STEM-related career fields.

UMaine Extension and UMaine collaborators created the Follow a Researcher (FAR™) to increase youth understanding of the research process by engaging them directly with UMaine researchers in the field. The program takes advantage of the fact that all middle school students have access to a computer or laptop through the Maine Learning Technology Initiative. FAR™ chooses UMaine expedition-oriented researchers based on their experience, ability to engage youth, and the "wow" factor of their research topic or expedition location.

In 2016, FAR™ reached 1676 Maine youth (over 50 percent female), and 76 adults. Participating middle school teachers created curriculum related to the expedition, exposing youth to science in their classrooms in new and engaging ways. Many teachers integrated the program directly into their English, mathematics and science curricula and developed activities for use with FAR™. FAR™ is expected to grow significantly as it develops relationships with Polartrec (Teachers and Researchers Exploring and Collaborating) and the National Public Radio Podcast Science Friday.

Supporting Military Families with Teen Summer Camps

Family life in the military can be challenging, especially for teens. At least one parent may be gone for long periods of time, there may be constant, underlying worry about the parent that is deployed, and there may be additional stress related to relocations. Research shows that while many military children and families manage well, for some these challenges can have a detrimental effect on their health and wellbeing.

Since 2011 UMaine Extension 4-H Camp and Learning Centers have offered Military Teen Adventure Camps to provide outdoor adventure, STEM, and leadership camp programs for

teens of youth with parents who are deployed or about to be deployed. Extension partners with the U.S. with support from NIFA, National 4-H and U.S. military youth programs, to create these programs.

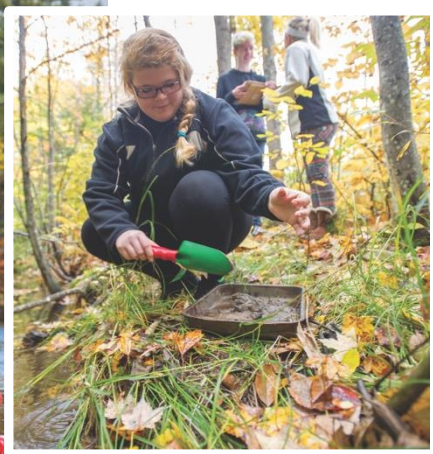
Through the 2016 Navy Teen Camp program, twenty-four teens from Navy bases in Singapore and California gained knowledge and skills in STEAM, 4-H, and community as they built submersible robots to explore the Ducktrap Watershed and discover the elements essential for healthy ecosystems. Since 2011, the three Camps and Learning Centers have provided camp experiences to over 540 military teens.

4-H Camps Connecting Youth to the Outdoors, Community and Mentors

More and more youth are connected to digital media, many for 6-8 hours a day. As a result of this isolation and sedentary indoor time, many youth suffer from obesity and/or ADHD, and some lack opportunities to develop positive interpersonal skills such as empathy. Research also shows that youth without positive adult role models are at greater risk for making unhealthy choices or engaging in risky behaviors.

UMaine Extension 4-H camps provide underserved youth ages 4-17 with transformational experiences that create a sense of place and belonging, comfort and confidence in the outdoors, and the opportunity to live for a week or more alongside trained adult educators, mentors, and caring peers. With 141 different summer camp programs focusing on ecology education, the arts, and outdoor skills, youth have a wealth of opportunities from which to draw meaningful experiences.

In 2016, UMaine 4-H summer camps served 1832 youth from all 16 counties in Maine, 31 states, and 7 countries. Through living and working together, campers and staff became part of an interconnected community committed to a sustainable future. The opportunities to develop mastery of skills happens in the context of the residential camp and learning center setting and includes healthy nutrition and activities, inclusive and safe learning environments, and leadership development. 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



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 of 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.[1]

[1]Excerpted from Title 7, Chapter 7 of the Maine Revised Statutes, §191–§195.

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Photos: Edwin Remsberg and Tori Lee Jackson