2017 University of Maine Combined Research and Extension Plan of Work

Status: Accepted

Date Accepted: 06/06/2016

I. Plan Overview

1. Brief Summary about Plan Of Work

Overview

The University of Maine Cooperative Extension and Maine Agricultural and Forest Experiment Station have worked closely for decades to enhance the profitability and sustainability of Maine's natural resources-based businesses and to improve the health of Maine's citizens. This joint plan of work highlights our efforts to

- create a safer, healthier, more productive foods system in Maine
- create vibrant and resilient youth, families, and communities
- improve Maine's environment and help business and communities adapt to climate change
- help sustain Maine's natural resources.

Cooperative Extension

We are solid in our programming priorities as a result of the expressed needs of Maine people. Chief among our current priorities is broad work within the Maine food system, which includes our strong traditional focus on agricultural sustainability and interrelated work in policy, research, production, processing, commerce, nutrition, food security, and food safety. Many of the recommendations to Maine's agricultural community come directly from research conducted at Maine Agricultural and Forest Experiment Station farms. This research-Extension partnership has been working for almost 100 years and is as vital today as it was early in the 20th century.

An equally strong and traditional focus for Cooperative Extension is 4-H Youth Development. Our program provides experiential educational and leadership programs for nearly 25,000 Maine youth, emphasizing the building of life skills necessary to be successful adults. Youth ages 5-18 participate in 4-H through clubs, camps, schools, and afterschool programs. Within the wide variety of 4-H programs we have a special focus on science and technology to help foster interest in these areas as avenues to successful careers. In all programs, youth are actively involved with their own learning, choosing which project areas they would like to learn about and working with volunteers and educators to further their own learning. As always, volunteers are key to the success of Maine 4-H. Our volunteers work in partnership with youth to focus on citizenship, leadership, and life skills development through "hands-on" learning experiences. In addition to making a difference in the lives of young people, volunteers also gain skills for their own personal and professional development.

Our work also continues to include a focus on community economics and education through small business and community development programs where participants learn how to effectively manage and sustain small and home-based businesses, household resources, and community assets. This work contributes to viable businesses, households, and communities by contributing to gainful employment, quality of place, and more effective use of limited public resources.

In this plan, activities are expressed as either "direct" or "indirect" outputs; direct outputs include work done in clubs, conferences, programs, consultations, scholarship, and/or training; and indirect outputs

relate to applied research, media and internet applications, publications, or as an ongoing result of a training. We have empowered our staff to track and report specific output efforts for the most important areas of their work, and general activities that relate to a given issue.

Maine Agricultural and Forest Experiment Station
The Maine Agricultural and Forest Experiment Station is the University of Maine's center for applied and basic research in agriculture and food sciences, forestry and wood products, marine systems, fisheries and aquaculture, wildlife, outdoor recreation, and rural economic development. The station's programs strive to enhance the profitability and sustainability of Maine's natural-resource-based industries, protect Maine's environment, and improve the health of its citizens.

In addition to identifying and addressing agricultural and natural-resource research needs of Maine, the programs of the Maine Agricultural and Forest Experiment Station strive to address today's grand challenges in foods and agriculture. These challenges are reflected in the USDA National Institute of Food and Agriculture's five thematic areas for research: global food security and hunger; mitigation and adaptation to climate change; improving nutrition and ending child obesity; improving food safety; and securing America's energy future. Maine's plan of work for 2017 (fiscal years 2017-2021) herein has a substantial focus on three of these challenge areas (global food security and hunger, climate change, and food safety) and supports economic development in Maine's agricultural and natural resource sectors. The research described in this plan of work falls under four broad program areas: Sustainable Community & Economic Development, the Maine Food System, Climate Change, and Sustainable Natural Resources. The research in our fifth program area--Supporting Forest Industries--is funded by McIntire-Stennis and is not covered by this plan of work.

Agriculture, forestry, aquaculture, and marine fisheries are important sectors of Maine's economy. The industries and small businesses at the core of these sectors are the foundation for allied businesses in food processing, wood products, and other goods and services. Maine's natural resources also attract millions of tourists each year who support an important hospitality sector. Maine has unique advantages in these sectors, but as in all business arenas, research and development are continually needed to remain competitive in regional, national and international markets. In the case of agriculture, Maine is relatively close to major markets in Boston and New York. In forestry, Maine is the most forested state in the nation and is well positioned to compete in emerging bioenergy markets. And Maine's more than 3,500 miles of coastline provides unique opportunities for aquaculture, fisheries, and tourism industries. This updated plan of work is part of the Maine Agricultural and Forest Experiment Station's efforts to continually adjust research programs to help Maine businesses and producers exploit new opportunities and meet current and anticipated challenges.

Research to protect Maine's environment and promote public health are important goals within this plan of work. High-priority environmental research in this plan focuses on aquatic systems (ground water, lakes, rivers, inland and coastal wetlands, and the Gulf of Maine), endangered species, and ecosystem sustainability. Maine has the potential to be a prime testing ground for research on adapting to global climate change because the climatic variation within Maine is expected to be generally greater than other states in the U.S. This plan of work continues our focus on food safety technologies, health benefits of agricultural foods, and research to promote healthy eating and lower obesity rates in youth.

Administrators of the Maine Agricultural and Forest Experiment Station recognize the value of regional collaboration and coordination of research activities. MAFES faculty members are encouraged to coordinate with scientists at other stations in the northeast region and nation in partnership with the USDA National Institute of Food and Agriculture. In addition, station administrators are actively involved in initiatives of the Northeastern Regional Association of State Agricultural Experiment Station Directors to encourage regionally coordinated research. These initiatives include planning grant programs and hosting research forums on high priority issues. The University of Maine, University of New Hampshire, and

University of Vermont stations also recently began a research funding initiative, the Northern New England Research Funding Program, to encourage development of faculty research to address issues common to the northern New England given the similar climate, environments, demographics, and opportunities for the region. The overall goal of the program, which began in 2013, is to catalyze coordinated regional research on high-priority needs for the northern New England region in experiment station mission areas.

Estimated Number of Professional FTEs/SYs total in the State.

Year	Extension		Research	
	1862	1890	1862	1890
2017	94.6	null	38.4	null
2018	94.5	null	38.4	null
2019	94.4	null	38.4	null
2020	0.0	0.0	38.4	0.0
2021	0.0	0.0	38.4	0.0

II. Merit Review Process

1. The Merit Review Process that will be Employed during the 5-Year POW Cycle

- Internal University Panel
- External University Panel
- External Non-University Panel
- Expert Peer Review
- Other (Volunteer advisory boards and County Executive Committees)

2. Brief Explanation

All research projects funded by the Maine Agricultural and Forest Experiment Station (MAFES) go through three reviews. First, all preproposals are reviewed by the MAFES Research Council, which is comprised of senior faculty who have an established record of high productivity and high-quality research. The Research Council reviews the preproposals to ensure that the proposed work falls within the purview of MAFES, addresses an important need identified by stakeholders, and that the faculty member submitting the preproposal possesses the expertise to conduct the research. Once approved by the Research Council, preproposals are distributed to advisory committees to elicit their input on the importance of the issues addressed within the preproposals.

Upon receiving the input of the Research Council and the advisory committees, each faculty member develops a full research proposal. The full proposals are sent out for external, expert peer review by qualified scientists. All reviewers are external to the University of Maine. Potential reviewers are identified through the CRIS system, faculty, and department chairs who

work in related areas, and through other experiment station directors. Each proposal is sent to three to five reviewers. Upon completion of the external expert peer reviews, the proposal is returned to the researcher, who then makes changes based on the comments of the reviewers. Finally, the proposal is reviewed and approved by the Research Council before it is submitted to NIFA for final approval.

As part of an annual process UMaine Extension faculty and professionals will engage in an ongoing process to plan for and adjust programs in ways that meet the needs of Maine citizens. The process involves independent review within local advisory structures, and collaborative review within statewide programmatic teams. Further, many engage in review by discipline-specific review panels and advisory groups that help to provide focus. While this results in defined programming intentions for the near future, the process is ongoing throughout the year and can result in new work to address emerging issues at any time.

Programming merit and success for faculty members is also reviewed by faculty peers through reappointment, promotion, and post-tenure processes established by the faculty and administration and codified in employment contracts. A unique process exists for non-faculty programming professionals who undergo annual reviews by supervisors, and peer reviews every 4 years.

III. Evaluation of Multis & Joint Activities

1. How will the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?

Cooperative Extension Plans of Work are outcome-focused, and structured to address one or more priority issues. Programs will be delivered to achieve the intended outcomes and will be measured through planned evaluations of short-, medium-, and long-term changes in target audiences.

Regular research projects, multistate projects, and integrated research and extension programs of the Maine Agricultural and Forest Experiment Station address high-priority needs identified by stakeholders, both within Maine and throughout the nation. Our proposal review processes require that projects show clear evidence of stakeholder needs and support. Agricultural producers in two important agricultural sectors in Maine also provide direct input on research and project priorities and contribute funding to the station's programs annually.

Station scientists contribute to several multistate projects that address stakeholder needs at the regional or national level. Examples include NE1031--Collaborative Potato Breeding and Variety Development Activities to Enhance Farm Sustainability in the Eastern US, NC140--Improving Economic and Environmental Sustainability in Tree-Fruit Production Through Changes in Rootstock Use, NE1028--Mastitis Resistance to Enhance Dairy Food Safety, and NC1193--Assessing and Addressing Individual and Environmental Factors that Influence Eating Behavior of Young Adults. All of these projects address high-priority needs through integrated activities.

2. How will the planned programs address the needs of under-served and under-represented populations of the State(s)?

Each programming staff member contributes to an annual civil rights plan and report for their office and/or discipline, backed up by internal administrative reviews of the civil rights

work and accomplishments. These reviews serve to educate and problem-solve the issues faced in a state that is 96.4% Caucasian. With this reality, many planned programs will attempt to reach senior citizens, the disabled as well as the limited but growing African immigrant population and the newly settled Hispanic migrant population in Washington County that is small but concentrated, well connected and therefore easily reached.

Since the August 2011 Civil Rights Review we are paying special attention to the composition of all of our advisory groups and understand that they are a valuable source of information when we are planning our programs. Recently two of our sixteen counties added to the diversity of their Executive Committees by adding African-American and Native American advisory committee members. Also since the 2011 review we have been developing a centralized database that will allow us to track our client population and have more reliable and more easily obtained demographic information

These are only some of the ways we continue to reach under-served and under-represented audiences in Maine:

¨ The UMaine Extension 4-H Youth Development Program in the most diverse part of Maine will continues to recruit members in the most diverse schools in Maine. While doing so program materials will be sent in three languages to ensure potential LEP (Limited English Proficient) youth and their parents will have an opportunity to benefit from the 4-H program. The 4-H program also provided educational activities at summer feed sites to a majority of under-represented children.

¨ In Aroostook County we will continue to reach out to the new Amish and Amish Mennonite community who recently relocated to the area. To ensure their full participation we have provided an area to tether their horses and house their buggies while participating in our programs or benefitting from our local services.

¨ The 4-H program in Washington County translated all program enrollment materials in to Spanish to meet the needs of the new Hispanic community members who have settled in to the area after participating in the blueberry harvest as migrant workers.

¨ In Androscoggin-Saggadahoc Counties the Sew Fabulous 4-H club has continued to serve Somali youth and to help them continue their native tradition of providing sewing skills.

¨ Extension hosts an Agribility grant that allows us to reach the disabled farmers statewide.

¨ The Master Gardener program continues to expand to reach the under-served and under-represented incarcerated population.

Both the Maine Agricultural and Forest Experiment Station and the University of Maine Cooperative Extension will continue their efforts to identify underserved and underrepresented groups in the state, and MAFES will develop new integrated programs with UMCE to address those needs.

Both multistate research projects and programs integrated with UMCE represent programs available to MAFES to serve the needs of these populations. Several of our multistate projects and integrated research and extension programs currently address needs of the underserved and underrepresented populations in Maine. NC1193--Assessing and Addressing Individual and Environmental Factors that Influence Eating Behavior of Young Adults examines the effectiveness of different intervention materials to encourage an increase in the consumption of fruits and vegetables in the diet of young adults. If successful, the project should reduce diet-related illnesses and obesity as this segment of the population ages. Participation by experiment station researchers in NE1029--Rural Change: Markets, Governance and Quality of Life--will improve the information available to Maine's rural leaders and residents as they try to encourage economic activities while preserving the character of their communities. Maine's

rural communities exhibit relatively slow economic growth and in general believe they have been underserved by state economic development efforts. This multistate project focuses station research efforts on economic development needs for these communities.

An integrated Hatch project focusing on beneficial and invasive pests in the wild blueberry agroecosystem works with blueberry growers in Downeast Maine, a group that includes the Passamaquoddy tribe.

Although neither an integrated nor a multistate project, a recent McIntire-Stennis project (Protecting Cultural Resources with Rapid Environmental Change: A Community-based Participatory Approach and Utilization of Biophysical Decision Support Tools) is working to develop tools for Maine's indigenous tribes and other landowners to identify and understand assets and vulnerabilities related to recent and future large scale environmental changes such the emerald ash borer and climate change impacts related to sea level rise and cultural and economic sustainability; to understand and articulate high value/important cultural resources for tribal communities and develop tailored biophysical decision support tools; and to develop information that may be incorporated into adaptation plans to protect high value cultural resources that support indigenous community sustainability into the future. The primary target community for this project is the four tribes that make up the indigenous peoples of Maine and have been allied for centuries in the Wabanaki Confederacy, including the Penobscot Nation, Passamaquoddy Tribes, Houlton Band of Maliseet Indians, and the Aroostock Band of Micmacs. A key goal of this research project is to help tribes, landowners, state, and federal regulators work together to manage and plan for uncertainties associated with rapid environmental change.

3. How will the planned programs describe the expected outcomes and impacts?

Under the current Plan of Work Cooperative Extension staff will focus a significant amount of their effort on planned programs by working within teams that conduct Extension programs and research to address current and emerging issues. The planned programs describe our intended organizational investment (inputs), planned educational methods and target audiences (outputs), and the learning and action changes that program participants will achieve that lead to positive changes in the condition of their lives (outcomes). Successful attainment of outcomes will be identified by a variety of evaluation techniques using established outcome measures for determining learning gained, actions taken by participants, and the resulting social, environmental, and\/or economic changes.

All the research and integrated programs of MAFES are moving toward a format that emphasizes reporting of planned outcomes and impacts. Researchers will be asked to identify the outcomes and impacts that will be achieved over the life of the program and specific progress in the attainment of these outcomes and impacts will be documented and reported annually.

4. How will the planned programs result in improved program effectiveness and/or

As in the past, planned programs within Cooperative Extension's Plan of Work were established using an issues-based process that examines ongoing situations, targets audiences and outcomes, and establishes general evaluation strategies. As budgets shrink, efficiency is paramount - during this process it is emphasized that teams refine their intentions to address the highest needs, and evaluate only programs that they believe will result in significant changes in the lives of Maine people. Research and educational planning is conducted using a structured format within a Web-based planning program that reflects the elements of the logic modeling process.

Significant partnerships further enhance our effectiveness. Examples include the Maine Agricultural Center, a collaboration that brings together the agriculturally related programs of the UMaine College of Natural Sciences, Forestry, and Agriculture, the Maine Agricultural and Forest Experiment Station, and UMaine Extension, as well as multistate programming; and Maine Sea Grant - a partnership that collaborates to expand our collective outreach activities to coastal Maine through our joint-funded Marine Extension Team.

Multistate research projects allow researchers to accomplish more as a research team than they can accomplish individually. A good example of the improved effectiveness and efficiency is the multistate potato clones project identified above. Through the multistate format, new potato clones can be tested in multiple locations on the East Coast simultaneously, and the various breeding programs in the east can specialize in characteristics for which they develop clones as the other breeding programs take the lead for developing clones with other desirable characteristics. The multistate project examining mastitis resistance is a good example of regionally coordinated research to address a current national challenge, the magnitude and scope of which extend far beyond the ability of any one institution.

Integrated programs also improve effectiveness by more efficiently distributing the results of the research performed by station scientists. Integrated programs also improve the identification of new research needs by facilitating the flow of information between the stakeholders and the researchers in MAFES.

IV. Stakeholder Input

1. Actions taken to seek stakeholder input that encourages their participation

- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Other (Research using relevant current and first-source data)

Brief explanation.

Cooperative Extension's Plan of Work is based on updated needs assessment research that included multiple components to encouraged direct participation through targeted solicitation of stakeholders, evaluation of current first-source data, and public input.

2(A). A brief statement of the process that will be used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

- Use Advisory Committees
- Use Internal Focus Groups
- Use External Focus Groups

- Needs Assessments
- Use Surveys
- Other (Identify and analyze issues)

Brief explanation.

Cooperative Extension stakeholders are primarily identified through historical and ongoing connections between UMaine Extension and traditional stakeholders, as well as through ever-evolving interactions within our communities. UMaine has deep historical connections to the fabric of life in of Maine communities. We also engage in more formal ways of understanding current and emerging issues through internal and external surveys, needs assessment, and scholarly analysis.

Stakeholders are also identified through ongoing interactions with advisory committees and traditional stakeholder groups, who serve as the eyes and ears for UMaine Extension within communities and specific areas of interest; and through the budget appropriations process with funders such as county commissioners and the Maine state legislature.

Internal policies also require that we actively recruit and retain people who are traditionally underserved and underrepresented in our programs and employee groups.

Existing advisory committees are good sources of information for identifying new stakeholder groups and individuals with an interest in station programs. Members of advisory groups are aware of new groups that have formed and of any individuals who have assumed leadership positions, either as individuals or leaders of the new stakeholder groups.

However, there is a need to go beyond advisory groups to ensure that new groups/individuals are identified that may not be networked with existing groups. Internal focus groups, comprised of faculty, extension and other people within the University who work with external constituents, will be used to identify new groups and individuals. External focus groups, comprised of federal and state officials along with traditional and nontraditional stakeholders, will also be conducted to identify new groups and individuals.

Finally, meetings with advisory groups, individual stakeholders groups, and other potential interested parties and individuals will be held periodically around the state to elicit input and help us to identify new groups and individuals to work with in the future.

2(B). A brief statement of the process that will be used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Survey of the general public
- Meeting specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public

- Other (Research using relevant current and first-source data)

Brief explanation.

As Cooperative Extension program priorities evolve, associated Extension educators work within program teams to maintain a connection to stakeholder and citizen issues and continuously reassess needs. As in the past, our staff will review their programming intentions for upcoming years and maintain a five-year vision of their intentions. As part of the process, they will review information from ongoing merit review processes and the statewide needs assessment, the most important elements of which will be updated once each five-year period.

3. A statement of how the input will be considered

- In the Budget Process
- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Staff Hiring Process
- To Set Priorities

Brief explanation.

Needs assessment data, which includes stakeholder input, will be used to help UMaine Cooperative Extension's administration prioritize our programs relative to our budgetary capacity, and to inform Extension teams and individuals about emerging issues that will help them prioritize and focus research and Extensions programs appropriately and effectively.

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Positive Youth Development

2. Brief summary about Planned Program

This plan addresses a Maine priority to engaging youth to reach their fullest potential.

The mission of 4-H is to provide meaningful opportunities for youth and adults to work together to create sustainable community change and to educate and empower Maine youth through hands-on and community-based experiences. This is accomplished within three primary content areas, or mission mandates - citizenship, healthy living, and science. The educational foundation of 4-H lies in these three mission mandates. These mandates reiterate the founding purposes of Extension (e.g., community leadership, quality of life, and technology transfer) in the context of 21st century challenges and opportunities. In Maine the major focus of the 4-H program is Science.

Maine has a population of about 1.25 million people, but we live in a large, rural state. Within our borders there are 16 counties that contain over 430 diverse communities, each governed by a collection of citizen councils, boards, and committees that are challenged to address a broad range of issues unique to their communities.

Maine is home to over 192,752 (census 2014) youth between the ages of 5 and 17. Maine has made a commitment to proficiency-based education, which helps to ensure that students acquire the knowledge and skills that are deemed to be essential to success in school, higher education, careers and adult life. When Extension's educational initiatives in youth development are supported, youth learn skills that help build positive relationships, increase knowledge, promote career aspirations and encourage community engagement. As a result, the public benefits by a more informed, involved, and self-reliant citizenry, increased community engagement, and a state that values its youth.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
724	Healthy Lifestyle	30%		0%	
802	Human Development and Family Well-Being	20%		0%	
806	Youth Development	50%		0%	
	Total	100%		0%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

The mission of 4-H is to provide meaningful opportunities for youth and adults to work together to create sustainable community change. This is accomplished within three primary content areas, or mission mandates - citizenship, healthy living, and science. The educational foundation of 4-H lies in these three mission mandates. These mandates reiterate the founding purposes of Extension (e.g., community leadership, quality of life, and technology transfer) in the context of 21st century challenges and opportunities.

Maine has a population of about 1.25 million people, but we live in a large, rural state. Within our borders there are 16 counties that contain over 430 diverse communities, each governed by a collection of citizen councils, boards, and committees that are challenged to address a broad range of issues unique to their communities.

Maine is home to over 269,218 (census 2011) youth between the ages of 5 and 17. The Guiding Principles of the Maine Learning Results (1997) require that each student leave school as a "clear and effective communicator, a self-directed and life-long learner, a creative and practical problem solver, a responsible and involved citizen, a collaborative and quality worker, and an integrative and informed thinker."

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Research shows activities framed around the eight essential elements[1,] 4-H guiding principles[4] and the mission mandates; delivery modes (club, afterschool, school enrichment and camp); appropriate dosage; experiential learning, place-based education (local priorities) positively affect youth.

Maine youth benefit by making healthy choices that help them develop the life skills necessary to lead successful and productive lives. This will affect their workforce preparation and future aspirations in

sustainable and healthy lifestyles, including environmental and Science, Technology, Engineering, and Math (STEM) education, community engagement, youth-adult partnerships.

2. Ultimate goal(s) of this Program

- Vibrant and Resillient Youth

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2017	24.9	0.0	0.0	0.0
2018	24.9	0.0	0.0	0.0
2019	24.9	0.0	0.0	0.0
2020	24.9	0.0	0.0	0.0
2021	24.9	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

General Activities in Support of Youth - Direct

- General Activities in Support of Youth - Indirect (Applied Research, Media, Internet, Publication, Resulting from Training)
- Youth Development Activities - Direct (Club, Conference, Program, Consultation, Scholarship, or Training)
- Youth Development Activities - Indirect (Applied Research, Media, Internet, Publication, Resulting from Training)

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
● Other 1 (Club, Conference, Program, Consu)	● Other 1 (Applied Research, Media, Interne)
● Other 2 (Consultation, Scholarship, or Tr)	● Other 2 (Publication, Resulting from Trai)

3. Description of targeted audience

¨ 4-H Volunteers (Adult)
¨ 4-H Youth (Youth)

- ¨ Agricultural Workers (Adult)
- ¨ Business Assist Organization Staff (Adult)
- ¨ Community Leaders (Adult)
- ¨ County Executive Committee Members (Adult)
- ¨ Eat Well Participants (Youth)
- ¨ EFNEP Participants (Youth)
- ¨ Extension - staff (Adult)
- ¨ Extension Staff (Adult)
- ¨ Families (Adult)
- ¨ General Public (Adult)
- ¨ General Public (Youth)
- ¨ Home Gardeners (Adult)
- ¨ Parent Educators (Adult)
- ¨ Parents (Adult)
- ¨ Senior Companion Program Volunteers (Adult)
- ¨ Teachers (Adult)
- ¨ Volunteers (Adult)

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Direct; Club, Conference, Program, Consultation, Scholarship, or Training
- Indirect; Applied Research, Media, Internet, Publication, Resulting from Training

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Youth will demonstrate responsibility, critical thinking and problem solving skills through informed decision making
2	Youth will demonstrate flexibility and adaptability through decision-making
3	Youth will set goals and determine steps to reach them
4	Youth will demonstrate the ability to communicate through multiple methods and media
5	Youth will develop positive and sustained relationships
6	Youth will express interest and be engaged in science related activities
7	Youth will express positive attitudes about science
8	Youth will see science in their futures and recognize the relevance of science
9	Youth will demonstrate a capacity for science process skills (i.e. Designing a scientific procedure to answer a question, Explaining to others why things happen in an experiment, Using data to create a graph for a presentation to others)
10	Youth will participate in service learning/community service
11	Youth will demonstrate leadership
12	Youth have intentions for future civic engagement
13	Youth will demonstrate value and respect for other cultures
14	Youth will consume more healthy foods
15	Youth will consume less unhealthy foods
16	Youth will follow healthy eating patterns
17	Youth will understand the benefits of physical activity
18	Youth will engage in 60 minutes or more of physical activity per day
19	Youth will reduce sedentary activity
20	Youth will engage in safety practices
21	Youth will engage in prevention practices

Outcome # 1

1. Outcome Target

Youth will demonstrate responsibility, critical thinking and problem solving skills through informed decision making

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 724 - Healthy Lifestyle
- 806 - Youth Development
- 802 - Human Development and Family Well-Being

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Youth will demonstrate flexibility and adaptability through decision-making

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 724 - Healthy Lifestyle
- 806 - Youth Development
- 802 - Human Development and Family Well-Being

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Youth will set goals and determine steps to reach them

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being

- 806 - Youth Development
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Youth will demonstrate the ability to communicate through multiple methods and media

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 724 - Healthy Lifestyle
- 806 - Youth Development
- 802 - Human Development and Family Well-Being

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

Youth will develop positive and sustained relationships

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 6

1. Outcome Target

Youth will express interest and be engaged in science related activities

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 7

1. Outcome Target

Youth will express positive attitudes about science

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being
- 724 - Healthy Lifestyle
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 8

1. Outcome Target

Youth will see science in their futures and recognize the relevance of science

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 9

1. Outcome Target

Youth will demonstrate a capacity for science process skills (i.e. Designing a scientific procedure to answer a question, Explaining to others why things happen in an experiment, Using data to create a graph for a presentation to others)

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development
- 802 - Human Development and Family Well-Being
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 10

1. Outcome Target

Youth will participate in service learning/community service

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development
- 802 - Human Development and Family Well-Being
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 11

1. Outcome Target

Youth will demonstrate leadership

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being
- 724 - Healthy Lifestyle
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 12

1. Outcome Target

Youth have intentions for future civic engagement

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development
- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 13

1. Outcome Target

Youth will demonstrate value and respect for other cultures

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being

- 806 - Youth Development
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 14

1. Outcome Target

Youth will consume more healthy foods

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 15

1. Outcome Target

Youth will consume less unhealthy foods

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 16

1. Outcome Target

Youth will follow healthy eating patterns

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development
- 802 - Human Development and Family Well-Being
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 17

1. Outcome Target

Youth will understand the benefits of physical activity

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 18

1. Outcome Target

Youth will engage in 60 minutes or more of physical activity per day

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

- 802 - Human Development and Family Well-Being
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 19

1. Outcome Target

Youth will reduce sedentary activity

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being
- 806 - Youth Development
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 20

1. Outcome Target

Youth will engage in safety practices

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development
- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 21

1. Outcome Target

Youth will engage in prevention practices

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being
- 806 - Youth Development
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Appropriations changes
- Public Policy changes
- Populations changes (immigration, new cultural groupings, etc.)

Description

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Work will be evaluated through the use of the National 4-H Common Measure Tools available on the National 4-H website and on-line.

Methods will include:

- Surveys
- Observations
- Case studies

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

The Maine Food System

2. Brief summary about Planned Program

This plan focuses on an inter-related matrix of work that includes all aspects of the food system in Maine that includes:

- Policy
- Research
- Production
- Processing
- Commerce
- Food Safety
- Nutrition

When you support the University of Maine's food systems research and Extension efforts the food supply is safer, land and water management practices are improved, access to food increases, health improves, and the regional economy benefits.

Advancing global food security within the context of an increasing human population requires ongoing research and development in new technologies and production systems to ensure the availability of sufficient, nutritionally adequate food that allows all people to maintain active and healthy lives. The Maine Agriculture and Forest Experiment Station conducts research to boost Maine's agricultural productivity, focusing on the fruits, vegetables, and animals important to Maine's food producers: potatoes, blueberries, apples, small fruits and vegetables, dairy, and marine aquaculture. Our researchers conduct basic and applied research that aims to increase the sustainability, productivity, and profitability of production, processing, marketing, and international export of Maine food products.

MAFES scientists are exploring new ways to control plant diseases, weeds, and insect pests to ensure sufficient food resources. They are looking to increase the productivity of Maine crops, by developing and testing new vegetable and fruit varieties and investigating ways to increase yields and improve soil quality through new soil management techniques. To ensure the productivity of Maine's animal food sources, they are working to increase the reproductive success of dairy cows; to develop new stocks of oysters; to develop and test new fish diets for marine aquaculture species; and to improve overall animal health. Researchers are also working to help Maine farms and food producers become more profitable through development of new, value-added products, reducing use of purchased inputs, increasing quality of Maine food products, and improving marketing efforts. With several recent outbreaks of foodborne infections and intoxicants in the U.S., the issue of food safety and pathogen control has become a central concern for consumers and food producers alike. The Maine Agricultural & Forest Experiment Station food scientists are developing new methods and technologies aimed at ensuring the quality of Maine food products and preventing foodborne illnesses.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	6%		10%	
202	Plant Genetic Resources	0%		6%	
205	Plant Management Systems	3%		7%	
211	Insects, Mites, and Other Arthropods Affecting Plants	0%		5%	
212	Diseases and Nematodes Affecting Plants	0%		4%	
213	Weeds Affecting Plants	4%		6%	
215	Biological Control of Pests Affecting Plants	5%		8%	
301	Reproductive Performance of Animals	5%		3%	
302	Nutrient Utilization in Animals	2%		4%	
305	Animal Physiological Processes	5%		3%	
311	Animal Diseases	5%		10%	
501	New and Improved Food Processing Technologies	5%		5%	
502	New and Improved Food Products	5%		3%	
503	Quality Maintenance in Storing and Marketing Food Products	0%		3%	
601	Economics of Agricultural Production and Farm Management	10%		4%	
605	Natural Resource and Environmental Economics	6%		6%	
702	Requirements and Function of Nutrients and Other Food Components	0%		3%	
703	Nutrition Education and Behavior	39%		4%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	0%		6%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

The Maine food system is a vital component of the Maine economy. It is a complex system comprised of all aspects of food including food production, processing, distribution, consumption and even food waste. The food system provides full time, part time and seasonal employment opportunities across all sectors and contributes an estimated $3.9 billion of dollars to the Maine economy each year. Currently, the Maine food system provides approximately 20% of the food consumed in the state. However, given the land area and market potential to consumers (70 million people live within a one-day drive), there is great potential to expand the depth and breath of our food system. Extension specialists, educators and other staff provide programming using research-based information to increase the efficiency, accessibility, safety, and sustainability of all aspects of the Maine food system. We work closely with the public to improve access to healthful food; and we promote USDA's Dietary Guidelines for Americans. We help farmers, fishermen, food processors, businesses, and individuals ensure food safety through current production, harvest and post-harvest handling and processing practices, including appropriate-scale composting to reduce the waste stream and sanitize pathogens. In addition to addressing commercial food-related efforts, Extension actively programs to improve the quality of food consumed by the general public while reducing issues of food security through the support of community and school gardens, home horticulture endeavors and the Expanded Food and Nutrition Education Program.

The major agricultural sectors in Maine contribute substantially to the state's economy and these industries have significant R&D needs to remain competitive in rapidly changing marketplaces.

Maine's potato industry encompasses more than 500 businesses generating nearly $280 million in annual sales, employing more than 2,600 people, and providing more than $100 million in income to Maine residents. Maine potatoes are exported both nationally and internationally. Potato production in Maine is concentrated in Aroostook County and central Penobscot County. Potato production in the Northeast is highly dependent on expensive chemical fertilizers and pesticides, yet productivity has not increased dramatically over the past 50 years. Maine potato growers need new strategies for controlling insect pests, such as the Colorado potato beetle, plant diseases caused by Rhizoctonia solani, Phytophthora infestans, P. erythroseptica, and Spongospora subterranea,and weeds. Potato growers in Maine and the eastern U.S. also need new potato varieties with better disease/pest resistance and better quality for fresh and processing markets. Furthermore, they need new management systems that produce the yields and quality needed for profitability.

Wild blueberries are a unique agricultural crop in that they occur naturally in Maine and are cultivated in Maine and Maritimes Canada, with limited production in other states. Wild blueberries are grown on more than 500 farms on 64,000 acres in Maine. Maine produces the most blueberries of any state or province in North America, with an average production of more than 75 million pounds a year. Maine blueberries are exported around the world and make up about 50% of the world's wild blueberry crop. Developing new nutrient recommendations for wild blueberry will improve productivity on low-yielding fields and increase the profitability of the wild blueberry industry. Additionally, Maine's wild blueberry growers need improved tools for managing weed and insect pests and plant diseases.

Maine dairy farmers produce about $100 million worth of milk each year, and dairy farms employ more than 1,200 people full time and many seasonal laborers. Over the past 25 years, however, there has been a steady decline in the number of dairy farms. Maine's dairy farmers face increased production costs and depressed pricing. MAFES research is trying to increase the profitability of Maine's dairy farms by increasing the productivity of dairy cows through improved nutrition and reproduction success rates.

Maine's fisheries and aquaculture industries are comprised of marine fish and shellfish species,

including Atlantic salmon, groundfish stocks, lobster, crab, clam, mussel, and oyster. Many Maine seafood products, most notably lobster, are exported around the world as well as across the country. The fish aquaculture industry in Maine is currently dominated by Atlantic salmon, but to ensure its sustainability, Maine's aquaculture industry needs other potential marine aquaculture species, new, less-expensive fish diets, and new methods for treating diseases. Maine's shellfisheries also face challenges, and need new methods of disease control, ways to repel invasive predatory species, and stock that performs well in Maine's cold water.

Much of the experiment station's research looks to develop new methods and treatments that reduce the amount of herbicide, insecticide, or fungicide applied to Maine crops. Reducing use of these chemicals will result in both direct economic savings for growers (obtaining effective control, but applying less pesticide) and indirect economic savings for growers (minimizing detrimental effects of insecticides on pollinators and pest natural enemies). In addition, Maine's communities also benefit from this tactic because a significant reduction in the use of chemical inputs should translate into reduced risk for ground and surface water contamination, and human and wildlife exposure to pesticides.

Food production and processing is important in several key sectors in Maine: dairy, fisheries, potatoes, blueberries, and other fruits and vegetables. Control of foodborne pathogens and the reduction in the potential health risks to consumers from pathogens is one of the most urgent problems confronting the food industry. Maine food producers need new rapid techniques to test for the presence of pathogens. Although food producers have long used chemical agents with antimicrobial activity to control foodborne pathogens, consumers today are increasingly concerned about the safety of these chemical additives in foods and prefer natural and unadulterated foods. Using Maine crops, such as blueberry and cranberry, to develop antimicrobial compounds will benefit the growers, food producers, and consumers. Maine's food producers and processors need help assessing the quality of their products, along with new techniques and technologies for preserving food quality and extending shelf life.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Funding will stay the same; staffing levels will stay the same; participation from both oyster and mussel growers in the state; requires highly qualified hatchery personnel; requires use of the University of Maine Zebrafish Facility and trained personnel to monitor the fish stocks; continued integration with UM Cooperative Extension; potato industry will remain important for Maine economy; apple production will remain stable but replanting will increase; cooperation with scientists from state and federal research programs involved in genetic improvement of potato and other solanaceous species; weed insect and disease pressure will continue; growers will continue to adopt new practices, cooperate with researchers on projects, and learn to use new pest control materials to be able to control these pests; the slow rate at

which new pesticides are developed, and increasing public pressure for environmental stewardship, will require the farming sector to increasingly rely on knowledge of the ecology of agroecosystems to produce equal or greater crop yields, of improved quality, with less reliance on pesticides for crop protection. Maine's food commodity groups will remain stable. Concern over food-borne pathogens will remain the same or increase.

2. Ultimate goal(s) of this Program

- A Safer, Healthier, More Productive Food System in Maine

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2017	40.9	0.0	19.0	0.0
2018	40.9	0.0	19.0	0.0
2019	40.9	0.0	19.0	0.0
2020	40.9	0.0	19.0	0.0
2021	0.0	0.0	19.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Conduct scientific research. Publish peer-reviewed journal articles and other publications. Present findings at professional and public meetings and at other venues, and provide training sessions for food producers and processors. Educate undergraduate and graduate students.

- Crop Production Activities - Direct (Club, Conference, Program, Consultation, Scholarship, or Training)
- Crop Production Activities - Indirect (Applied Research, Media, Internet, Publication, Resulting from Training)
- Eat Well (Expanded Food and Nutrition Education Program) - Indirect (Applied Research, Media, Internet, Publication, Resulting from Training)
- Eat Well (Expanded Food and Nutrition Education Program)- Direct (Club, Conference, Program, Consultation, Scholarship, or Training)
- Farm Energy Activities - Direct (Club, Conference, Program, Consultation, Scholarship, or Training)
- Farm Energy Activities - Indirect (Applied Research, Media, Internet, Publication, Resulting from Training)
- Food Safety - Direct (Club, Conference, Program, Consultation, Scholarship, or Training)
- Food Safety - Indirect (Applied Research, Media, Internet, Publication, Resulting from Training)
- General Activities in Support of the Maine Food System - Direct (Club, Conference, Program,

Consultation, Scholarship, or Training)
• General Activities in Support of the Maine Food System - Indirect (Applied Research, Media, Internet, Publication, Resulting from Training)
• Home Horticulture Activities - Indirect (Applied Research, Media, Internet, Publication, Resulting from Training)
• Home Hotriculture Activities - Direct (Club, Conference, Program, Consultation, Scholarship, or Training)
• Livestock Activities - Direct (Club, Conference, Program, Consultation, Scholarship, or Training)
• Livestock Activities - Indirect (Applied Research, Media, Internet, Publication, Resulting from Training)
• Nutrition Education - Direct (Club, Conference, Program, Consultation, Scholarship, or Training)
• Nutrition Education - Indirect (Applied Research, Media, Internet, Publication, Resulting from Training)
• Specialty Food Products - Direct (Club, Conference, Program, Consultation, Scholarship, or Training)
• Specialty Food Products - Indirect (Applied Research, Media, Internet, Publication, Resulting from Training)

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
● Other 1 (Club, Conference, Program, Consu)	● Other 1 (Applied Research, Media, Interne)
● Other 2 (Consultation, Scholarship, or Tr)	● Other 2 (Publication, Resulting from Trai)

3. Description of targeted audience

Maine crop and livestock farmers, aquaculture industry, food producers, processors and marketers, Cooperative Extension staff, other scientists, state policymakers, regulators, and legislators, classroom teachers

¨ 4-H Volunteers (Adult)
¨ 4-H Youth (Youth)
¨ Agricultural Producers (Adult)
¨ Agricultural Service Providers
¨ Agricultural Workers (Adult)
¨ Apple Growers (Adult)
¨ Beef Producers (Adult)
¨ Blueberry Growers (Adult)
¨ Business Assist Organization Staff (Adult)
¨ Community Leaders (Adult)
¨ Cranberry Growers (Adult)
¨ Dairy Producers (Adult)
¨ Elders or Seniors (Adult)
¨ Families (Adult)
¨ Families (Youth)
¨ Farmers (Adult)
¨ Food Processors (Adult)
¨ General Public (Adult)
¨ General Public (Youth)
¨ Home Gardeners (Adult)

¨ Home Gardeners (Youth)
¨ Low-Income Families (Adult)
¨ Low-Income Families (Youth)
¨ Master Gardener Volunteers (Adult)
¨ Ornamental Horticulture Industry (Adult)
¨ Parents (Adult)
¨ Pesticide Applicator Training Participants (Adult)
¨ Pesticide Applicators (Adult)
¨ Policy Makers (Adult)
¨ Potato Growers (Adult)
¨ Sweet Corn Growers (Adults)
¨ Teachers (Adult)
¨ Vegetable Growers (Adult)
¨ Volunteers (Adult)

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Direct; Club, Conference, Program, Consultation, Scholarship, or Training
- Indirect; Applied Research, Media, Internet, Publication, Resulting from Training

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Pounds of food donated
2	Monetary value of food produced, gleaned, and donated
3	Number of agencies served
4	Implement practices that improve efficiency, reduce inputs and negative impacts on the environment, increase profitability, or reduce energy consumption
5	Adopt and maintain integrated pest management strategies
6	Demonstrate how to develop integrated farming systems (on farm composting? different enterprises on the same farm?)
7	Improve animal well-being
8	Establish new farm enterprises
9	New crops and markets developed
10	Implement techniques to reduce effects of variable climate
11	Adopt specific food safety plans and/or policies
12	Adopt healthy dietary practices (consume nutrient-rich foods, follow current Dietary Guidelines for Americans or DASH, etc)
13	Increase consumption and preservation of healthful, locally-grown and -produced food (farm to school program, food preservation, etc.)
14	Adopt techniques to improve soil quality
15	Adopt a water saving technique (rain barrels, soaker hoses, etc.)
16	Utilize Cooperative Extension to identify pest problems and determine research-based management strategies
17	Increase consumption of home-grown food
18	Enhance capacity of a sustainable global food system including new/improved plants, animals, technologies, and management systems
19	More sustainable, diverse, and resilient food systems in Maine
20	Improve food safety

Outcome # 1

1. Outcome Target

Pounds of food donated

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 502 - New and Improved Food Products
- 501 - New and Improved Food Processing Technologies

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Monetary value of food produced, gleaned, and donated

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 601 - Economics of Agricultural Production and Farm Management
- 503 - Quality Maintenance in Storing and Marketing Food Products

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Number of agencies served

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Implement practices that improve efficiency, reduce inputs and negative impacts on the environment, increase profitability, or reduce energy consumption

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 503 - Quality Maintenance in Storing and Marketing Food Products
- 213 - Weeds Affecting Plants
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 501 - New and Improved Food Processing Technologies
- 212 - Diseases and Nematodes Affecting Plants
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 502 - New and Improved Food Products
- 205 - Plant Management Systems
- 601 - Economics of Agricultural Production and Farm Management
- 215 - Biological Control of Pests Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

Adopt and maintain integrated pest management strategies

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 205 - Plant Management Systems
- 215 - Biological Control of Pests Affecting Plants
- 202 - Plant Genetic Resources
- 211 - Insects, Mites, and Other Arthropods Affecting Plants

- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 212 - Diseases and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 6

1. Outcome Target

Demonstrate how to develop integrated farming systems (on farm composting? different enterprises on the same farm?)

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 601 - Economics of Agricultural Production and Farm Management
- 702 - Requirements and Function of Nutrients and Other Food Components

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 7

1. Outcome Target

Improve animal well-being

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 311 - Animal Diseases
- 302 - Nutrient Utilization in Animals
- 305 - Animal Physiological Processes

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 8

1. Outcome Target

Establish new farm enterprises

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 9

1. Outcome Target

New crops and markets developed

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 503 - Quality Maintenance in Storing and Marketing Food Products

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 10

1. Outcome Target

Implement techniques to reduce effects of variable climate

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 605 - Natural Resource and Environmental Economics
- 205 - Plant Management Systems

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 11

1. Outcome Target

Adopt specific food safety plans and/or policies

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 502 - New and Improved Food Products

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 12

1. Outcome Target

Adopt healthy dietary practices (consume nutrient-rich foods, follow current Dietary Guidelines for Americans or DASH, etc)

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 13

1. Outcome Target

Increase consumption and preservation of healthful, locally-grown and -produced food (farm to school program, food preservation, etc.)

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 14

1. Outcome Target

Adopt techniques to improve soil quality

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 215 - Biological Control of Pests Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 15

1. Outcome Target

Adopt a water saving technique (rain barrels, soaker hoses, etc.)

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 205 - Plant Management Systems
- 102 - Soil, Plant, Water, Nutrient Relationships

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 16

1. Outcome Target

Utilize Cooperative Extension to identify pest problems and determine research-based management strategies

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 212 - Diseases and Nematodes Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 17

1. Outcome Target

Increase consumption of home-grown food

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 503 - Quality Maintenance in Storing and Marketing Food Products
- 702 - Requirements and Function of Nutrients and Other Food Components
- 502 - New and Improved Food Products

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 18

1. Outcome Target

Enhance capacity of a sustainable global food system including new/improved plants, animals, technologies, and management systems

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 213 - Weeds Affecting Plants
- 305 - Animal Physiological Processes
- 202 - Plant Genetic Resources
- 501 - New and Improved Food Processing Technologies
- 212 - Diseases and Nematodes Affecting Plants
- 301 - Reproductive Performance of Animals
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 215 - Biological Control of Pests Affecting Plants
- 102 - Soil, Plant, Water, Nutrient Relationships
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 302 - Nutrient Utilization in Animals
- 311 - Animal Diseases
- 502 - New and Improved Food Products

4. Associated Institute Type(s)

- 1862 Research

Outcome # 19

1. Outcome Target

More sustainable, diverse, and resilient food systems in Maine

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 213 - Weeds Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 301 - Reproductive Performance of Animals

- 302 - Nutrient Utilization in Animals
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 212 - Diseases and Nematodes Affecting Plants
- 305 - Animal Physiological Processes
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 205 - Plant Management Systems
- 703 - Nutrition Education and Behavior
- 102 - Soil, Plant, Water, Nutrient Relationships
- 311 - Animal Diseases
- 501 - New and Improved Food Processing Technologies
- 605 - Natural Resource and Environmental Economics
- 601 - Economics of Agricultural Production and Farm Management
- 202 - Plant Genetic Resources

4. Associated Institute Type(s)

- 1862 Research

Outcome # 20

1. Outcome Target

Improve food safety

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 502 - New and Improved Food Products
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Description

{NO DATA ENTERED}

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Evaluation initiatives will measure desired behavioral changes that contribute to a safer, healthier, more productive food system in Maine. Methods will include:

- Pre- and post-activity assessments
- Surveys
- Observations
- Case studies

Evaluations are currently conducted at the project and program levels.

At the project level, all projects are reviewed by an internal research council and external peer reviewers when initiated and again at completion by the research council. During the research council final evaluation, the focus is on determining if terminating projects met their stated objectives, secured extramural funding, and produced peer-reviewed publications. Researchers use a variety of methods to evaluate their own research projects including evaluations retrospectively, before-after, and during the life of the project; case studies; and comparisons between treatment/intervention and nontreatment/nonintervention.

At the program level, external NIFA review teams are asked to review the research programs of schools/departments. These teams provide input on the impact and productivity of research programs supported through the station. The station is working to develop a standard program-level evaluation process, which will be used to evaluate each station program area. Our current plans include an approach based on use of expert panels as recommended by the federal Government Accounting Office with individual program evaluations occurring every four to five years on a staggered time table.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Sustainable Community & Economic Development

2. Brief summary about Planned Program

Maine's economy relies on several key industries (agriculture, forestry, tourism and recreation, and marine fisheries), many of which are experiencing on-going and new challenges in competitive national marketplaces. Some of Maine's rural areas also are facing intense development pressure, with the concomitant issues of sprawl and debates concerning land use.

This plan addresses USDA/NIFA national priority to create sustainable communities through economic development, and includes work related to:

- Small & Home Based Business Management Education
- Tourism Economic Development
- Personal, Family and Community Resource Management Education
- Farm Business Management

When you support Extension's educational initiatives in community and economic development, program participants learn how to effectively manage and sustain: small and home-based businesses, household resources and community assets. This contributes to viable businesses, households and communities that will benefit other community members by contributing to gainful employment, quality of place and municipal tax revenues that support community services.

The Maine Agricultural and Forest Experiment Station's research in this program area includes projects on a range of issues affecting Maine's rural people and communities. Researchers are looking for ways to increase the profitability and sustainability of Maine's natural resource-based industries. They are addressing the issues important to Maine's horticultural and green, commercial fisheries, and other natural-resource-based businesses. They provide their expertise on nature-based tourism and rural labor markets and studying the effects on human health of exposure to certain environmental and/or occupational toxicants.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	0%		6%	
112	Watershed Protection and Management	0%		3%	
123	Management and Sustainability of Forest Resources	0%		2%	
131	Alternative Uses of Land	0%		2%	
134	Outdoor Recreation	0%		13%	
136	Conservation of Biological Diversity	0%		2%	
311	Animal Diseases	0%		6%	
315	Animal Welfare/Well-Being and Protection	0%		6%	
511	New and Improved Non-Food Products and Processes	0%		2%	
602	Business Management, Finance, and Taxation	25%		0%	
603	Market Economics	0%		3%	
604	Marketing and Distribution Practices	20%		0%	
605	Natural Resource and Environmental Economics	0%		19%	
607	Consumer Economics	15%		4%	
608	Community Resource Planning and Development	15%		18%	
609	Economic Theory and Methods	0%		3%	
610	Domestic Policy Analysis	0%		3%	
723	Hazards to Human Health and Safety	0%		6%	
801	Individual and Family Resource Management	20%		2%	
805	Community Institutions and Social Services	5%		0%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Community Development - Those who benefit from UMaine Extension's educational initiatives in community development learn how to be effectively engaged in their communities through volunteerism, public service, becoming involved in and improving their skills with public organizations, and group process

skills. This contributes to more effective public organizations, and more effective use of limited public resources as trained citizens are increasingly involved in process and decision-making.
Economic Development - Those who benefit from UMaine Extension's educational initiatives in economic development learn how to effectively manage and sustain small and home-based businesses, household resources and community assets. This contributes to viable businesses, households, and communities that will benefit other community members by contributing to gainful employment, quality of place, and municipal tax revenues that support community services.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Maine's economic future is dependent on the successful start-up, continuation and expansion of small businesses. There are nearly 160,000 small businesses in Maine. About 90 percent of them employ five or fewer employees, accounting for about 22 percent of the labor force. Many of these businesses are home-based and located in the rural areas of the state.

Successful start-up and growth of small businesses is expected to lead Maine and the nation out of the recent recession and play an increasingly important role in Maine's employment growth in the next decade. Many of these businesses are expected to be home-based or micro-enterprises that produce value-added products from Maine's natural resources. Small and home-based businesses represent entrepreneurial strength, diversity and durability, which contribute to the economic vitality of the state.

Funding will stay the same; staffing levels will stay the same; continued decline in natural-resource-based industries; continued interest in tourism; continued development pressure.

2. Ultimate goal(s) of this Program

- Vibrant and Resilient Communities

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2017	6.5	0.0	6.2	0.0

2018	6.5	0.0	6.2	0.0
2019	6.5	0.0	6.2	0.0
2020	6.5	0.0	6.2	0.0
2021	0.0	0.0	6.2	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Community Development - Direct (Club, Conference, Program, Consultation, Scholarship, or Training)
- Community Development - Indirect (Applied Research, Media, Internet, Publication, Resulting from Training)
- Economic Development - Direct (Club, Conference, Program, Consultation, Scholarship, or Training)
- Economic Development - Indirect (Applied Research, Media, Internet, Publication, Resulting from Training)
- General Community and Economic Development Activities - Direct (Club, Conference, Program, Consultation, Scholarship, or Training)
- General Community and Economic Development Activities - Indirect (Applied Research, Media, Internet, Publication, Resulting from Training)
- Small and home based business education - Direct (Club, Conference, Program, Consultation, Scholarship, or Training)
- Small and home based business education - Indirect (Applied Research, Media, Internet, Publication, Resulting from Training)

Conduct scientific research. Publish peer-reviewed journal articles and other publications. Present findings at professional and public meetings and at other venues. Educate undergraduate and graduate students.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
● Other 1 (Club, Conference, Program)	● Other 1 (Applied Research, Media, Interne)
● Other 2 (Consultation, Scholarship, or Tr)	● Other 2 (Publication, Resulting from Trai)

3. Description of targeted audience

Scientists, economists, state and local policymakers, extension specialists, green/horticulture industry, tourism planners, land use commissions, and commercial fishermen

Business Assist Organization Staff (Adult)
Community Leaders (Adult)
County Executive Committee Members (Adult)

Elders or Seniors (Adult)
Extension - staff (Adult)
Families (Adult)
Families (Youth)
General Public (Adult)
General Public (Youth)
Small or Home-Based Business Owners - Current (Adult)
Small or Home-Based Business Owners - Potential (Adult)
Teachers (Adult)
Volunteers (Adult)

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Direct; Club, Conference, Program, Consultation, Scholarship, or Training
- Indirect; Applied Research, Media, Internet, Publication, Resulting from Training

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Adopt sound business management practices
2	Increase profitability
3	Jobs created
4	Make more effective business decisions
5	Increase sales
6	Improve efficiency
7	Hire employees
8	Reduce business management risks
9	Start a business
10	Stay in business
11	Expand a business
12	Reconsider business plan
13	Join a business association
14	Join a local chamber of commerce
15	Increase partnerships
16	Increase career aspirations and goal setting
17	Demonstrate applications of life skills
18	Assess community needs and assets
19	Adopt effective community strategies
20	Mobilize community capacities, assets, or resources
21	Demonstrate leadership skills
22	Assess current and projected impacts of climate change and adopt effective strategies to respond to and mitigate such training
23	Identify household priority needs and aspirations
24	Assess alternate choices for managing household resources
25	Adopt sustainable living practices
26	Engage positively in their community
27	Train, support and mentor others in leadership roles

28	Demonstrate application of leadership skills
29	Demonstrate civic engagement
30	Strengthen human capacities, human capital, building partnerships
31	Improve knowledge of, or strategies and tools for, sustaining Maine's rural economies and communities
32	Adoption of strategies/tools for sustaining Maine's rural economies and communities
33	Enhance sustainability, diversity, and resiliency of Maine's rural economies and communities

Outcome # 1

1. Outcome Target

Adopt sound business management practices

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Increase profitability

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 607 - Consumer Economics
- 602 - Business Management, Finance, and Taxation
- 609 - Economic Theory and Methods

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Jobs created

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 607 - Consumer Economics

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Make more effective business decisions

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation
- 609 - Economic Theory and Methods

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

Increase sales

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 604 - Marketing and Distribution Practices
- 607 - Consumer Economics
- 609 - Economic Theory and Methods

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 6

1. Outcome Target

Improve efficiency

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 607 - Consumer Economics
- 602 - Business Management, Finance, and Taxation
- 609 - Economic Theory and Methods
- 604 - Marketing and Distribution Practices

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 7

1. Outcome Target

Hire employees

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 8

1. Outcome Target

Reduce business management risks

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 9

1. Outcome Target

Start a business

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 609 - Economic Theory and Methods
- 602 - Business Management, Finance, and Taxation

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 10

1. Outcome Target

Stay in business

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 11

1. Outcome Target

Expand a business

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 607 - Consumer Economics
- 609 - Economic Theory and Methods
- 602 - Business Management, Finance, and Taxation

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 12

1. Outcome Target

Reconsider business plan

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 609 - Economic Theory and Methods
- 602 - Business Management, Finance, and Taxation

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 13

1. Outcome Target

Join a business association

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation
- 608 - Community Resource Planning and Development

- 805 - Community Institutions and Social Services

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 14

1. Outcome Target

Join a local chamber of commerce

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development
- 602 - Business Management, Finance, and Taxation

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 15

1. Outcome Target

Increase partnerships

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation
- 610 - Domestic Policy Analysis

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 16

1. Outcome Target

Increase career aspirations and goal setting

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation
- 609 - Economic Theory and Methods

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 17

1. Outcome Target

Demonstrate applications of life skills

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 610 - Domestic Policy Analysis

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 18

1. Outcome Target

Assess community needs and assets

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development
- 805 - Community Institutions and Social Services

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 19

1. Outcome Target

Adopt effective community strategies

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development
- 805 - Community Institutions and Social Services

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 20

1. Outcome Target

Mobilize community capacities, assets, or resources

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development
- 805 - Community Institutions and Social Services

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 21

1. Outcome Target

Demonstrate leadership skills

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 22

1. Outcome Target

Assess current and projected impacts of climate change and adopt effective strategies to respond to and mitigate such training

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 23

1. Outcome Target

Identify household priority needs and aspirations

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 610 - Domestic Policy Analysis

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 24

1. Outcome Target

Assess alternate choices for managing household resources

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 610 - Domestic Policy Analysis

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 25

1. Outcome Target

Adopt sustainable living practices

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 610 - Domestic Policy Analysis

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 26

1. Outcome Target

Engage positively in their community

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 27

1. Outcome Target

Train, support and mentor others in leadership roles

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 28

1. Outcome Target

Demonstrate application of leadership skills

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 29

1. Outcome Target

Demonstrate civic engagement

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 30

1. Outcome Target

Strengthen human capacities, human capital, building partnerships

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 31

1. Outcome Target

Improve knowledge of, or strategies and tools for, sustaining Maine's rural economies and communities

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 134 - Outdoor Recreation
- 131 - Alternative Uses of Land
- 311 - Animal Diseases
- 315 - Animal Welfare/Well-Being and Protection
- 123 - Management and Sustainability of Forest Resources
- 609 - Economic Theory and Methods
- 112 - Watershed Protection and Management
- 607 - Consumer Economics
- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Research

Outcome # 32

1. Outcome Target

Adoption of strategies/tools for sustaining Maine's rural economies and communities

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 131 - Alternative Uses of Land
- 134 - Outdoor Recreation
- 609 - Economic Theory and Methods
- 112 - Watershed Protection and Management
- 605 - Natural Resource and Environmental Economics
- 315 - Animal Welfare/Well-Being and Protection
- 607 - Consumer Economics
- 311 - Animal Diseases
- 123 - Management and Sustainability of Forest Resources
- 102 - Soil, Plant, Water, Nutrient Relationships

4. Associated Institute Type(s)

- 1862 Research

Outcome # 33

1. Outcome Target

Enhance sustainability, diversity, and resiliency of Maine's rural economies and communities

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 315 - Animal Welfare/Well-Being and Protection
- 609 - Economic Theory and Methods
- 134 - Outdoor Recreation
- 123 - Management and Sustainability of Forest Resources
- 607 - Consumer Economics
- 311 - Animal Diseases
- 102 - Soil, Plant, Water, Nutrient Relationships
- 131 - Alternative Uses of Land
- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Description

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Evaluation initiatives will measure behavioral changes that contribute to sustainable community and economic development in Maine. Methods will include:

- Pre, post and retrospective activity assessments
- Surveys
- Observations
- Case Studies

Evaluations are currently conducted at the project and program levels.

At the project level, all projects are reviewed by an internal research council and external peer reviewers when initiated and again at completion by the research council. During the research council final evaluation, the focus is on determining if terminating projects met their stated objectives, secured extramural funding, and produced peer-reviewed publications. Researchers use a variety of methods to evaluate their own research projects including evaluations retrospectively, before-after, and during the life of the project; case studies; and comparisons between treatment/intervention and nontreatment/nonintervention.

At the program level, external NIFA review teams are asked to review the research programs of schools/departments. These teams provide input on the impact and productivity of research programs supported through the station. The station is working to develop a standard program-level evaluation process, which will be used to evaluate each station program area. Our current plans include an approach based on use of expert panels as recommended by the federal Government Accounting Office with individual program evaluations occurring every four to five years on a staggered time table.

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Climate Change

2. Brief summary about Planned Program

As concern about the timing, magnitude, and rate of future climate change increases, it is crucial that we have a better understanding of both how the mechanisms that govern climate variability work and what potential impacts may be experienced in Maine.

Home to the Climate Change Institute, the University of Maine is a recognized leader in discovery research on global climate change. Maine's location creates a prime testing ground for research on climate change, as it falls along the northernmost extent of the range of some species and the southernmost extent of the range of others. Scientists in the Maine Agricultural & Forest Experiment Station investigate the effects of climate on Maine's natural resource-based industries, particularly, agriculture, forestry, marine fisheries, and outdoor recreation and tourism.

In the Climate Change program area, MAFES scientists are investigating the interaction between climate and apple rootstocks and adaptation of weed management to future climates. Scientists are studying effects of climate change on Maine plant and animal wildlife and on Maine's lake water quality and aquatic resources. MAFES soil scientists are evaluating the influence of perturbations to forested ecosystem due to climate change. To ensure a viable apple industry, scientists are investigating the interaction between climate and apple rootstocks.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	0%		4%	
102	Soil, Plant, Water, Nutrient Relationships	0%		14%	
112	Watershed Protection and Management	0%		15%	
123	Management and Sustainability of Forest Resources	0%		11%	
132	Weather and Climate	0%		1%	
133	Pollution Prevention and Mitigation	0%		4%	
135	Aquatic and Terrestrial Wildlife	0%		18%	
136	Conservation of Biological Diversity	0%		10%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		16%	
205	Plant Management Systems	0%		3%	
215	Biological Control of Pests Affecting Plants	0%		2%	
216	Integrated Pest Management Systems	0%		2%	
	Total	0%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Climate data for the Northeast show that average annual temperatures have increased in the region by +1.8 F over the last century. The data also show a greater rate of warming during the winter months, a slight increase in length of the growing season, and an increase in the frequency of extreme precipitation events.

For Maine agriculture, these changes in climate may lead to changes in disease, weed, and pest pressures. Furthermore, certain crops that do well in cooler climates may not perform as well with warmer annual temperatures. Changes in precipitation may also require new crop varieties or new methods for dealing with field flooding and soil changes. Since there is much uncertainty about the effects of climate change, it will be crucial for Maine farmers to have access to current scientific research on the best ways to adapt to the new conditions.

Potential new invasive plant and animal species will affect Maine's forest, fishery, and outdoor recreation and tourism industries. Changing ocean temperatures will have an effect on Maine's marine aquaculture and fisheries industries. Loss of particular tree species due to warming temperatures may have a negative impact on Maine's forest industry and its maple sugar producers, along with the tourism industry, which relies heavily on fall foliage tourism. Maine's wildlife attracts many hunters, anglers, and

wildlife watchers, who may no longer visit the state if certain species no longer live within its borders. It will be important for people who manage these resources and for state policymakers to have a better understanding of the relationships between climate, habitat, and species composition. One of the challenges for successful environmental management, however, is the need for indicators that permit one to monitor the condition of the resource, to detect changes in the resource, to understand why a resource is changing, and to make predictions about the future condition of the resource.

In the Climate Change program area, experiment station scientist conduct basic and applied research on the effects of climate on Maine's forests, aquatic resources, wildlife, plant crops, along with the policy issues affecting land use. Some of the research in this program area, however, is funded by McIntire-Stennis and, as such, is outside of the scope of this Plan of Work.

2. Scope of the Program

- In-State Research
- Multistate Research
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Funding will stay the same; staffing levels will stay the same; cooperation with scientists from state and federal research programs; climate change will affect weed, insect, and disease pressures and productivity of Maine crops; climate change will lead to new invasive plant and animal species; climate change will lead to change in range for some plant and animal species.

2. Ultimate goal(s) of this Program

To develop a better understanding of the effects of climate change on Maine's natural-resource-based industries, particularly, agriculture, forestry, marine fisheries, and outdoor recreation and tourism.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2017	0.0	0.0	2.4	0.0
2018	0.0	0.0	2.4	0.0
2019	0.0	0.0	2.4	0.0
2020	0.0	0.0	2.4	0.0
2021	0.0	0.0	2.4	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Conduct scientific research. Publish peer-reviewed journal articles and other publications. Present findings at professional and public meetings and at other venues. Educate undergraduate and graduate students.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
● Other 1 (none)	● Other 1 (none)

3. Description of targeted audience

Maine natural-resource-based industries, Cooperative Extension staff, other scientists, state and federal policymakers, regulators, and legislators, classroom teachers

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Develop new knowledge and technologies to address the effects of climate variability and change
2	Enhance adaptive capacity of production and natural systems to reduce exposure and vulnerability to climate change

Outcome # 1

1. Outcome Target

Develop new knowledge and technologies to address the effects of climate variability and change

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 135 - Aquatic and Terrestrial Wildlife
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 112 - Watershed Protection and Management
- 136 - Conservation of Biological Diversity
- 102 - Soil, Plant, Water, Nutrient Relationships
- 133 - Pollution Prevention and Mitigation
- 123 - Management and Sustainability of Forest Resources
- 101 - Appraisal of Soil Resources

4. Associated Institute Type(s)

- 1862 Research

Outcome # 2

1. Outcome Target

Enhance adaptive capacity of production and natural systems to reduce exposure and vulnerability to climate change

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 123 - Management and Sustainability of Forest Resources
- 135 - Aquatic and Terrestrial Wildlife
- 133 - Pollution Prevention and Mitigation
- 101 - Appraisal of Soil Resources
- 112 - Watershed Protection and Management
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 102 - Soil, Plant, Water, Nutrient Relationships
- 136 - Conservation of Biological Diversity

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

Description

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Evaluations are currently conducted at the project and program levels.

At the project level, all projects are reviewed by an internal research council and external peer reviewers when initiated and again at completion by the research council. During the research council final evaluation, the focus is on determining if terminating projects met their stated objectives, secured extramural funding, and produced peer-reviewed publications. Researchers use a variety of methods to evaluate their own research projects including evaluations retrospectively, before-after, and during the life of the project; case studies; and comparisons between treatment/intervention and nontreatment/nonintervention.

At the program level, external NIFA review teams are asked to review the research programs of schools/departments. These teams provide input on the impact and productivity of research programs supported through the station. The station is working to develop a standard program-level evaluation process, which will be used to evaluate each station program area. Our current plans include an approach based on use of expert panels as recommended by the federal Government Accounting Office with individual program evaluations occurring every four to five years on a staggered time table.

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Sustainable Natural Resources

2. Brief summary about Planned Program

When most people think of Maine, they think of its natural resources: its lakes, streams, and rivers, its scenic coastline, its forests, and the fish, animal, and plant species these areas support. Maine citizens value these resources highly, and judging by Maine's $3 billion tourism industry, people from across the country and around the world also value them. Therefore, it is a critical part of the Maine Agricultural & Forest Experiment Station's mission to provide the research necessary to conserve and preserve these resources.

The Sustainable Natural Resources program area comprises discovery research projects that focus on aspects of Maine's natural resources: water, soil, and air quality and conservation of Maine's plant and wildlife species. MAFES water research is monitoring the health and quality of Maine's ground water, rivers, and lakes. Wildlife biologists are investigating the status, distribution, and habitat requirements of harbor and gray seal. Other research examines the effects of resource availability and quality on individual growth, breeding success, and survival of migrant and resident bird populations and ways to improve stream habitat for fish.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	0%		2%	
111	Conservation and Efficient Use of Water	0%		4%	
112	Watershed Protection and Management	0%		8%	
123	Management and Sustainability of Forest Resources	0%		11%	
131	Alternative Uses of Land	0%		2%	
132	Weather and Climate	0%		2%	
134	Outdoor Recreation	0%		4%	
135	Aquatic and Terrestrial Wildlife	0%		17%	
136	Conservation of Biological Diversity	0%		11%	
202	Plant Genetic Resources	0%		4%	
206	Basic Plant Biology	0%		4%	
215	Biological Control of Pests Affecting Plants	0%		4%	
301	Reproductive Performance of Animals	0%		2%	
306	Environmental Stress in Animals	0%		3%	
311	Animal Diseases	0%		2%	
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	0%		4%	
605	Natural Resource and Environmental Economics	0%		10%	
608	Community Resource Planning and Development	0%		2%	
609	Economic Theory and Methods	0%		2%	
723	Hazards to Human Health and Safety	0%		2%	
	Total	0%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Maine is a state rich in water resources. It includes more than 3,500 miles of coastline, 6,000 lakes and ponds, and 32,000 miles of rivers and streams. These waters represent a valuable part of the natural

resource base in the state of Maine. They provide important ecological habitats, diverse recreational activities, valuable social amenities, unique scenic attractions, and abundant resource-based economic opportunities within the state. Unfortunately, aquatic resources in Maine and throughout the U.S. are at risk from pressures and threats associated with human population growth, climate changes, land development and sprawl, invasive exotic species, and non-point pollution. Conservation and wise management of these natural waters requires ongoing research efforts to monitor the ecological health of these systems and to detect changes and trends associated with degradation of these aquatic resources.

Maine's wild plant and animal species are another valuable part of Maine's natural resource base. Wildlife and their habitats attract anglers, hunters, and tourists to Maine, but they also serve as indicators of overall health of Maine's environment and improve quality of life for all Maine citizens. To better protect and conserve these species, the state needs more information about their genetic makeup and the relationship between these species and their environment.

The natural resources program area needs answers to basic questions about how these systems work, what effects changes in one aspect have on the system as whole. Therefore the outcomes for this

2. Scope of the Program

- In-State Research
- Multistate Research
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Funding will stay the same; staffing levels will stay the same; research space will be available; collaborations with the Maine Departments of Environmental Protection and Inland Fisheries and Wildlife, Atlantic Salmon Commission, U.S. Fish and Wildlife Service and the National Marine Fisheries Service and citizen groups will continue; permits for fish sampling will be approved.

2. Ultimate goal(s) of this Program

To increase our understanding of and knowledge about Maine's natural resources to help the state manage these resources sustainably

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2017	0.0	0.0	10.8	0.0
2018	0.0	0.0	10.8	0.0
2019	0.0	0.0	10.8	0.0

2020	0.0	0.0	10.8	0.0
2021	0.0	0.0	10.8	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Conduct scientific research. Publish peer-reviewed journal articles and other publications. Present findings at professional and public meetings and at other venues. Educate undergraduate and graduate students.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
● Other 1 (none)	● Other 1 (none)

3. Description of targeted audience

Other scientists; teachers at all levels; directors of aquariums and museums, exhibit halls, etc.; endangered species biologists/managers; state and local policymakers; state regulatory agencies; environmental consultants; landowners

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Improve knowledge of, or strategies and tools for, sustaining Maine's natural resources
2	Enhance sustainability, diversity, and resiliency of Maine's natural resource-based industries
3	Improve health, distribution, and/or abundance of crucial plant and animal species

Outcome # 1

1. Outcome Target

Improve knowledge of, or strategies and tools for, sustaining Maine's natural resources

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 135 - Aquatic and Terrestrial Wildlife
- 723 - Hazards to Human Health and Safety
- 134 - Outdoor Recreation
- 605 - Natural Resource and Environmental Economics
- 131 - Alternative Uses of Land
- 215 - Biological Control of Pests Affecting Plants
- 136 - Conservation of Biological Diversity
- 306 - Environmental Stress in Animals
- 206 - Basic Plant Biology
- 123 - Management and Sustainability of Forest Resources
- 301 - Reproductive Performance of Animals
- 132 - Weather and Climate
- 111 - Conservation and Efficient Use of Water

4. Associated Institute Type(s)

- 1862 Research

Outcome # 2

1. Outcome Target

Enhance sustainability, diversity, and resiliency of Maine's natural resource-based industries

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 123 - Management and Sustainability of Forest Resources
- 111 - Conservation and Efficient Use of Water
- 206 - Basic Plant Biology
- 134 - Outdoor Recreation
- 605 - Natural Resource and Environmental Economics
- 215 - Biological Control of Pests Affecting Plants

- 301 - Reproductive Performance of Animals
- 723 - Hazards to Human Health and Safety
- 136 - Conservation of Biological Diversity
- 131 - Alternative Uses of Land
- 135 - Aquatic and Terrestrial Wildlife
- 132 - Weather and Climate
- 306 - Environmental Stress in Animals

4. Associated Institute Type(s)

- 1862 Research

Outcome # 3

1. Outcome Target

Improve health, distribution, and/or abundance of crucial plant and animal species

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation
- 135 - Aquatic and Terrestrial Wildlife
- 132 - Weather and Climate
- 123 - Management and Sustainability of Forest Resources
- 215 - Biological Control of Pests Affecting Plants
- 206 - Basic Plant Biology
- 136 - Conservation of Biological Diversity
- 605 - Natural Resource and Environmental Economics
- 301 - Reproductive Performance of Animals
- 306 - Environmental Stress in Animals
- 723 - Hazards to Human Health and Safety
- 131 - Alternative Uses of Land
- 111 - Conservation and Efficient Use of Water

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- Other (new invasive species)

Description

Natural disasters, weather extremes, and climate change all have the potential to affect the outcomes of MAFES natural resources research. New invasive species may affect Maine's plant and animal wildlife. Funding for university research is affected by the economy and other policy changes.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Evaluations are currently conducted at the project and program levels.

At the project level, all projects are reviewed by an internal research council and external peer reviewers when initiated and again at completion by the research council. During the research council final evaluation, the focus is on determining if terminating projects met their stated objectives, secured extramural funding, and produced peer-reviewed publications. Researchers use a variety of methods to evaluate their own research projects including evaluations retrospectively, before-after, and during the life of the project; case studies; and comparisons between treatment/intervention and nontreatment/nonintervention.

At the program level, external NIFA review teams are asked to review the research programs of schools/departments. These teams provide input on the impact and productivity of research programs supported through the station. The station is working to develop a standard program-level evaluation process, which will be used to evaluate each station program area. Our current plans include an approach based on use of expert panels as recommended by the federal Government Accounting Office with individual program evaluations occurring every four to five years on a staggered time table.