

2018 University of Alaska Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

Alaska is recognized for its immense size, dispersed population, and its cultural, geographic and environmental diversity. The state represents a major region of renewable and nonrenewable natural resources in the United States. Its 365 million acres include the nation's largest oil reserves, coal deposits and two largest national forests. The state also contains an array of mineral deposits, including gold, zinc, boron, molybdenum and rare earth minerals. Alaska has a diverse geography that offers soils for production of food, fiber and biomass fuels as well as a multitude of recreational and tourism activities. Waters surrounding Alaska's shoreline and riparian habitats contain large stocks of salmon, cod, pollock, halibut, herring, crab and shrimp that support thriving commercial, sport and subsistence fisheries.

Alaska's natural resources have historically been the foundation of the state's economy, though resource industries have been mostly extractive in nature. During the past half century, Alaska's economy has become dependent upon revenues related to petroleum development. To diversify its economy, the state is moving toward non-petroleum natural resources for economic opportunities that are cost-effective and sustainable. The use and management of these resources is a predominant force in the planning and delivery of teaching, research, Extension and engagement programs.

Our combined unit has been known as the School of Natural Resources and Extension (SNRE) since July 1, 2014, after the formal merger of the School of Natural Resources and Agricultural Sciences (SNRAS) and the Agricultural and Forestry Experiment Station (AFES) with the Cooperative Extension Service (CES). The programs of AFES and CES play a vital role in extending the knowledge generated at the university to meet the needs and interests of Alaskans. Citizens are provided engagement opportunities to influence future research and education priorities. SNRE is a critical partner for the university, providing a linkage among researchers, Extension personnel and Alaskans to deliver the latest research findings, education and outreach opportunities.

Planned programs for the purposes of this report include Agriculture and Food Security; Natural Resources and Community Development; Healthy Individuals, Families and Communities; Climate Change and Ecosystem Management; Youth Development; and Sustainable Energy. Climate change, while addressed primarily in one planned program, affects all the program areas.

Alaska imports over 90 percent of foods and other agricultural products. As the population grows and transportation costs increase, more locally and regionally produced food will be needed to provide greater food security. To this end, growers in the agricultural sector produce fresh market potatoes, vegetables and herbs; forages, grains and manufactured livestock feeds; controlled environment products, which include bedding plants, florals, landscape ornamentals and short season vegetables; and a variety of niche market crops. Harvests of peonies and *Rhodiola rosea*, in particular, have continued to expand.

Many Alaskans live a subsistence lifestyle or supplement their diets with local fish and game meat. Alaska also has a large military population, most of whom have not previously preserved game meat or fish. The state has one of the nation's highest rates of botulism, with the most recent suspected case in 2018, making it imperative to provide much needed information on safe preservation of dietary staples. Food safety is also a concern for small food business entrepreneurs and of food industry workers, who need state-required training.

Alaska also has one of the fastest growing senior populations, who face the challenge of remaining active and healthy in a demanding environment. Other concerns that define health and nutrition

programming are the high rates of child and adult obesity and diabetes. Alaskans need help managing chronic conditions and planning healthy meals in food-insecure environments. High energy costs remain a critical issue, particularly in rural Alaska. Research and outreach have focused on new and alternative sources of energy, woody biomass and energy conservation. There is a consistent need for research based cold climate building and maintenance information. Homes are tightly built to try and reduce heating costs; however, this leads to other consequences, such as indoor air quality concerns.

The aim of SNRE is to provide new information to manage renewable resources and to improve technology for enhancing the economic well-being and quality of life at high latitudes. While foresters, farmers and land managers are primarily the audiences putting our research results into practice, all Alaskans benefit from the wise use of land resources. Our research projects are in response to requests from producers, industries, and state and federal agencies for information in plant, animal and soil sciences, forest sciences and resource management.

Alaska's AFES priorities, like national priorities, are to enhance sustainability of food and agricultural systems; adapt to and mitigate the impacts of climate change; support energy security through the development of renewable natural resources; ensure a safe, secure and abundant food supply; improve human health, nutrition and wellness; support environmental stewardship through the development of sustainable management practices; and strengthen individual, family, and community development and resilience. Experiment station scientists publish their research in scientific journals, conference proceedings, books, and in experiment station bulletins, circulars, newsletters, research progress reports and other miscellaneous publications. Scientists also disseminate their findings through conferences, public presentations, workshops, consultations and other public information programs like websites and blogs.

Administratively, AFES is an integral part of SNRE. This association provides direct links between research, teaching and outreach. Scientists who conduct research at the experiment station also teach, sharing their expertise with undergraduate and graduate students, adult learners and Extension faculty and staff. Researchers also collaborate with Extension faculty by inviting them for guest lectures and collaborating on integrated grant projects.

Cooperative Extension's mission is to educate, engage and support the people and communities of Alaska, connecting them with their university. Extension provides factual and useful information while bringing Alaskans' issues and challenges to the university. CES is committed to promoting the sustainability and economic security of individuals, families and communities by providing practical, non-formal education, including conferences, workshops and cooperative work with community, regional and tribal partners. Outreach is also provided through publications, consultations, newsletters and social media outreach dedicated to district information and locally useful subject matter. CES programs address national priorities by helping families, youth and individuals be physically, mentally and emotionally healthy; enhancing workforce preparation and life skills; strengthening the profitability of animal and plant production systems; protecting our rich natural resources and environment; ensuring an abundant and safe food supply through horticulture and food preservation education; preparing for and responding to natural disasters; and fostering greater energy independence.

Programming respects cultural and ethnic diversity and is responsive to emerging stakeholder needs and interests. Programs result from client requests, various regional and subject matter advisory groups, surveys and needs assessments. Our national partnership with eXtension has also helped with reaching stakeholders. Agents answer stakeholder questions through eXtension Ask an Expert, participate in communities of practice and incorporate eXtension resources into their programming.

Extension will continue to work with researchers to support agriculture, horticulture, forestry, and rural and economic development. Collaborations continue with other universities and with other units within the University of Alaska Fairbanks, the University of Alaska statewide system, federal and state agencies, nongovernmental organizations and private industry. Stakeholders include K-12 students, higher education students, researchers, individuals, businesses, industry, government, nongovernmental organizations, and families and communities throughout Alaska, the circumpolar North and the nation. SNRE brings the university to Alaskans while bringing community concerns and issues back to the university.