

Alaska (University of Alaska Fairbanks) Annual Report - FY2022

Report Status: Approved as of 06/29/2023

Contributing Organizations

University of Alaska Fairbanks

Executive Summary

Overview

Alaska is recognized as a

Home and energy Extension programming addressed indoor air quality, home maintenance and repair, energy use and conservation. Emergency preparedness impacted such areas as families and communities responding to natural and man-made disasters. The state records frequent earthquakes, flooding and other natural disasters, which underscores a need for emergency preparation as well as periodic radon testing related to ground shi s.

Training was conducted with youth, teachers, 4-H leaders, youth group organizers, parents and community partners to provide techniques for working directly with youth in the area of nutrition and physical activity. StrongPeople groups and diabetes education helped community members increase their physical activity and manage chronic illnesses.

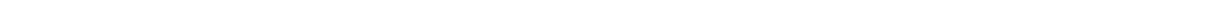
Critical Issue: Natural Resources, Ecosystems & Sustainable Energy

Communities increasingly depend on Alaska's natural resources for viable economic development. Policies to sustain this growth that mirror sociological and technological change will be critical. Major Alaska resource development activities have been centered in the oil and gas industries.

Headquarters for these industries are located in the urban centers where there is access to transportation and advanced communication systems.

Headquarters for these industries are located in the urban centers where there is access to transportation and advanced communication systems. However, many communities still need to build infrastructure to fully engage in value-added activities that would enhance development of non-petroleum sectors.

IANRE continued to adapt to the post-pandemic environment and offered "Walkabout Wednesdays" where stakeholders could join conversations on agricult



details regarding what t



Overall, research shows better outcomes for youth who have connections with caring adults. 4-H is uniquely positioned to provide a variety of modalities to forge such connections for Alaska's youth in culturally relevant programming, featuring opportunities for civic engagement and leadership.

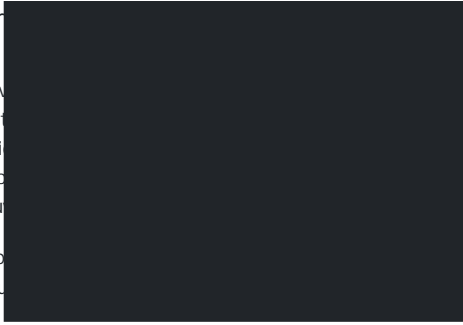
Briefly describe the 4-H programs, projects, or major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

In FY22, Alaskan 4-H volunteers and participants made progress on intended outcomes of applying at least two of the Essential Elements in their interactions during programming, and demonstrating confidence and knowledge gained from opportunities for leadership. Specifically, youth participated in opportunities to lead through roles such as camp counselors, exchange ambassadors, and club officers. Youth also gave public presentations and participated in the Youth in Governance program. In Sitka, a teen club leader wrote a resolution related to food sovereignty. In the Interior, two 4-H teens took on leadership for a new club for younger kids ages 5-7, reaching 12 more members. Six teens in the Interior served as camp counselors, facilitating camp activities for about 30 attendees. Five youth in Kodiak volunteered to help lead camps on the islands.

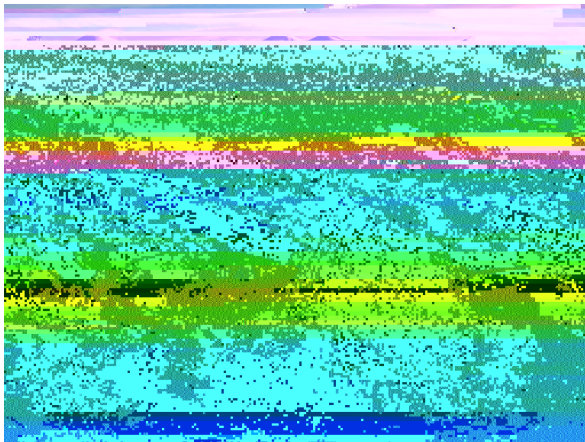
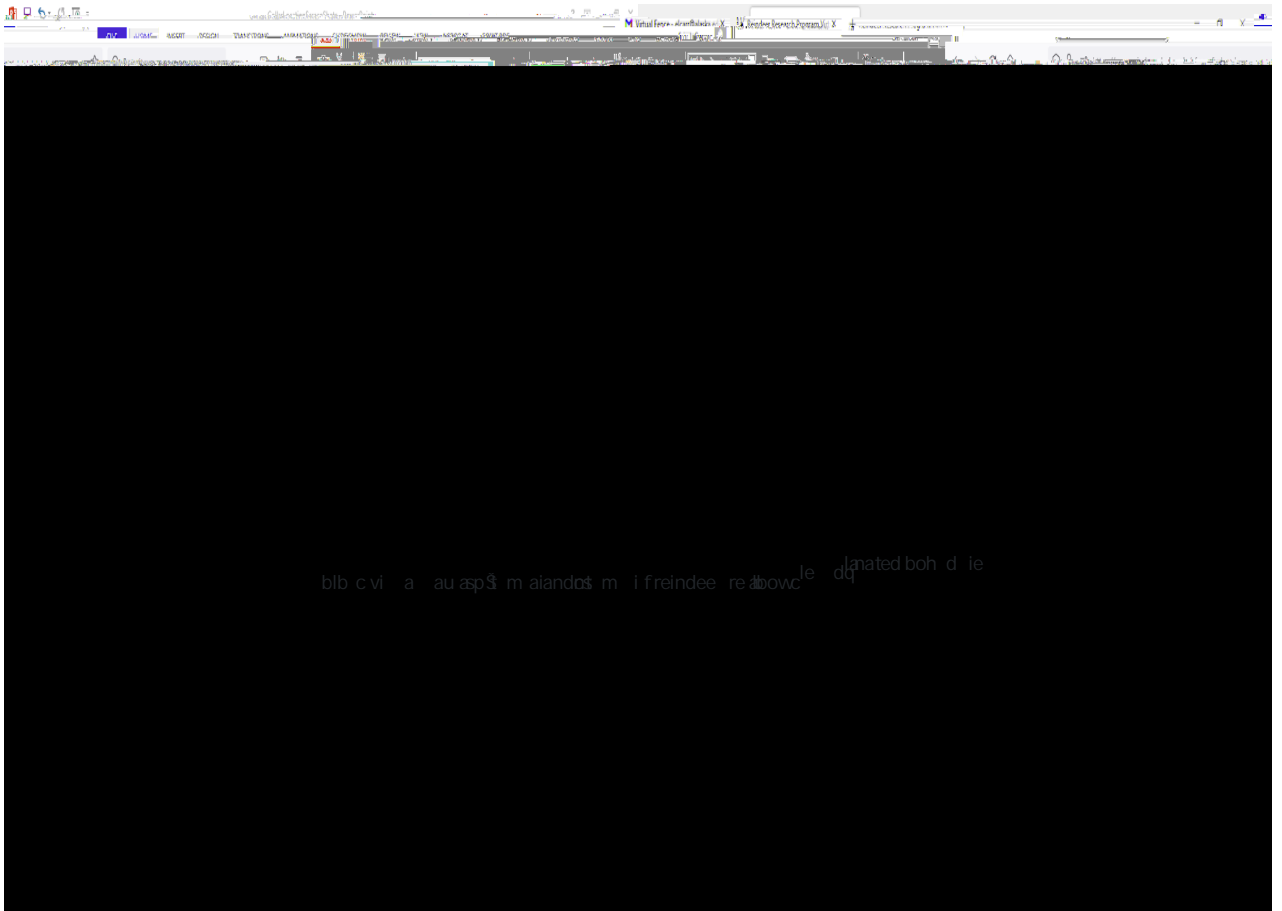
Briefly describe in non-technical terms how your major activities helped you achieve, or the goals and objectives described in your non-technical summary.

In FY22 (year one of this project), Variety Trials were conducted evaluating 12 crops and over 80 cultivars. Randomized Complete Block Design (RCBD) as well as un-replicated screening trials were carried out on "check" crops and varieties as well as crops considered marginal for Alaska's current growing conditions. Data were calculated for certain crops (e.g. Sweet Corn) in order to monitor how changes in growing seasons affect crop yields in Alaska agriculture. Additionally, a perennial berry trial was initiated with project partners in Anaktuvuk Pass.

Research findings were disseminated to the public through a number of outreach and education opportunities, including field days, webinars, and social media posts. Harvest data and which are published and available free to the public through AFES website; multiple reports are available on the Fairbanks AFES Farm and Georges, are available on the Fairbanks AFES website.

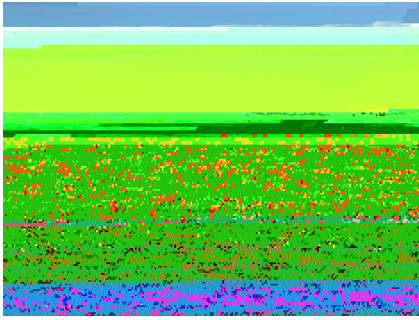






A simulation of the virtual boundary and alert system has been integrated into the HLRM201 Range Management Techniques course at the University of Alaska Fairbanks Northwest Campus, Nome. A simulation of the project was presented to the Reindeer Herders Association, the Alaska Reindeer Council (ARC) which is composed of reindeer producers, state and federal agencies that are associated with the reindeer industry and at public forums sponsored by the University of Alaska Fairbanks.

Briefly describe howes



Briefly describe how the broader public benefited from your project's activities.

The products developed and tested through this project can be implemented with any species of livestock or wildlife. There are Virtual Fence systems available commercially, but we have generated reliability and cost benefit data for a number of configurations that will allow a producer to select the radio collar type and data acquisition system that will best fit his needs and budget. A marine mammal researcher attending in the Alaska Reindeer Council presentation expressed an interest in adapting an on-going Beluga whale GPS satellite collar study to this project's activities.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

The products of this project are based on an internet mapping and cellular phone alert system. At the present time, internet and cell phone service are very unreliable in the rural Alaska villages. Gaps in service may cause delays in the mapping and alerting of boundary infringement by animals, thus reducing its effectiveness. However, Congress has recently appropriated substantial funds to greatly increase the capability and reliability of rural Alaska internet service.

The study findings were presented through various venues.

- o Presentation of study findings and developed tools at the Reindeer Herders Association Annual Meetings (2021-22).

- o Presentation of study findings and developed tools at the Alaska Reindeer Council 2022

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

The objectives of this project are to evaluate two cover crop mixtures (clover + perennial ryegrass, and alfalfa + slender wheat grass) under 2- and 4-year rotations on soil quality and soil nutrient status. Year 2022 was the third year of the project. In this year, in addition to the key objectives, hay yield was determined from alfalfa treatment in response to farmers' request on the instant economic benefit by growing cover crops.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

This is the 3rd year of the field experiments. After cutting two 2-year rotational plots (Denali alfalfa+ Wainwrights slender wheat grass, and Alsike clover + perennial ryegrass) in the fall 2021, soil samples taken in fall 2021 were incubated at 15°C for mineral N release in two weeks in order to determine impact of cover crops on soil N availability in the spring of 2022. Barley were also grown in the two 2-year rotational treatments in order to determine biological N uptake after cutting the cover crops. Weed population was determined in the remaining plots using the line intersection method. Major weed species were lambs quarter and chickweed and the results showed that high seeding rate of cover crops still can't suppress wheat growth. Biomass samples of 2022 were taken in August 21 to determine the forage yield. In addition, the alfalfa + Wainwright slender wheat grass was cut for hay in order to estimate economic benefit from growing cover crop. Because of

activity/submit



It is essential for the management of insect pests to unde



In 2-3 sentences, briefly describe the issue or problem that your project addresses.

The objectives of the project are 1) select short growing season of spring wheat; 2) evaluate feed barley (6- and 2-row) for malting purpose; and 3) develop a Polish canola for Alaska. Year 2022 is the 4th year into the project. A two row barley from Sweeden showed can reach maturity in the season and has large kernel size. Its malting quality is to be tested.



Alaska imports over 90 percent of its food, and many communities are off the road system. Shortages related to economic effects of the pandemic highlighted.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Launched in July of 2021, the Juneau agent continued the successful Maritime Extension Project in FY22 by using a trawler to travel by boat and deliver food safety and preservation classes to communities off the road system. The Extension agent reached eight communities and taught more than 32 classes to over 60 people in communities that were either previously unreachable, or had gone without an in-person workshop for several years. The agent also gave food preservation demonstrations to 20 participants at the Haines fair, taught food entrepreneurship workshops online, and tested canner gauges across the region.

Briefly describe how your target audience benefited from your project's activities.

Extension's efforts improved food safety. Canner gauge tests identify gauges that need to be fixed or replaced, improving the accuracy of important tools for the preservation process. These efforts also improved Extension's reach to underserved audiences, with the majority of class participants being from low income areas or Alaska Native tribes.

Briefly describe how the broader public benefited from your project's activities.

Extension improved food safety knowledge and practices at a regional level by employing crAM

Briefly describe how the broader public benefited from you⁸

Problems - We were unable to test out a piece of equipment that will be used next summer due to issues with the instrument caused by the compan

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Invasive Chokecherry Management- Wildland plots in forest of Anchorage and Fairbanks were set up and invasive chokecherry (*Prunus padus*) received basal bark treatments with a persistent and non-persistent herbicide. Evaluation of these wildland plots occurred during the summer of 2022. We saw increased non-target impacts from higher doses of persistent herbicide, while the differences in efficacy were small though significant. An additional evaluation will be done in 2023.

Certified Weed Free Straw- In 2021 plots treated in a fallow season (2020) had soil samples taken to determine the quantity of herbicide present. Barley was planted to harvest straw and determine if the crop could be certified weed free according to standards set by Alaska and the North American Invasive Species Management Association. Barley was planted again in 2022 and additional soil samples taken. The persistent herbicide increased rate of certification of the plot as weed free by NAISMA standards. Bioassays were also performed on the soils sampled. These show evidence that the persistent herbicide is present in the soil for up to two years after the application.

Sorption experiments- Additional laboratory bench work was completed to determine the soil processes driving the affinity of two herbicides, aminopyralid and clopyralid, for soils in Alaska. We found that the persistent herbicide, aminopyralid, has more affinity to soil particles at a lower pH. Little to no herbicide binds to soil particles at a pH of 5 which is equivalent to the soil's natural pH. We see the increase in affinity at pH of 2 and 3.5. This however is contrary to the observation of continued persistence that we have observed under field conditions.

Briefly describe how your target audience benefited from your project's activities.

Presentations of the current results were prepared and given to the target audience at the Alaska Invasive Species Workshop, Western Society of Weed Sciences, and the Alaska Sustainable Agriculture Conference. These presentations outlined the difficulties of invasive plant management in Alaska and the utility of persistent herbicides. Further, we highlighted how our research will help manage the use of persistent herbicides to prevent non-target impacts and problems with rotating crops to sensitive species.

Briefly describe how the broader public benefited from your project's activities.

The broader public will benefit from this project by increased efficacy of the invasive plant control in both agricultural and forested settings. The agricultural settings are aimed to increase the availability of certified weed free straw products that are used as animal bedding, and in the local manufacturing of erosion control materials. The forested settings are aimed at increased efficacy and management of persistent herbicides in the control of invasive chokecherry trees (*Prunus padus*). As we continue the research to understand the soil properties that drive affinity for aminopyralid and clopyralid to soils we can form additional hypotheses about the potential period of control, and remediation of treated sites with plant material or adjusting soil chemical properties such as pH.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Initially we intended to study the impact of temperature on the ability of aminopyralid to bind to soil particles. However, in our preliminary experiments we were unable to get any herbicide to bind to the soil at any temperature. When we realized it was likely because of the effect of pH on the charge of the herbicide, we changed our experimental design to compare different pH levels. The ranges used cover a broad area of low pH levels, and provide good insight into potential processes of herbicide binding and ways to manage the herbicide remaining in the soil.

[19-06 Hatch Regular: Understanding Human and Community Benefits and Mechanisms](#)

Project Director

Peter Fix

Organization

University of Alaska Fairbanks

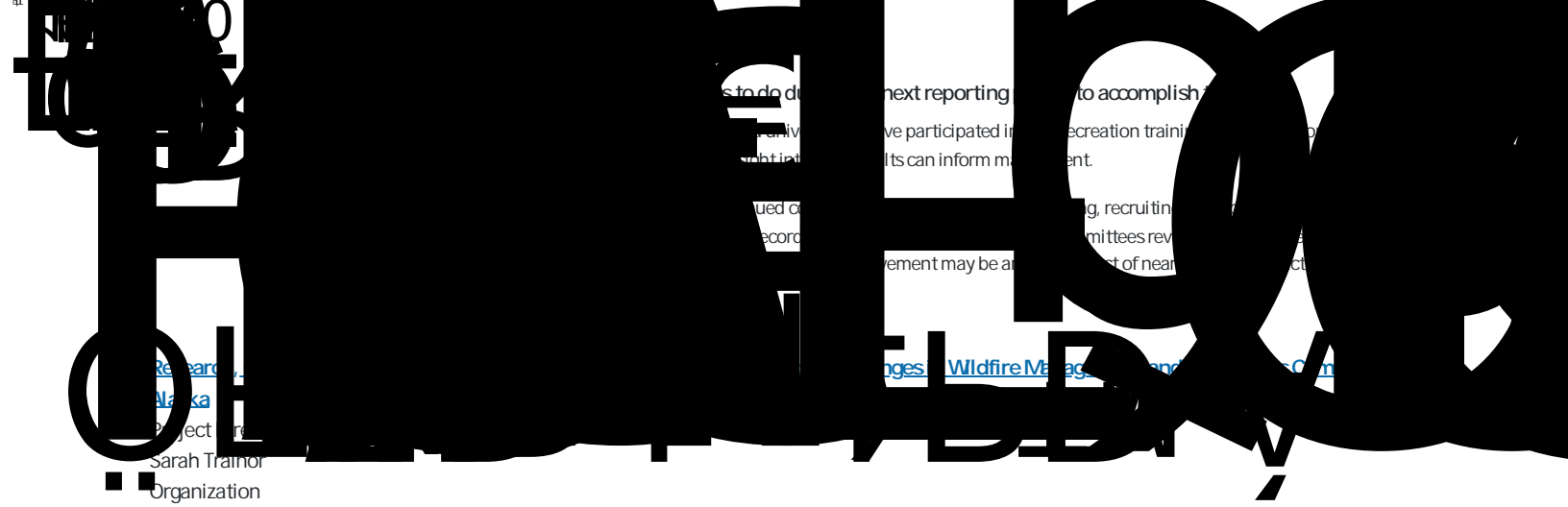
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1) A survey was administered to residents of communities in southcentral Alaska. The survey was designed to gather information on the relationship among the prevalence and type of recreation facilities, use of those facilities, and total amount of physical activity. The study design also allowed for an examination of whether income influences that relationship. Data from the survey will reveal whether there is a relationship among recreation facilities, use of the facilities, and amount of physical activity. In addition, the survey also asked about constraints that prevented participation in recreation. The resulting information will be provided to policy makers and managers, and can inform decisions on the future development of recreation facilities.

2) Surveys and focus group protocols were developed to be administered at Bureau of Land Management recreation areas and communities surrounding those recreation areas. The survey and focus group protocols were approved by the Office of Management and Budget. The surveys and focus group will examine the beneficial outcomes users hope to achieve through recreation at the site and management actions that can facilitate the realization of those benefits. The focus groups will include a wide diversity of participants, including people who might not currently use the area in question, local businesses, and local government. Data will inform managers on the actions that might optimize desires of the public. Surveys and focus groups were conducted at 4 different areas in FY 2022.

3) A project was initiated to advance diversity, equity, and inclusion (DEI). The major activities have included development of research instruments, building partnerships, gaining UAF Institutional Review Board approval for the project, capacity building, and, most importantly, relationship building. In partnership with YWCA Alaska, a non-profit community organization headquartered in Anchorage, the recreation



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Research, Alaska, Project, Sarah Trainor, Organization, University of Alaska Fairbanks, Accession Number, 1018914, Wildfire Management, Indigenous Communities in Alaska

Organization
University of Alaska Fairbanks
Accession Number
1018914

★ Annual-Research, Capacity Building, and Training for Meeting the Climate Change Challenges in Wildfire Management and Indigenous Communities in Alaska

In 2-3 sentences, briefly describe the issue or problem that your project N scend h tN

(4) Graduate Student Project: Understanding the Role of Boundary Spanning in Knowledge Co-Production and Scienc

(2) Bridging Wildfire Science and Management

Burn Severity Explained

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Briefly describe how your target audience benefited from your project's activities.

Research at the OneTree lab continued to target greater predictability for when the birch sap season will start, peak and end. The lab collected and contributed seasonal data to researchers working on predictive algorithms. This has the potential to provide greater certainty for producers to know when to set and pull taps.

Briefly describe how the broader public benefited from your project's activities.

The data collected by the OneTree lab is shared across units at the university and contributes to broader knowledge about green-up trends. Natural resources programming helps youth develop a connection with nature. The inclusion of community members as citizen scientists helps Alaskans practice being good forest stewards. The publication on birch tapping has been shared widely, and helps increase awareness and knowledge of Alaska's forest products.

Describe and f

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The Extension energy specialist also produced a conference poster and connected with multiple organiza**ts**