



Annual Highlights 2015



SCHOOL OF NATURAL
RESOURCES AND EXTENSION

University of Alaska Fairbanks

update

A note FROM THE VICE PROVOST

THE UAF SCHOOL OF NATURAL RESOURCES AND EXTENSION

encompasses teaching, research and outreach. On the academic side, the school provides relevant, hands-on natural resources research and instruction for undergraduate and graduate students. During the past two years, our enrollment has increased. We have added a new minor in forest management and are also seeking professional accreditation of our natural resources management degree by the Society of American Foresters. Representatives will visit the school this spring.

Our researchers study natural resources management, including the impact of how a changing climate affects Alaska's forests, soils and agriculture. Other research focuses on greenhouse management, animal science, agronomy, horticulture, policy law and public lands tourism. The research arm of the school includes the Agricultural and Forestry Experiment Station, a research institute with more than 100 years of history. It was founded in 1906 as the federal Agricultural Experiment Station.

Extension agents continue their 85-year history of exemplary work in communities throughout Alaska. Extension makes a significant impact, whether it's science, technology, engineering and math (STEM) school programs, youth mentoring, working with rhodiola and peony growers, or helping families with food preservation or gardening.

As with other university departments, we face funding challenges but intend to keep the school's credit and noncredit offerings strong and relevant to Alaska. We are capitalizing on videoconference and online course delivery technology to extend our reach to more students.

Please contact me with any concerns or ideas you have on how we can do a better job.

Sincerely,

Fred Schlutt
Vice Provost, School of Natural Resources and Extension



School of
Natural Resources
and Extension



Agricultural & Forestry
Experiment Station



4-H develops leaders

GENEVA WRIGHT was a high school senior this past spring when she met with President Obama in the White House.

Eight 4-H members from rural communities around the country were asked to give short presentations to the president. Wright said she led a line of youth to the Oval Office and was surprised when the president himself opened the door.

Wright said the president asked about rural poverty. She told him about the conditions in Tanana, where she lives, and in rural Alaska, where there are high rates of domestic violence and suicide and getting fresh food is a challenge.

Wright, who is now a freshman at the University of Alaska Fairbanks, credits 4-H for helping her gain confidence and for the experience of meeting other youth at national leadership conferences.

"I learned to be a leader and speak out," said Wright.

She and a group of Tanana youth also spoke at large gatherings about how suicide and substance abuse affected them, including an Alaska Federation of Natives convention.

Wright is studying to become an elementary school teacher in rural Alaska, and she is thinking about ways to reach out to youth about suicide prevention.

4-H teaches leadership and citizenship in a variety of ways. A group has been visiting the state Legislature in February every year, speaking with legislators, seeing how government works and testifying on bills. Other 4-H youth volunteer as camp counselors, design trails in Anchorage, interview elders in Dillingham, teach younger youth about dog mushing and practice public speaking.

Geneva Wright meets President Obama in the White House. Official White House Photo by Pete Souza

- ❖ Since 2005, 96 youth have traveled to Juneau to see how Alaska's legislative process works. Some have returned the following year to intern with a representative and senator from their district. Former participants have testified at legislative hearings or attended city council meetings.
- ❖ In 2014, nearly 4,000 Alaska 4-H youth participated in citizenship activities, including community and volunteer service, leadership projects, civic engagement and more.





New App

IDENTIFYING INVASIVE SPECIES WITH TECHNOLOGY

ALASKANS CAN IDENTIFY INVASIVE WEEDS using a new free mobile app.

Gino Graziano, an invasive plants instructor with Extension, worked with the University of Georgia to develop the Alaska Weeds Identification app.

Graziano said the app will make it easier for people to identify invasive weeds and to report them if they are unsure about the identification or are concerned about the presence of invasive weeds on their property or public lands. The app provides photographs, descriptions of the plants by type or region, and management practices.

Invasive weeds of special concern are non-native plants that cause harm to ecosystems or agriculture. Graziano hopes the app will help identify invasive weeds before they get a foothold in a new area.

People who wish to send a report with an attached photo sign into a University of Georgia database on the app. That information, which provides GPS coordinates, gets routed to Graziano, who either responds to or forwards the report to other pest management experts or public land managers.

In the first five months following its August release, more than 850 people have downloaded the app for IOS mobile devices, including iPhones, or Android devices.

One of the first reports Graziano received was from a bear hunter in Cold Bay who reported Canadian thistle. Graziano said the advantage with the app is you can easily identify and report an invasive weed when you're hiking or anywhere outdoors.

"It's just right there at your fingertips," he said.

- ❖ Extension also has a Citizen Monitoring Portal that allows individuals to submit photographs of invasive plants, diseased plants and insects at www.uaf.edu/ces/ipm/cmp. Citizen reports have resulted in the eradication of purple loosestrife in South-central and management of giant hogweed in Kake.
- ❖ The Western Alaska Landscape Conservation Cooperative supported the creation of the app with funding from the U.S. Geological Survey and the U.S. Fish and Wildlife Service.

A beach fringe of invasive knotweed in Southeast Alaska. Tom Heutte, USDA Forest Service, Bugwood.org



SURVEY

Public lands management

CONDUCTING SURVEYS OF RECREATION AREAS

WHEN THE BUREAU OF LAND MANAGEMENT assesses user demand for recreation areas, it frequently turns to Peter Fix for help.

Fix, an associate professor of outdoor recreation management, has conducted surveys for BLM for 10 years. The work is part of a Cooperative Ecosystem Studies Unit collaboration between public agencies and universities. The unit that covers most of Alaska is coordinated by the University of Alaska Fairbanks, under the direction of Fix.

Michelle Ethun, the assistant field manager for the Eastern Interior BLM field office, said the agency does not have the staff or expertise to conduct and analyze the on-site visitor surveys.

“It’s an extremely valuable tool for us,” she said. “We would not be able to get this data.”

She said BLM uses the visitor information for planning and to inform management decisions.

Fix and UAF students have conducted more than a dozen surveys of visitors to BLM-managed lands and scenic rivers near the Dalton, Steese, Denali and Taylor highways, the Iditarod Trail, and the Western Interior and Bering Sea areas. The surveys ask visitors about their travels, experiences and the perceived benefits of activities, which range from berry picking and hiking to hunting and gold panning. To better understand the economic impact of visitors, some surveyers ask them about their expenditures.

As part of a larger project, recreational and subsistence users will be surveyed this summer on public lands across Alaska, which will help agencies determine how visitors access public lands, whether the access is adequate for different stakeholders and how it can be improved.

“Hopefully it will lead to better planning for access in the region,” says Fix.



- ❖ Fix leads a multistate team that is developing a survey guide that BLM will use at sites it manages across the nation.
- ❖ The Interior BLM collaboration has led to summer internships for UAF students the past three years.

Visitors raft on the Nenana River near Denali National Park. UAF photo by Todd Paris



Gard

Refugee Project

GARDENING IN AN ADOPTED HOME

EXTENSION HAS BEEN TEACHING REFUGEES how to garden in Anchorage since 2007 as part of its Refugee Farmers Market Project.

Working with Anchorage horticulture agent Julie Riley, they learn how to grow Alaska vegetables and herbs in an 8,000-square-foot garden on city parkland. The refugees harvest their crops and, with the help of volunteers, sell them at Anchorage farmers markets under the name Fresh International Gardens.

Participants have come from Congo, Togo, Sudan, Thailand and, most recently, Bhutan. Bhutanese refugee Phul Niroula resettled in Anchorage with her family in 2011 through the Refugee Assistance and Immigration Services Program. She enjoys working in the garden.

“It makes her real happy,” her daughter-in-law, Yashoda Adhakari, said, interpreting. She even likes working at the market. “The volunteers help me to change money and speak to the customers.”



Phul Niroula

The project gives participants a chance to practice their English and to learn marketing and customer service skills. Sales from the garden in 2015 reached an all-time high of \$12,640 and included nearly 900 bags of the gardeners' signature salad mix, a blend of lettuces, mizuna, arugula, spinach, dill and other ingredients.

Proceeds are split among participants, but Riley says, “It’s not about the money.” The project gets the refugees out and interacting with others in the garden and at market. They also learn about new vegetables and may even start a business.

Last summer, 14 participants worked more than 1,800 hours in the garden and at market. Three of them had never gardened before. Others have gardened for years, have their own gardens and are even selling independently.

Niroula has started her own garden behind the home she acquired through the Habitat for Humanity program. She grows Asian vegetables, pumpkins, potatoes, lettuce and white radishes for her family.

Bhakti Dhakal shows off some of the produce grown for Fresh International Gardens. Photo by Edwin Remsberg

- ❖ Fresh International Gardens is one of the largest sources of fresh vegetables grown in Anchorage.
- ❖ The project is a collaboration with the Refugee Assistance and Immigration Services, which refers interested refugees.

rdening

Researching a changing climate

SCIENTISTS SAY the average temperature across Alaska has increased by approximately 3 degrees Fahrenheit in the last 60 years and additional warming is expected, along with drier conditions.

Researchers with the School of Natural Resources and Extension are studying how the changing climate affects the distribution of vegetation, forest productivity, regrowth and management, arctic and subarctic soils and new agricultural possibilities. Some of this research is highlighted here.

Research published last summer by forest ecologist Glenn Juday indicates that the Interior has become too hot and dry to be an ideal climate for lowland white spruce, which is the most prized commercial species in the region.

For 25 years, silviculturist John Yarie has been studying what effect limiting moisture has on forest productivity. He has created artificial drought conditions by using plastic platforms to exclude rainfall and removing snow to reduce snowmelt.

Professor Dave Verbyla has been using Geographic Information Systems (GIS) and remote sensing to analyze historic trends in the boreal forest, mostly recently on how vegetation is affected by changing climatic factors such as the spring snowpack, length of the growing season, date of the spring bud burst and summer moisture.

Agronomist Mingchu Zhang said higher temperatures could lead to a longer growing season and, potentially, new crops that can be grown in Alaska. He is identifying and selecting spring wheat and malting and hullless barley cultivars that can be grown under dryland conditions.

Associate Professor Julie Joly is analyzing public policy as it relates to natural resources management, including potential conflicts between land managers because of issues related to climate change.

“Our work in climate change relates to managing natural resources in a changing environment,” said Milan Shipka, director of research for the school.



Climate

- ❖ The site of the 1983 Rosie Creek fire near Fairbanks provides forest scientists an ideal lab to study forest regrowth under changing conditions.
- ❖ Research will provide information for forest managers who are trying to design adaptive management alternatives.

*Sam Demientieff takes a core sample from a mature white spruce along the lower Yukon River as part of research on white spruce growth over time.
Photo by Claire Alix*



Academic programs develop farmers

UAF School of Natural Resources and Extension 2015

ROGER RIDENOUR GREW UP ON A FARM in western Pennsylvania, but he is learning about farming in Alaska from the School of Natural Resources and Extension.

“I know farming in Pennsylvania but Alaska makes it twice as hard,” says Ridenour, who came to Alaska as a tuba player with the Army and stayed. He and his wife bought 63 acres to farm near North Pole.

So far he has taken classes on greenhouse management, plant science, soils, sustainable agriculture and plant propagation. He hopes to have a producing greenhouse within four years, and also raise vegetables, pigs, chickens and cows.

Ridenour believes that farming in Alaska has a future. “Alaska food security is a problem that needs to be fixed,” he said. “I plan on being part of the solution.”

Horticulturist Meriam Karlsson, the department chair for the agriculture and horticulture program, said the school is definitely improving students’ awareness about food production, which is important since an estimated 90 to 95 percent of food eaten in Alaska is imported.

Karlsson team teaches a new class, Principles of Sustainable Agriculture. Students learn how to make farming sustainable from ecological, social and economic viewpoints. They read and discuss farm case studies and learn about sustainable management of soil, plants and animals. They are also grounded in the practical aspects of farming.

“To be sustainable, you have to make a profit,” notes Karlsson.

- ❖ An animal science class covers the science of livestock production. Students can also take that knowledge on the road. As part of another class about Alaska natural resources issues, they tour livestock operations and meet producers.
- ❖ The Calypso Farm and Ecology Center in Fairbanks offers a hands-on farmer practicum that is part of the school's offerings. Participants live on the farm and learn about planting, weeding, harvesting, composting, farm planning, raising livestock and more.
- ❖ Agriculture was one of five fields of study offered at the Alaska Agricultural College and School of Mines (now University of Alaska Fairbanks) when it opened in 1922.

University of Alaska Fairbanks students visit the Northern Lights Dairy in Delta Junction as part of a natural resources management field tour.

Food security

PRESERVING THE HARVEST SAFELY

JUNEAU AGENT SARAH LEWIS TEAMED UP with the Southeast Alaska Regional Health Consortium last year to teach workshops on food preservation and developing small foods businesses in more than a dozen Southeast communities.

Working with community contacts, Lewis offered classes based on local interest in everything from canning fish and making sauerkraut to knowing what to do when your freezer conks out. While visiting communities from Hydaburg and Ketchikan to Skagway and Klukwan, she also checked the accuracy of pressure canner gauges.

Food preservation work remains a staple for Lewis and for other agents. “They’re definitely my most requested and most attended classes,” she said.

Lewis said some people simply want to save money by filling their freezers and pantries. Others want to know where their food came from and what’s in it.

Local foods enthusiast Charles Bingham attended Lewis’ canning salmon and canning soup classes in Sitka. Although his parents had taken Extension classes in Anchorage and canned their own food, he hadn’t tried it on his own.

“Taking the classes was a good way for me to learn the basics and give me the confidence to do my own canning this year,” he said.

Agents can’t offer workshops in every Alaska community, but they provide guidance on the phone, by email and through many hands-on classes. During 2015, agents showed more than 1,300 Alaskans how to do everything from making jams, jellies and mozzarella to canning fish and game meat and making pickles.

Extension resources include its Preserving Alaska’s Bounty DVD how-to series. Interactive lessons on many topics are available at www.uaf.edu/ces/preservingalaskasbounty.



- ❖ Alaskans with food preservation questions may call district offices or the toll-free number at 877-520-5211.
- ❖ Agents tested more than 800 pressure canner gauges, demonstrating how to make adjustments when necessary or recommending replacement.
- ❖ More than 50 food preservation publications may be downloaded for free from Extension's website or ordered for a nominal cost. Search online for topics or the catalog at www.uaf.edu/ces/pubs/catalog/.

Sarah Lewis loads jars of soup into a canner during a July 2015 food preservation class at the Sitka Kitch. Photo by Charles Bingham


 A photograph of Meriam Karlsson, a woman with blonde hair, smiling and gesturing towards a large green plant in a greenhouse. The greenhouse is covered with a reflective material, and there are colorful LED light strips (red, blue, and white) hanging from the ceiling.

Researching light

LED USE IN ALASKA GREENHOUSES STUDIED

HORTICULTURE PROFESSOR MERIAM KARLSSON is studying the use of LEDs in high-latitude greenhouses and developing guidelines for their use. She says that LEDs are a good research tool because they allow researchers to “hone in on different aspects of light.”

Although it has always been assumed that full-spectrum light is the best, Karlsson says that may not be the case. For example, she has found that for photosynthesis to occur you need to increase red and blue light, but you also need to “tweak” the mix of red(s), blue and even white and yellow to get exactly what you want.

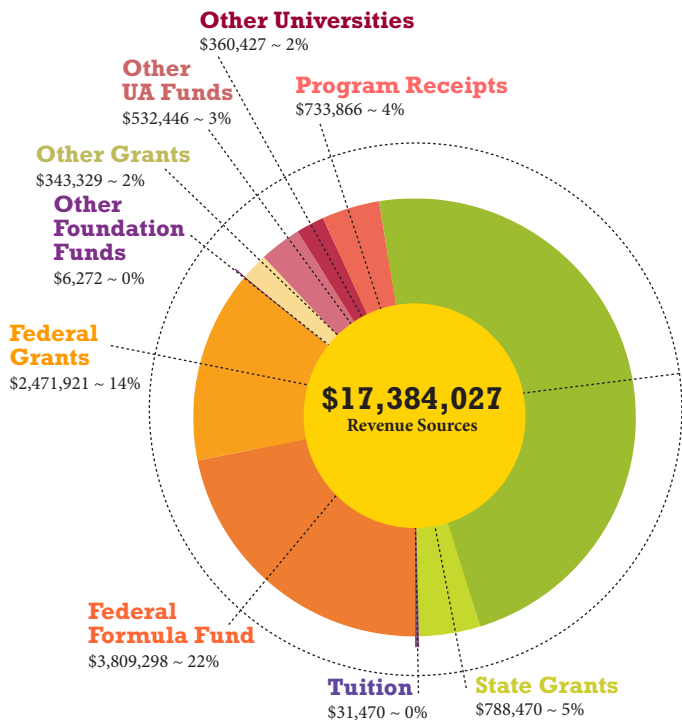
She says there have been lots of studies on the effects of blue on plants. For example, adding more blue during the last three days of growing could increase the level of antioxidants in the plant, and blue light provided during transportation could keep levels of antioxidants from decreasing. By increasing red, plants might develop more vitamin C.

The guidelines Karlsson is developing will probably include different levels of blue and red with some added white to make the light more appealing to humans. Also, different plants at different stages need different types of light. For example, she has found that seedling tomatoes need a different mix of LEDs than do grafted plants.

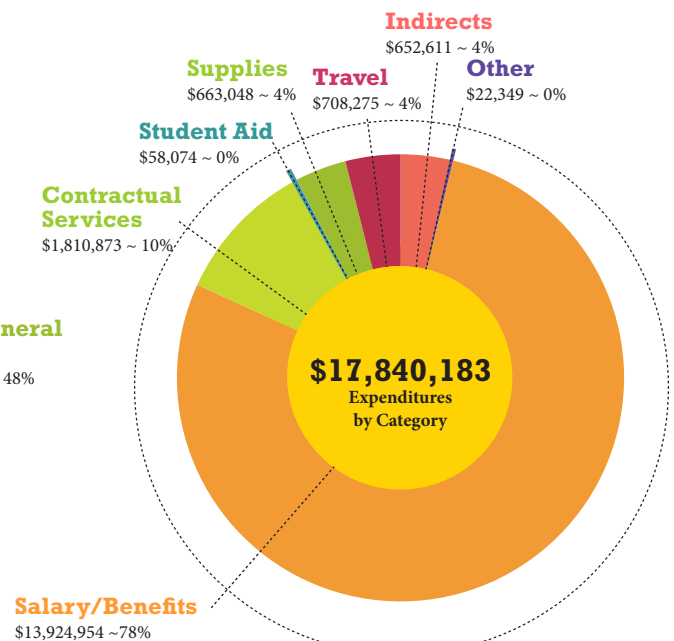
Right now, she says, LEDs make the best sense for seedlings and plants that grow close to the ground, but last summer she grew peppers and will continue growing them, as well as tomatoes, this year.

- ❖ Light-emitting diodes are popular because they use less energy, last longer and are cheaper and smaller than other bulbs.
- ❖ LEDs don't contain mercury, emit UV radiation or damage organic materials.
- ❖ Because they do not produce heat, LEDs can be placed closer to the plants without burning them.
- ❖ LEDs can also be used for multilayer cultivation and interlighting, or placing bulbs within the plant canopy.

Meriam Karlsson is developing a set of guidelines for using LEDs in Alaska greenhouses.



July 1, 2014 - June 30, 2015 (State FY15)
SNRE Revenue Sources
Total \$17,384,027



July 1, 2014 - June 30, 2015 (State FY15)
SNRE Expenditures by Category
Total \$17,840,183