FALCON Student Presentations

Friday, October 22, 2021
11:15am – 1:15pm ET
10:15am – 12:15pm CT
9:15am – 11:15am MT
8:15am – 10:15am PT

1	Title	Presenters	Institution/Organization
	An Internship Experience with U.S. Department of Agriculture, Animal and Plant Health Inspection Service Wildlife Services in Augusta, Maine	**Morgan Yazzie and Jeandria Mariano**	**Navajo Technical University**

ABSTRACT

Our 10-week summer internship with the U.s Department of Agriculture (USDA) Wildlife Services (WS) in Augusta, Maine was a great opportunity and experience. Living here on the Navajo reservation our whole life and being able to see hundreds of miles ahead of us on open range, then switching to a different landscape within 10 weeks was quite challenging including the two-hour time difference. Some of the projects we assisted with were Avian Influenza Surveillance where we observed and recorded target birds on public and non-public water including rivers, lakes, ponds, and streams to determine if further dispersal would be required. We also cage-trapped target (skunks, red fox, coyotes, and racoons) species for rabies, surveyed road-kill for rabies, and dropped oral rabies vaccine bait from an airplane. Through all of these projects, we obtained the knowledge and working experience as USDA WS interns during this internship.

2	Title	Presenters	Institution/Organization
	My Adventure as a U.S. Department of Agriculture Animal and Plant Health Inspection Service Veterinary Service Intern in Kentucky	**Hunter Livingston**	**Navajo Technical University**

ABSTRACT

My 9-week internship this summer with the U.S. Department of Agriculture Animal and Plant Health Inspection Service Veterinary Service, Frankfort, KY, was an adventure. Being removed from all that I knew on the Navajo Reservation, I was eager to get my feet wet and learn all that I could in 9 weeks. My experience included serving as a Counselor and Program Assistant for AgDiscovery, a 2-week USDA Ag program for high school students, where I chaperoned 19 youth and helped with program activities. As a Veterinary Service intern, I assisted with stockyard inspections for cleanliness and sheep, goat, and cattle processing and sale preparation. To ensure the overall health of overseas horses transported to the Kentucky Derby, I helped with taking vitals and properly quarantining of the horses before transportation for further training for the big race. I assisted in processing cattle blood samples at the Frankfort

brucellosis lab. In addition, I visited a butcher shop and grocery store to ensure the meat was properly cleaned, handled, and stored. During the last part of my summer experience, I shadowed veterinarians performing three equine surgeries and assisted with fecal analysis in the laboratory at an equine hospital. Finally, I answered importation and exportation correspondence calls from customers for the Veterinarian Trade Export Services. I recommend tribal college students to participate in a USDA internship to help them explore new areas.

3	Title	Presenters	Institution/Organization
	Applications of Data Science, Python, and Geospatial Modeling of LiDAR Data on Tribal Lands	**Justina White Eyes**	**Oglala Lakota College**

ABSTRACT

Phase one utilizes data science, Python, and geospatial applications to manage, process, and model LiDAR (Light Detection and Ranging) data at Oglala Lakota College's ten decentralized college centers. This endeavor aims to contribute to creating a campus-wide data infrastructure management plan to house spatial data, architectural AutoCAD data, land use information, and plan for future construction projects effectively and efficiently. This project phase looked at LiDAR analysis at the Oglala College Center on the Pine Ridge Indian Reservation. LASTools third-party geospatial software was used to establish data acquisitions and prep methods to work with the LiDAR datasets. ESRI ArcGIS products modeled LiDAR data into bare earth elevation, slope, aspect, contours, TIN's, building extractions, and 3D visualization imagery and animations. Python was used in a Google Colab framework to start getting modeled datasets into a Python environment to begin sharing and working with the datasets more efficiently. The next project phase includes applying Python to data preparation and the geospatial modeling within the Google Colab environment. Our tribal offices and university partners have ready-to-use analytical datasets, thus, saving significant amounts of time when starting campus-wide projects.

4	Title	Presenters	Institution/Organization
	The Effect of an Agricultural Pesticide on Soil Microbial Communities	**Robert Sam**	**United Tribes Technical College**

ABSTRACT

Agricultural pesticides are the primary application used for preventing pests and disease among crops. With rising population and a demand for sustainable food production, pesticides use has been on a steady increase. Despite pesticides beneficial role in pest and disease suppression, pesticide use has also been shown to have detrimental impacts on ecosystems. One primary area of interest is the impact pesticides have on soil ecology. Studies have reported

decreases in growth, respiration, and nutrient availability for soil microbial communities. In this study, we measured the effects of agricultural pesticides on soil microbes. Samples were collected from two research plots at the Northern Great Plains Agricultural Research Station in Mandan, ND. The first plot was a USDA certified organic plot. The second plot was an experimental plot that had multiple seasons of controlled pesticide application. During the 2021 growing season the second plot was sprayed with crop oil and Jackhammer. From each sample location, two different soil depths were collected (0-5 inches and 8-10 inches). To test soil microbial activity and community diversity, we used the Solvita CO2 burst test and Biolog Ecoplates. Microbial respiration was recorded after 24 hours using the Solvita color chart. Optical density measurements were taken daily for five days to determine average well color development (AWCD). AWCD was used to determine the average Shannon-Wiener diversity index (H) and carbon source substrate values for all samples and a PCA analysis was conducted with Excel. Results are still pending.

5	Title	Presenters	Institution/Organization
	Seeds and Change: Preserving Our Past and Planting Our Future	**Marcus Antonio and Gabriel Mendoza Sr.**	**Tohono O'odham Community College**

ABSTRACT

Decades ago, agriculture was one of the ways of survival for the Tohono O'odham. The surrounding communities would come together to help prepare the fields. For the O'odham the primary growing seasons was the summertime because of the monsoon rains. Today, agriculture has changed; the most common agriculture done on the reservation is backyard garden; moreover, several farms continue to grow the traditional crops.

Tohono O'odham Community College (TOCC) Agriculture Extension Program provides hands-on learning for enrolled students to gain experience and knowledge in traditional and modern farming/gardening. Additionally, the program has a seed bank of the traditional crops.

The TOCC Agriculture Program has twenty-four varieties of traditional seeds in its seed bank and shares them when in abundant supply. The program educates the community on the importance of seeds saving.

Proper seed saving is substantial because, over the years, local farmers have experienced little to no production when planting traditional foods due to climate change. We have witnessed the short supply of traditional seeds.

A future goal is to educate community members through hands-on activities, furthermore to realize the connection between the importance of growing traditional foods and saving seeds.