

# FALCON Poster Presentations

**Saturday, November 8, 2014**

**3:15–5:00 pm**

**Denmark Commons**

## *Student Section*

1	Title	Presenters	Institution/Organization
	<b>Evaluating Cattle Introgression in Bison on the Pine Ridge Reservation through Genetic Analysis</b>	<b>Tada Vargas</b>	<b>Oglala Lakota College</b>

### ABSTRACT

North American buffalo (*Bison bison*) exhibit a range of genetic purities depending on the history and management of individual herds. We undertook a large-scale study to evaluate the introgression of cattle (*Bos taurus*) genes present in Pine Ridge Reservation herds. Maternally inherited introgression was determined by screening 900 individuals using a PCR-based mitochondrial DNA assay. No evidence of maternally inherited cattle introgression was detected. To further screen for cattle introgression, DNA from a subset of 336 individuals are being PCR amplified with a panel of 18 nuclear DNA markers. The product is then genotyped to determine levels of paternally inherited cattle introgression. The assay is based on the size of the amplicons or lack thereof in the case of the null alleles. Some of the markers are diagnostic and some are confirming based off the fragment size. The next step is to analyze an additional 38 nuclear markers to screen select individuals for genetic diversity in the nuclear genome among the herd. This research was funded by a USDA NIFA Tribal College Research grant to A. Higa.

2	Title	Presenters	Institution/Organization
	<b>Estimates of Logging Slash from Flathead Reservation Forest Harvests</b>	<b>Anne Vanderburg</b>	<b>Salish Kootenai College</b>

### ABSTRACT

The overarching goal of this project is to predict the supply of woody biomass (i.e. logging slash 'waste') from Flathead Reservation Tribal Forestry operations. In many areas of the US, a growing industry is beginning turn this 'waste' into a product. Woody Biomass could be used on the Flathead Reservation to heat buildings, as a raw material for a wood pellet mill, or other alternative energy sources. An estimate of supply would encourage the local utilization of woody biomass. This presentation covers a piece of the biomass project -- analyzing empirical slash estimates from several harvest areas, and creating a predictive volume model, accounting for forest structure, and basal area of harvested trees.

3	Title	Presenters	Institution/Organization
	<b>Ecological Data Collection</b>	<b>Ken LaTender and Brenda Miller</b>	<b>College of Menominee Nation</b>

ABSTRACT

The basis of all research is data. There are 2 means to produce research data. The first, depending on the type of research being conducted, is to use data from previous studies. The second is to gather new data as a component of the research project. The goal of the ecological data collection internship is to provide an opportunity to learn field data collection using an advanced tree census protocol developed by Dr. Richard Condit through the Smithsonian Institute. Through the procedures described below, the students have learned how to apply the protocol to collect field data, and to a lesser extent, how to record, download, manage, archive, and manipulate the data for analysis. The keys emphasized throughout are precision and consistency to establish and maintain data integrity so future studies and/or analysis are based on a credible foundation.

4	Title	Presenters	Institution/Organization
	<b>A Partnership in Forest Stewardship Education</b>	<b>Keith Kinepoway and Eric Schneider</b>	<b>College of Menominee Nation</b>

ABSTRACT

In 2014, I participated in the Learning from the Land internship. I traveled to Upstate New York in the Adirondack Mountains where I hiked in the mountains and learned how acid rain is being monitored. In addition, I was able to learn how to identify numerous plants and various tree types, and researched for mushrooms in 20 meter x 20 meter plots. In the plots we also measured tree diameter at breast height (dbh). When returning to Wisconsin, we continued data collection in the Menominee Forest using the methods learned in New York.

5	Title	Presenters	Institution/Organization
	<b>Land Use Impacts on Water Quality On White Earth Nation</b>	<b>Hannah Smith</b>	<b>White Earth Tribal &amp; Community College</b>

ABSTRACT

For the White Earth Nation (WEN), located in northwestern Minnesota, waterways play a very important part of life. It is the growing place of Wild Rice (*Zizania palustris* L) –which is an economic backbone of the community. Water also holds a cultural and spiritual importance. We started with compiling water quality data for the region and identifying waterway areas that would benefit from testing. The goal is to continue water quality monitoring program, utilizing a database of historical and current water quality data, and create difference maps to benefit White Earth Nation, local agencies, and landowners; as well as keeping the integrity of the traditional relationship between *nibi* (water) and the White Earth community.

6	Title	Presenters	Institution/Organization
	<b>USDA Bean Research</b>	<b>Stanton Alexander</b>	<b>White Earth Tribal and Community College</b>

ABSTRACT

My name is Stanton Alexander and I am an enrolled member of the White Earth Nation. Currently a student attending White Earth Tribal and Community College (WETCC), I am seeking an Environmental Science degree. As internship is part of the core requirements, I am working as a Bean Research Assistant with the WETCC Extension Service as part of our USDA Tribal College Research Grants Project. My faculty advisor is Dr. Steven Dahlberg, e-mail address: sdahlberg@wetcc.edu.

The objectives of this research are to identify at-risk indigenous crops vital to Native American cultures. Collaborating in this research are individual Native seed keepers: Dream of Wild Health, the Science Museum of Minnesota, Native Seed Search, USDA Germplasm Resources Information Network, and North Dakota State University's Carrington Research Extension Center.

My presentation will identify some preliminary results on which varieties are best suited to be grown in our plant hardiness zone. I will also show the nutritional values, along with Native oral traditions regarding these food sources. By working with university researchers, I hope to gain experience and insight in doing community research.

7	Title	Presenters	Institution/Organization
	<b>Climate Change and Weather Data Comparisons, "A Comparative Study of State, National and Local Weather Information"</b>	<b>Sarah Zavala and Rose Buffalo Chief</b>	<b>Nebraska Indian Community College</b>

ABSTRACT

Climate Change has forced communities around the world to adapt to changing environmental conditions. This includes Indian Country. The purpose of this research project is to provide climate science information that will help our Tribal communities adapt to these changes. This research project compares State and National historical temperature and precipitation data to our own local historical temperature and precipitation data to determine correlations and future trends. This research adds to the knowledge base of climate change and how climate change affects local communities.

8	Title	Presenters	Institution/Organization
	<b>The Spiritfire dancer: Jackpine ecological and cultural keystone species.</b>	<b>Sheila Northbird</b>	<b>Leech Lake Tribal College</b>

ABSTRACT

The Leech Lake Band of Ojibwe and the Chippewa National Forest (CNF) are on the edge of the great northern boreal biome. The CNF contains a few old growth pine stands within a laurentain mixed boreal forest of 1.6 million acres. The Leech Lake Reservation, home to the Ojibwe of the Anishinaabeg, resides within the boundaries of the CNF. Logging and climate change have impacted the forest and an Ojibwe’s traditional way of life. There are still a few families who hunt and gather resources from the forest like birch bark, animal hides, jack pine roots, and many other plants for cultural traditions. The Ojibwe continue to practice one of their greatest original teachings which draws upon the very essence of the boreal forest for their continued sustainability. Consistent climate patterns and respectable cultural ecological management of keystone species have maintained a sustainable environment for the Ojibwe for thousands of years. This knowledge is known as gekinamowa, original teachings, or Anishinaabeg sciences. Jack Pine (*Pinus banksiana*) is the unsung hero of the boreal forest and a cultural and ecological necessity in a pine forests achievement of homeostasis. While the forest developed independently prior to the migration of Ojibwe tribes, their presence in the forest helped to increase productivity of biodiversity without losing whole sections of forests to slash and burn. Management practices by Ojibwe tribes are recorded within the *P.banksiana* chronological history, the General Office of Land Survey pre-settlement.

9	Title	Presenters	Institution/Organization
	<b>Radon Exposure in Residential and Commercial Building in Crownpoint, New Mexico (Navajo Nation)</b>	<b>Malanie Begay</b>	<b>Navajo Technical University</b>

ABSTRACT

The community of Crownpoint, NM is located within the Grants Mineral Belt. This mineral deposit, found in the Morrison Formation, is the major source for uranium mining in New Mexico. The presence of uranium ultimately leads to the presence of Radon (Rn) gas through radioactive decay. The EPA has estimated that 1 out of every 15 homes has radon gas and is the cause for roughly 21,000 lung cancer deaths per year; second to smoking. Preliminary data (via a radon detector) has disclosed radon gas is present in buildings at Navajo Technical University, and surrounding homes in Crownpoint, NM; located in the Eastern Agency of the Navajo Nation. The EPA guideline for radon is to not exceed 4.0 pCi/L; values above this are considered to pose a health hazard. I am in the process of gathering more data from more sites on and off campus to determine if radon gas concentrations are higher or lower on campus.

10	Title	Presenters	Institution/Organization
	<b>NTU Solar Projects</b>	<b>Dedrick Tolino</b>	<b>Navajo Technical University</b>

ABSTRACT

We receive advanced training in the technical aspects of PV systems, which includes Solar Air Collectors, and their installation. The ongoing research will better prepare us in understanding issues related to photovoltaic durability and reliability. As well as, the effects of the type of installations & equipment being used on the systems. Also, discovering technologies that are used at National Research Facilities, can now be used at NTU campus. Year one, we installed a 48volt PV system to power an electronic sign on campus. Year two, we gathered data on the system including temperature, insolation levels (irradiation), wind velocity, voltage, amperage, wattage and other measured quantities. The research data is used to compare the variables with Arizona State University. As interns, we are required to install a complete PV system, and understand each components in the installation. The data collection was done by physically going out to the PV array. Year three, we plan to employ and commission electronic measuring equipment that has the capabilities to remotely extract data, and project real-time data on to the school website. So, that students can learn how analyze, measure and evaluate and Photovoltaic Systems on tribal lands.

NTU, Energy Systems program is broadening this research project. We are now, integrating other fields of study, into the research. To see, how we can implement renewable energy into what they do. The need for the specialized equipment and engineering services is on the rise, it will continue to grow. Technological advances in renewable energy is now going to allow us to remotely monitor the performance of PV systems. Also, be able to get a PV system into a computer program, where it can be 3D modeled and be subjected to simulations to get irradiance levels, or to do a shadow study.

11	Title	Presenters	Institution/Organization
	<b>Monitoring Air Quality on the Tohono O'odham Nation</b>	<b>Ulrick Francisco</b>	<b>Tohono O'odham Community College</b>

ABSTRACT

In recent years the Tohono O'odham Nation Environmental Protection Office (TO-EPO) has received complaints about decreased visibility and more cases of airborne illnesses such as asthma in communities on the Tohono O'odham Nation. The Tohono O'odham Nation is located in the Sonoran Desert in southern Arizona 60 miles west of Tucson. The Tohono O'odham Nation has the second largest American Indian reservation in Arizona in both population and geographical size with a land base of 4,460 square miles approximately the size of the state of Connecticut. The objective of my project was to identify the point sources for Particulate Matter 10 (PM-10) on the Tohono O'odham Nation, by collecting way-points using a GPS receiver, and creating maps showing these points using ArcGIS 10.2.2. With help from the Tohono O'odham Office of Emergency Management (TO-OEM) I obtained shapefiles of the Nations' villages, roads,

and districts to add to the map. After all the data was collected I used the buffer tool in ArcMap, and manuals to show how far PM-10 could potentially travel from gas stations, agriculture fields, and various roads all of which are considered point sources for PM-10 because they are heavily trafficked roads, fallow fields, and emit hazardous amounts of nitrous oxide.

12	Title	Presenters	Institution/Organization
	<b>Establishing agribusiness opportunities on the Navajo Nation through research and analysis of diversified forage crops</b>	<b>Tasha Nez</b>	<b>Diné College</b>

ABSTRACT

The objectives of this research project are to educate and implement diverse knowledge of alternative forage crops to Navajo communities and farmers. These different locations provide strategies under Diné College’s Land Grant Office staff to develop workshops, collect field data, and have field data days to involve local farmers, members of the communities, student interns, and university collaborators.

The research plots are located in Tsaile, Upper and Lower Wheatfields, Teec Nos Pos, and Many Farms, Arizona. Twelve forage crops were planted at the sites and include cool and warm season crops. Along with the plant establishment information, soil samples have been collected, along with rainfall measurements, irrigation application, and harvest data from the forage crop variety trials. Additionally, marketing of plant products (such as seeds) will help broaden agribusiness income to farmers and ranchers.

Results from average forage crop species seedlings emergence at the five locations across the Northeastern portion of the Navajo Nation in early June, 2013, were concluded. The results conclude Lower Wheatfields produced between 0 and 4.8 seedlings per square feet, for seven out of the twelve species. Tsaile and Teec Nos Pos, also produced seedlings ranging from 0 to 10.3 seedlings per square feet. Upper Wheatfields and Many Farms were two locations that did not produce any seedlings.

From an environmental standpoint these crops can protect the environment by providing plant cover, improve soils nutrients and reduce soil erosion. From the agribusiness standpoint, there are sufficient results indicating these alternative crops can be produced on the Northeastern Navajo Nation, for livestock consumption and alternative food storages which can project diversified forage crops and agribusiness development.

13	Title	Presenters	Institution/Organization
	<b>Aquaponics Research</b>	<b>Kukunaokala Begay</b>	<b>Diné College</b>

ABSTRACT

Aquaponics is the equilibrium of fish and plants where they live in a symbiotic system that feeds the fish and gives nutrients to the plants. As part of the development in Navajo Nation, we must learn to adapt to new changes and progress that has come upon our people by learning and practicing various methods of sustainability. Although we may have the worst living conditions on Navajo land and reservations, we must discover ways to adapt a method that will work for us to thrive upon. Much of this takes patients, timing, and money but in the end, it all pays off for future generations to utilize these knowledge's and techniques. With the changing weather and environment, we learn to utilize our resources wisely with these techniques and implement them to ourselves for use. For that we must research what exactly will work with our environment and conditions that we live in, whether it being a poor income or lack of electricity. With aquaponics, we teach ourselves and our youth to understand the plants, fish, and water by being closer to them every day in these systems. It brings us closer to the functions of life and helps us re-learn what our ancestors understood. We then regain our heritage through agriculture and its practices.

Here at Land Grant Office of Dine College, with the aquaponics system in place, we are going to see what hardships, accomplishments, do's, don'ts, pros and cons are for a set up here on the Navajo Nation. Although most some would argue that as Navajos are not allowed to eat fish, we are going to see just how much it takes to have an aquaponics system for anyone willing to try in our environment and culture for fresh organic fish, organic produce, for pleasure or for profit. These findings and research will be shared with the general public.

14	Title	Presenters	Institution/Organization
	<b>2014 Native American Environmental Youth Camp &amp; Agriculture Youth Camp</b>	<b>Lyander Begay</b>	<b>Diné College</b>

ABSTRACT

The main purpose the Dine College Land Grant Office puts up the Agriculture and The Native American Environmental youth camps during the summer is to reach out to the youth and give them hands on experience in what Agriculture and environmental science is. It is also to show them the importance of what they can benefit from it, and to have them get more involved in their own communities. What it also does is it helps the youth build this sense of community amongst one another; it shows them how to work together in groups and pushes them out of their comfort zone. It also teaches them different skills that they may use later on in life. The Agriculture camp is based around farming, produce, livestock management and a wide range of other stuff pertaining to agriculture. Throughout the week the students received hands-on training through field labs, workshops, and field activities. College students mentored and participated alongside the students in both camps and helped them begin and learn about the exciting wonders of the surrounding natural environment around them.

The Native American Environmental Youth camp was based on the environment and how it can tell you a lot about the condition it's in by simply applying the concept of science. The primary purpose of the camp was to educate the youth about the dynamics of the land and water through hands-on learning. Throughout the week the students camped out and explored different ways of evaluating the health of a watershed through collecting basic ecology data at local streams and lakes, classifying plant vegetation, identifying sources of pollution and the human impact on the environment. The Land Grant Office offered field tours and outdoor classrooms at the designated community campsite.

15	Title	Presenters	Institution/Organization
	<b>Historical Impact on the Kwina Woods: Telling the Story of the Land</b>	<b>Paul K. Cline</b>	<b>Northwest Indian College</b>

ABSTRACT

A botanical survey of the Kwina property history, pre-reservation, post-day-school, and current, was performed to better understand the historical impacts of botanical change with a focus to revitalize traditional plant knowledge. I performed a literature review, conducted a plant survey, and researched historical archives. My findings include the history of the establishment of the reservation, further reduction of forest for NWIC, and future options for restoration of certain areas. Historical documentation provided limited ethnobotanical roles known by the Lummi people.

16	Title	Presenters	Institution/Organization
	<b>A Contemporary View Towards Food Forestry of Indigenous Practices</b>	<b>Na'ta'ne Morning-Song Miles</b>	<b>Northwest Indian College</b>

ABSTRACT

In my internship project I examined aspects of forest ecology in the Pacific Northwest, indigenous knowledge of traditional ecological systems and Hügélkultur (a German gardening technique which translates to mound cultivation). My approach focuses on a disturbed area which was remnant of a much larger forest before the campus expansion took place at Northwest Indian College (NWIC). I'm looking at a novel approach between synergistic practices and theories within the broader context of forest gardening. My research integrates indigenous perceptions with an emphasis on sustainability, food sovereignty and the potential application of a forest garden on Northwest Indian College's tribal landscape.

17	Title	Presenters	Institution/Organization
	<b>Using Molecular Analysis to Detect <i>Histoplasmosis</i> in Bat Guano</b>	<b>Connie Begay</b>	<b>United Tribes Technical College</b>

ABSTRACT

Bat species in the central region of North Dakota rely heavily on dilapidated structures such as old bridges or long-standing buildings as a main roosting location. United Tribes Technical College has a large bat population that inhabits the historical structures on campus. It is critical that these building go through renovation every few years to rid the attics of bat guano which may be a culprit of a serious respiratory infection, *Histoplasmosis capsulatum*, which is a fungus that can be found in bird and bat droppings. Although these bat dropping are a nuisance and have a potential health risk, they can also serve as a natural fertilizer for the many campus community gardens. Guano is an excellent source of nitrogen and can serve as a soil conditioner and a natural fungicide in gardens. In order to ensure safety while utilizing this guano in gardens across the campus, we proposed testing guano from various buildings for *Histoplasmosis*. *Histoplasmosis* can be detected through DNA analysis of dried guano using Zimofecal Kits. Sequences will be matched with genomes in BLAST, an online genome database. The purpose of this study is to identify whether there are health concerns related to utilizing local guano for community gardens. The study results will helps educate the public on the benefits of bat.

18	Title	Presenters	Institution/Organization
	<b>North Dakota Bat Presence and Habitat Use in Rural and Urban Areas</b>	<b>Devin Dragswolf</b>	<b>United Tribes Technical College</b>

ABSTRACT

Bat species throughout the United States are usually associated with negative attitudes and misrepresentations. They are known to infest building, leave large amounts of droppings, and cause chilling nightmares. Although they carry a negative stigma, bats provide irreplaceable environmental services for entire ecosystem; Bats serve as key pollinators and can act as a biological control agents against agricultural pests. In recent years, researchers have noticed a decline in bat populations around the US due to an emerging fungal disease, White Nose Syndrome (WNS). This disease has devastated bat populations throughout the eastern United States and is slowly making its way to the west. North Dakota is home to eleven different bat species that have been undisturbed by WNS. United Tribes Technical College monitored the difference between bat populations in urban and rural locations around the central part of North Dakota using acoustic detectors. Petterson acoustic detectors were used to record echolocation calls from various bat species. Detected bat calls were run through Sonobat, an analysis software program specifically designed for bat acoustics, to determine species presence and habitat use. Developing baseline data for these species now may help in aiding species conservation programs for these.

19	Title	Presenters	Institution/Organization
	<b>An Examination of Health Benefits Associated with Traditional Native American Agricultural Practices</b>	<b>Travis James Miller</b>	<b>Institute of American Indian Arts</b>

ABSTRACT

The research student will provide a poster presentation sponsored by the Center for Lifelong Education at the Institute of American Indian Arts. The objectives of this study examined a potential relationship between health benefits associated with traditional Native American agricultural practices. Research factors such as eating habits, land usage and accessibility, food sovereignty, and agricultural methods were examined under field and greenhouse conditions. Research methodology included a questionnaire dispersed among a study population, and personal interviews with practitioners of Native American agriculture. The study design is best described as a retrospective-perspective design. Past, present, and future applications to address the research question was considered during the analysis of study data. Analysis of the study expressed strong correlations of numerous variables effecting Native American health; land accessibility, education, and food sovereignty issues creating the most detrimental impacts upon health and well-being. Preliminary results built a conceptual foundation and framework for further expansion of this particular research focus.

20	Title	Presenters	Institution/Organization
	<b>The Relationship Between Juniper Trees and Piñon Saplings</b>	<b>Nicole Mitchell</b>	<b>Institute of American Indian Arts</b>

ABSTRACT

The research student will provide a poster presentation sponsored by the Center for Lifelong Education at the Institute of American Indian Arts. This project seeks to examine the potential relationship between Juniper trees and Piñon saplings with regard to Juniper trees serving as “nurse” trees to Piñon saplings – that is, full-grown Juniper trees providing nutrients to Piñon saplings and hence sustaining the development of those saplings. The question of whether such an interdependent relationship consistently exists is explored through assessment and survey of such trees in the Piñon-Juniper Woodlands in the area of Santa Fe, New Mexico. This assessment and survey consists of GPS plotting, recording distance between potentially interdependent trees, slope measurements, and measurement of soil moisture levels. In addition, visual representations will be created with this data to further assess ecological correlations. Identification of an interdependent relationship between Juniper and Piñon has the potential to serve as a body of work for various academic disciplines and land management.

21	Title	Presenters	Institution/Organization
	<b>Developing an Interactive Research Archive</b>	<b>Arlo Werito</b>	<b>Southwestern Indian Polytechnic Institute</b>

#### ABSTRACT

The Natural Resources and Engineering Program of Southwestern Indian Polytechnic Institute will be focusing in on building a Research Archive Database for our college. The project has goals that we wish to accomplish. This can be anything from education and developed of the project, outreach sessions and presentations, the roles students, administration, and faculty play in the project, and handing out on what Southwestern Indian Polytechnic Institute needs for the future. Natural Resources and Engineering Programs will partner with Southwestern Indian Polytechnic Institute to make awareness of the Research Archive Database. The project objective and methods will be designed for research on the SIPI campus. Research will accomplish this though formulation of educational information on the research to present to our SIPI community. The information that I will gather will be organized and handed out to anyone who is interested in our Archive Database for the future.

22	Title	Presenters	Institution/Organization
	<b>A project based on Native American naming of plant species throughout the southwest</b>	<b>Cheyenne Randolph</b>	<b>Southwestern Indian Polytechnic Institute</b>

#### ABSTRACT

Plant names were researched using publications from different tribes across the southwest to increase the native names included on herbarium specimens at SIPI. Currently the common name and Latin name are listed. This project was conducted in one summer as an internship for a NIFA/USDA Research grant. Included in the project were understanding native languages, plant species, and culturally appropriate methods of acquiring these. A letter to the Governor and Tribal council will be sent requesting the use of names of Santa Domingo, Navajo and White Mountain Apache requesting names of certain plant species in the herbarium and if the pueblos and reservations would be willing to be part of this project. The other portion of this project was working on a publication from 1800's and updating the plant species identification in Latin names. The project significantly improved the herbarium collection organization as well as increased student knowledge of language.

## *Faculty Section*

23	Title	Presenters	Institution/Organization
	<b>Anaerobic Digestion on Bay Mills Indian Community</b>	<b>Diana Cryderman</b>	<b>Bay Mills Community College</b>

### ABSTRACT

Bay Mills Indian Community, an Anishinaabe Nation, is located at the junction of the Lake Superior and the St. Marys River. Commercial fishing is the second largest industry on local tribal lands and has culturally been a significant part of the traditional lifestyle. Regionally, an estimated 420,000 lbs. of fish (round weight) were captured by tribal fisherman annually. On average, 30-40 percent of the total weight of a fish is unusable for human consumption. Anaerobic digestion is being used in other regions to recapture fish waste via the creation of biogas and fertilizer. However, this technology has not yet been adapted for local use. Information on the viability of anaerobic digestion of freshwater fish species in a Northern climate is lacking. This project seeks to fill this knowledge gap and introduce the technology to the local community. To achieve this, the project has been divided into three phases. In phase one, bench-scale anaerobic digesters (500mL) were employed to investigate the necessary ratio between fish and other (local restaurant) waste streams to provide the highest biomethane potential. A ratio of 50:50 fish waste to restaurant waste yielded the largest average volume of biogas (935mL), compared to 924mL biogas create from a 25:75 fish to restaurant waste digestion. These values were 3-fold larger than the average volume of biogas produced through digestion of fish waste alone (368mL;  $p < 0.001$ ). This data is being used in phase two of the project: two outdoor (55 gallon) batch digestion processers, in which the biogas production of the previously mentioned fish to restaurant waste ratios will be compared and deployed during winter months. This will test the seasonal viability of anaerobic digestion of commercial fish waste on the Bay Mills Indian Reservation.

24	Title	Presenters	Institution/Organization
	<b>Place-Based Opportunities for Sustainable Outcomes and High Hopes (POSOH)</b>	<b>Christopher Caldwell</b>	<b>College of Menominee Nation</b>

### ABSTRACT

The Place-Based Opportunities for Sustainable Outcomes and High Hopes (POSOH) project seeks to develop strategies for preparing all learners—including typically underserved youth from non-mainstream cultures—to pursue bioenergy- and sustainability-related studies and careers, while exploring the contributions of traditional and scientific ways of knowing to our understanding of ecosystems and sustainability.

The project serves the Northeastern WI bioregion, which includes three nearby reservations, Menominee, Oneida, and Stockbridge-Munsee; the College of Menominee Nation, an accredited tribally controlled community college; and surrounding rural communities.

This collaborative project involved primary partnerships between College of Menominee

Nation and its Sustainable Development Institute, University of Wisconsin – Madison, CESA 8 School District, Michigan State University, and the Great Lakes Bioenergy Research Center. It also included many other partners, and participating educators from area tribal and public schools.

We will provide an overview of the project and detail more specifically our experiences with bringing together faculty, students of all levels, and community members, to discuss our learning process and the successes and gaps we have discovered along the way. This will include discussion on the development of; (a) collaborative curriculum design and development, (b) high school sustainability engagement activities, (c) undergraduate internship opportunities, and (d) faculty engagement activities.

25	Title	Presenters	Institution/Organization
	<b>California Tribes Fish Use and Threats</b>	<b>April Negrette</b>	<b>American Indian College Fund</b>

#### ABSTRACT

The research was conducted with the purpose of getting water quality standards in California better protected by the EPA and California State Water Resources Control Board. California is in a severe drought and many stakeholders' voices have been heard, but never the voices of the tribes statewide. Over 20 of California's tribes and California tribal members of over 40 different tribes participated in the study to give traditional fishing information and current consumption rates. The results showed that 64% of California tribal elders were eating fish at least one a day when there was access to fish and traditional fishing areas. Historically, Native people of California ate on average between 1 and 2 lbs of fish a day. The results showed current rates of consumption significantly lower due to ecological, health, regulatory, financial and cultural reasons. Currently, over 60% of people reported only being able to eat fish once or twice a week. In most every case, tribal members reported wanting to be able to eat an amount of fish that more closely resembled the traditional and historical amount their grandparents and ancestors used to eat, but due to factors that were not within their control they could not. The 3 largest responses when asked what the issues were are: decline of abundance of fish, concerns about quality of the water and health risk of eating fish, and rivers, lakes and streams drying up. There were also several barriers for tribes even when healthy waterways were present. Access to traditional fishing areas, ability to fish using traditional communal methods, limits on catch, and loss of native species were all reported by tribal members. These findings will hopefully influence policy to better protect tribal fishing rights, better protect California's waterways for everyone, and influence other states of follow suit.

26	Title	Presenters	Institution/Organization
	<b>TCUs Building Sustainability Pathways</b>	<b>April Negrette and Dorothy Aguilera-Black Bear</b>	<b>American Indian College Fund</b>

ABSTRACT

The American Indian College Fund conducted listening sessions with Tribal Colleges and Universities in North Dakota, South Dakota, Wisconsin and Minnesota in 2013. Several principles that are viewed as foundational to programming with tribal nation communities emerged from this study including, preservation and restoration of Native life ways, intergenerational knowledge transfer, and place-based capacity building. This presentation will provide a snapshot of TCU programming in environmental sciences and sustainability fields and how students are targeting sustainability issues right in their tribal communities.

27	Title	Presenters	Institution/Organization
	<b>A Glimpse into Health Outreach Efforts in Rural Alaska</b>	<b>Amanda Sialofi</b>	<b>Ilisagvik College</b>

ABSTRACT

Providing outreach to rural communities to engage students in health careers does not have a one-size-fits-all approach; and, Area Health Education Centers (AHEC) are experts at identifying the needs of their unique populations. The Northwest AHEC program in Alaska is hosted by Ilisagvik College and works in collaboration with the Allied Health program to promote health career pathways in schools, to increase health profession students in clinical training programs, and support continuing education programming for health professionals in Alaska. Their service region spans 154,592 miles – which is almost equivalent to the size of the state of California. In their region, communities range in size from 107 to 4,346 with a total population of only 24,165. This session will discuss how the Northwest AHEC and Allied Health programs designed their health outreach through a series of videos including footage from outreach visits, interviews with students, and a presentation of data demonstrating the impact on the region. Conference participants will have an “eye witness account” of what it means to do health outreach in rural Alaska and the impact of Northwest AHEC and Allied Health programs in underserved rural communities despite extreme geographic and cultural challenges. Self-determination through the recruitment of a local and passionate healthcare workforce is essential to sustainable quality primary care and a thriving relationship between local clinics, the greater healthcare community, and rural Alaskans – Northwest AHEC and Allied Health with financial support from Ilisagvik College, NIFA, HRSA, and the North Slope Borough provides the way to achieve this on the North Slope.

Participants will be able identify 3 successful activities programs conducted by Northwest AHEC and Allied Health to understand the impact of their outreach on rural students and its role working towards a local and diverse healthcare workforce in Alaska. We will understand the unique circumstances and challenges of outreach in rural underserved Alaskan villages, and

identify key differences between Lower 48 “rural” and Alaskan “rural/frontier” communities.

The effect or results of outreach work, how it influenced or altered a condition or practice will include: Addressing Critical Health Workforce Shortages and Health career pathways.

Our future plan is to “grow our own” health workforce especially in rural communities here in Alaska where a shortage of health care professional is evident. In order to do this we need to promote and engage students in health career pathways in local schools, increase health profession students in clinical training programs, recruit health profession students into health careers in Alaska upon completion, and support continuing education programming for health professionals.

28	Title	Presenters	Institution/Organization
	<b>Circus on the Slope: A Collaborative Project to get Kids and Communities Moving</b>	<b>Diana Solenberger</b>	<b>Ilisagvik College</b>

#### ABSTRACT

Ilisagvik serves the community of Barrow and the seven remote villages that comprise the North Slope Borough (NSB), an 89,000 square mile region situated entirely above the Arctic Circle. Ilisagvik’s Cooperative Extension office provides programming that seeks to encourage an environment of life-long learning and educational inquiry in the communities of the North Slope through a variety of non-classroom, hands on workshops specifically focused on topics that enhance health, wellness and family.

The largest and most successful program offered through Cooperative Extension is ‘Circus on the Slope’. This program brings professional circus artists into our communities to teach activities as varied as trapeze, silk, juggling, manipulation, balancing, stilt walking, partner acrobatics, and circus art to kids ages 5 and up and including young adults (in age-group classes). It is aimed at introducing new and amusing physical activities to help combat obesity and diabetes in adults and youth.

Circus on the Slope is a program accomplished in partnership with ASNA’s Diabetes Prevention Program, and the City of Barrow. Over the previous three years Circus on the Slope has visited all eight communities at least once. Village programs last a week, while the Barrow camp is two weeks in length. Equivalent camps offered in the contiguous United States have been priced at \$250 per week, per child. However, our community partnerships allow these camps to be offered to North Slope children for free. In this way there is no economic barrier to attending the program.

This program is a huge undertaking, because it means a staff of 3-4 must fly to each of the villages and remain there for a week at a time. For summer 2014 we took the program to 4 communities: Barrow, Anaktuvuk Pass, Pt. Lay, and Wainwright, and had over 300 children and young adults participate!

29	Title	Presenters	Institution/Organization
	Envisioning a Coast Salish Forest Garden	Brian D. Compton	Northwest Indian College

ABSTRACT

This two-year project involves the preliminary examination of aspects of botany, ethnobotany, forest gardening, and related topics within a Coast Salish, specifically Lummi, context. The project was designed to determine the potential for revitalizing traditional plant knowledge and harvest practices related to Pacific lowland forests and the Indigenous peoples whose traditional homelands encompass those forests. Native Environmental Science student interns worked with faculty from Northwest Indian College and Washington State University to conduct research on several topics within the broader scope of the project. Research findings include results of botanical surveys and ethnobotanical research regarding vascular plants on and near Northwest Indian College as well as a proposed site for a forest garden. Individual student topics also focused on historical impacts on native vegetation in the area, as well as traditional and novel practices regarding the management and harvest of plants for food, materials, and other applications for possible implementation at the college campus in the future.