

Indigenous Knowledge Symposium Connects Cultural and Scientific Knowledge

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Nisga'a youth prepare to visit Khutzeymateen Grizzly Bear Sanctuary during their annual

Salmon Science Camp, led by Dr. Andrea Reid and John-Francis Lane.

(Photo: Andrew Stewart)

The Mentoring and Encouraging Student Academic Success (MESAS) program, housed in the Emma Eccles Jones College of Education and Human Services, held its third annual Indigenous Knowledge Symposium on March 31st. The event featured three Indigenous researchers from across the nation. Drs. Andrea Reid, Karletta Chief, and Melinda Adams each discussed how their own perspectives, experiences, and communities shape their research.

Through each presentation, they shared their personal journeys and lived experiences which highlighted how Indigenous knowledge can be integrated into Western scientific research. The symposium had over three hundred participants from USU statewide campuses and communities, as well as national and international participation.

Learn about each of the presenters and their work below, or view the [full symposium recording](#).



Dr. Andrea Reid

Andrea Reid, PhD

Dr. Andrea Reid is a citizen of the Nisga'a Nation who was raised on Prince Edward Island in Canada. Of Nisga'a and Irish ancestry, Reid was raised without Nisga'a language and cultural knowledge; she is proud to be reconnecting with her roots through learning her ancestral language and living in the Nass River Valley, home of the Nisga'a. Reid is an assistant professor of indigenous fisheries at the University of British Columbia's Institute for the Oceans and Fisheries, and she and her team started the Centre for Indigenous Fisheries to study and protect culturally significant fish and fisheries.

Fish are profoundly important to the indigenous peoples like the Nisga'a, who rely on freshwater fisheries as critical source of food and other resources. A certain species of fish, called ooligan or candlefish, migrates hundreds of miles each year, returning to Nisga'a waters in early spring. Ooligan have a body fat content of 15%, making them an important source of food and grease used for other purposes. Because the small-bodied fish rely on the tides to bring them up the river, their migration is linked to the lunar cycle, and a scientific understanding of the phases of the moon is integral to knowing how and when to fish for them. There are also traditional Nisga'a stories involving fish speaking to one another, which connects to recent research suggesting that fish have complicated methods to communicate with one another. These examples from Reid's work show how cultural knowledge is intrinsically tied to scientific knowledge.



Dr. Karletta Chief

Karletta Chief, PhD

Dr. Karletta Chief is a professor and extension specialist in Environmental Science at the University of Arizona. She is the director of the Indigenous Resilience Center and lead for the National Science Foundation Indigenous Food, Energy, and Water Security and Sovereignty Training Program. Chief grew up on the Navajo Nation without electricity or running water. A first-generation graduate, Chief's personal experiences of environmental injustice motivate her to devote her environmental research to supporting the resilience of Indigenous communities and training students in sustainable technologies.

On August 5, 2015, 3 million gallons of acid mine drainage were spilled into the San Juan river as a result of a mining accident at the Gold King mine in northern Arizona. This contamination of a major water source was devastating to the Navajo people who live along the river; in addition to needing water for their communities and crops, they rely on the San Juan for prayer, ceremony, and many other aspects of their way of life. To help these communities understand the environmental impact of the spill, Chief and her team integrated indigenous knowledge into their response to the spill to facilitate culturally centered recovery and healing. Chief's team adapted scientific measures to connect with cultural reference points (e.g., measuring contaminants as drops in a water barrel rather than parts per billion), and organized their research of the spill's impact according to a four-part

Navajo wellness model centered on spiritual wellness, economy and livelihood, family and community, and the environment. These adaptations helped create trust between communities and researchers as they worked together to find solutions..



Dr. Melinda Adams

Melinda Adams, PhD

Dr. Melinda Adams is a member of the San Carlos Apache Tribe. She is the Langston Hughes Assistant Professor in the Department of Geography and Atmospheric Science and the Indigenous Studies program at the University of Kansas. Her current research focuses on the revitalization of cultural burns (small, area-prescribed fires conducted using Traditional Ecological Knowledge), in collaboration with Tribal Nations in Northern California. She examines plant and soil physical-chemical responses to cultural fire, including culturally significant plant yield, soil carbon storage, nutrient cycling, and water holding capacity.

Fire, as described by Adams, is a language that many Indigenous nations speak. The view that fire is a destructive force that must be avoided and regulated is largely a Western one, and Adams is working to reclaim the significance of fire as a cultural practice and method of environmental restoration. Adams originally studied the ancestral use of fire to burn degraded plant material to create a substance called biochar, which can be integrated back into soil that has been depleted by large-scale farming and mining to improve its nutrition profile

and water retention. Adams now works with cultural fire practitioners to study the positive effects of these small-scale, low intensity fires; rather than viewing them only as tools for ecological restoration and climate change mitigation, she sees her work as a cultural reunification of Indigenous peoples' inherited land and water stewardship ways.