



Adaptation to Climate Change and Variability: Bringing Together Science and Indigenous Ways of Knowing to Create Positive Solutions

HEALTH AND LIVELIHOOD HAZARDS

Over seventy participants of *Rising Voices* convened for a second time at the National Center for Atmospheric Research (NCAR) in Boulder, Colorado on June 30-July 2, 2014 to discuss what the science, information, support and research needs are of tribal communities to facilitate respectful and appropriate adaptation solutions to climate change and variability. *Rising Voices* is a community of engaged Indigenous leaders, Indigenous and non-Indigenous environmental experts, students, and scientific professionals across the United States, including representatives from tribal, local, state, and federal resource management agencies, academia, tribal colleges, and research organizations.

We came together from across the nation – including Hawai'i and Pacific Islands, Alaska, Northwest, Southwest, the Plains, Midwest, Gulf states, and Northeast – for a rich and honest discussion regarding the complex climate change challenges facing Indigenous peoples, current adaptation and mitigation strategies, protection of Indigenous knowledge, sustainable Indigenous practices, and political and institutional barriers. Many of the Indigenous communities represented at *Rising Voices* are already contending with a changing climate, including displacement of Native Alaskan villages and Native Gulf Coast communities due to rising sea levels, loss of sea ice, and/or extreme hurricane activity.

The key climate change-related risk is loss of life – of plants, animals, people – both seen and unseen. Other health and livelihood risks include loss of subsistence species and traditional foods, along with the related cultural practices, and changes in the relationships between species and time, such as signals for harvesting specific species that no longer match the seasons. Some of the key issues relate to increasing weather extremes, such as heat and drought, which are becoming the norm and impacting traditional foods, cultural, wildlife migration, livelihoods, safety, and health. It is not only physical health that is at risk, but also people's emotional health as their cultural connections are severed to disappearing "relatives" and mental health as their identity, which is tied to their surrounding land- and waterscapes, is drastically altered. Indigenous peoples, especially elders on tribal lands, are at particular health risks due to lack of access to medical health care, which is especially needed for responses to industrial food and contamination of the environment. Furthermore, some of the current market-based strategies to address climate change, such as REDD (reducing emissions from deforestation and forest degradation) and carbon trading, pose potential livelihood hazards to Indigenous peoples and need to be addressed.

Both western and Indigenous science need to be respected and represented in the decision-making process. The way that western scientists approach Indigenous community members is critical. Instead of demanding that Indigenous people fit their knowledge and ways of understanding into the western system, scientists should ask Indigenous people how they feel most comfortable sharing their

knowledge and how to create an iterative process where knowledge is exchanged and inclusive of different knowledge systems. Building trust is of utmost importance, especially when asking elders to share their traditional knowledge. The first step to collaboration needs to be forged through relationships. One compromise approach to building trust and relationships is for agencies and non-Indigenous scientists and researchers to find the bridge builders in the community. Data collected and questions that inform the data need to go back to the communities, as well as the questions that inform the research and data gathered.

There are many practical solutions to address the health and livelihood hazards. For example,

- Consider the “pre-covey”, to understand what you want to build better and not just re-building what was there. To address the climate, energy, housing, and economic crises on tribal lands, the InterTribal Council on Utility Policy (COUP) is designing better housing that is SAFE (sustainable, affordable, future-proofed, and energy efficient).
- Identify varieties that are more tolerant of climate change. Turn to traditional foods, such as breadfruit, that are more resilient and adaptive to flooding and weather extremes.
- Focus on an adaptive fisheries strategy, such as raising young fish at hatcheries then releasing them into the waters, as is being done by the Pyramid Lake Paiute. Also, consider Indigenous health indicators and treaty level rights to species from the perspective of toxin loading and fish, such as some tribes are doing in the Puget Sound.
- Negotiate access to new lands, such as the Quileute tribe exchanging land with the National Park Service for some of their traditional lands on higher ground. This is also important as species are no longer available in current treaty-guaranteed areas. For example, some tribes in the Pacific Northwest have been alerting the U.S. Forest Service and other federal agencies to look at both species management and negotiating rules to guarantee that tribes can still have access to species as the species migrate out of the treaty-assigned territory.
- Support opportunities for elders to pass on knowledge about traditional foods and practices, especially important for mental health implications of lack of access to traditional foods.
- Create a connection and opportunities for youth to learn in a different way and share knowledge, such as developing a repository of effective climate change media and art that is useful for learning and teaching. Encourage the youth to learn their native language to gain intergenerational knowledge and find strategies to adapt.
- Take policy change to the next level, taking the information before Congress and becoming the policymakers. Decisions should be made with Indigenous peoples, not just be made about them.

These solutions bring opportunities for collaborations, which require:

- Communities helping shape the scientific questions being asked. Review panels for major funders, such as the Environmental Protection Agency and the National Science Foundation, should include community members and not just academics.
- Finding the bridge builders in the community who can act as a conduit between the community and agencies, organizations, and researchers to help each other.
- Sharing and publishing failures, which are learning experiences to not be repeated.
- Thinking more broadly than human physical health and focusing on holistic health.

To learn more or become part of the Rising Voices movement, please contact Heather Lazrus (hlazrus@ucar.edu), Julie Maldonado (jkmaldo@gmail.com), Bob Gough (gough.bob@gmail.com), or Jeffrey Morisette (morisettej@usgs.gov).

Rising Voices website: <http://www.mmm.ucar.edu/projects/RisingVoices>