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# Building collaborative capacity: supporting tribal agriculture and natural resources in a changing climate

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**Abstract**

A working group was held during the 2017 National Adaptation Forum to build collaborative capacity on issues related to Tribal agriculture and natural resource management in a changing climate. We developed three synthetic themes from these discussions and dialogue to highlight on-going opportunities, but also demonstrate areas for continued engagement with Tribes related to effective agricultural and natural resource management. We hope this forum demonstrates the critical importance of partnerships, and motivates further coordination and collaboration among Tribes, universities and Federal agencies.

Native food and fiber systems are quite vulnerable to future changes in climate (Bennett et al., 2014; Norton-Smith et al., 2016). Increasing temperatures, as well as shifts in precipitation frequency and intensity, will disproportionately impact Tribal agriculture, as well as other ecological services (e.g., water quantity and quality, open range, etc.), which also have spiritual and cultural significance to Native Americans (Bennett et al., 2014; Norton-Smith et al., 2016). Indigenous communities have always adapted to long-term changes (Nakashima et al., 2012; Wildcat, 2013) through multi-generational communication of traditional ecological knowledge. Despite their great capacity for adaptation, there remains institutional barriers and untapped collaborative opportunities to effectively maintain and enhance Native food security (Whyte, 2013; McNeeley, 2017).

The goal of this forum is to stimulate discussion toward more effective coordination and collaboration to better assist Tribal Nations manage their agricultural resources in a changing climate. We build on presentations and dialogue from a working group convened at the National Adaptation Forum<sup>1</sup>. The objective of the working group was to provide a venue for collaborative engagement, and share successes and challenges related to Tribal agricultural and natural resource management. In this forum, we highlight existing efforts and offer further insights in achieving the overarching goal in three broad areas: (1) **dynamic flow of resources and decision-relevant information**, (2) **cultural competency among scientists and researchers**, and (3) **streamlined educational and professional opportunities for Tribal youth**.

**Enhancing decision-relevant information and knowledge pathways**

Enhancing the content, communication and delivery of both research and resources is paramount to improving programmatic support from Federal partners, such as the U.S. Department of Agriculture (USDA), to ultimately sustain Tribal agriculture and natural resources. While the USDA offers a multitude of programs to help Tribal communities (USDA, 2016), there are well-documented challenges to program implementation (Whyte, 2013; Singletary et al., 2014). These can include geography, bureaucracy, cultural understanding and existing socio-economic conditions that affect Tribal program capacity, to name a few.

Despite these barriers, there have been efforts within and across USDA agencies to engage our Tribal partners and form relationships. For example, Tribal liaisons exist within agencies of the USDA (e.g., Natural Resources Conservation Service, U.S. Forest Service) to directly assist and serve Tribal partners. However, more could be done to increase the visibility of Tribal liaisons to connect more with Tribes and partners working with them. Expanding beyond USDA, inter-agency climate and Tribal staff have developed the Tribal Resilience Resource Guide<sup>2</sup>, an online portal to provide Federal government-wide resources for Tribal resilience. Federal agencies have recently formed climate change coordination networks to increase the relevancy of information

<sup>1</sup>“Accelerating and Improving Knowledge Transfer: Supporting Tribal Agriculture and Natural Resources in a Changing Climate”.

<sup>2</sup>Tribal Resilience Resource Guide: <https://biamaps.doi.gov/tribalresilience/resourceguide/>

to stakeholders like Tribes while also enhancing collaborative capacity at the agency level to respond appropriately and efficiently to needs. The USDA Climate Hubs program integrates climate-relevant resources from various USDA agencies to deliver science-based, region-specific knowledge to stakeholders and partners including Tribes. Hubs interface with organizations that are the 'boots-on-the-ground' like cooperative extension to help improve the two-way flow of information gaps and research needs. Moreover, there are efforts by other Federal climate coordination networks like the Department of Interior Climate Science Centers (CSCs), Landscape Conservation Cooperatives and Bureau of Indian Affairs (BIA) Tribal Resilience Program to also focus efforts on building resource capacity for Tribes. Most importantly, these 'boundary organizations' collect on-the-ground stories, successes and challenges that can be transmitted through appropriate channels to refine what information is needed, how this information can best be communicated, and why it is important—questions that address programmatic challenges.

### Continued cultural competency of scientists and researchers

Interactions between scientists and Tribal members may improve cultural understanding (on both sides) in regional environmental issues (Whyte, 2013). For example, the Tribal Climate Camp (TTCC) is a successful collaboration between the Department of Interior and regional Tribal organizations that engages scientists and researchers with Tribal groups to collectively share resources and knowledge related to climate adaptation. Not only do non-Tribal participants better understand the role of traditional knowledge, but increased collaboration supports science-based efforts that fit within Tribal programming and needs (Donoghue et al., 2010).

Non-governmental organizations also exist to help alleviate the aforementioned barriers and disconnects, such as the Institute for Tribal Environmental Professionals (ITEP) and Intertribal Agricultural Council (IAC). These act as boundary organizations between Tribal communities and Federal agencies, as well as engage non-Tribal researchers such as through ITEP's Climate Adaptation Workshops. Programs such as these can provide increased resource and knowledge availability, as well as recognition of capacity (i.e., human, financial capital) of both Tribes and agencies. Successful implementation of various agricultural and natural resource projects will be dependent on both (1) effective interaction among these diverse actors, and (2) cultural awareness to understand the potential role and application of traditional knowledge.

### Streamlined youth opportunities for educational and professional growth

Mismatches between courses offered at Tribal colleges and universities (TCUs) and skills desired by natural resources and agricultural management employers were highlighted during the working group. This disconnect disadvantages those Tribal youth looking for Federal positions due to differing employment requirements from TCU curricula. Fostering direct tracks of education to employment by strengthening TCU programs with transferable coursework and fieldwork could increase Tribal capacity in agricultural and natural resource sectors, while also enabling completion of degrees at land grant universities, as is common with community college systems.

Existing partnerships are already addressing this disconnect through undergraduate coursework and TCU engagement, to name a few. The Society for Range Management (SRM), for

example, has developed a training workshop program<sup>3</sup> to streamline coursework related to range and soil sciences, as well as offer a 'train the trainer' series. This collaborative initiative by SRM involving Federal, state and non-governmental actors could serve as a model in other agricultural sectors to effectively develop educational resources that is both appropriate for TCU coursework and Federal employment.

With Federal support from multiple agencies [i.e., BIA, National Oceanic and Atmospheric Administration (NOAA) and NRCS] and in partnership with AmeriCorps VISTA, the American Indian Higher Education Council (AIHEC) has established the Native Climate Resilience Network (NCRN)<sup>4</sup> to strengthen TCU partnerships with Federal agencies and other organizations to respond effectively to possible changes in climate. Volunteers from AmeriCorps VISTA will work with TCU faculty, students and community members, as well as enhancing relationships with USDA Climate Hubs and Climate Science Centers. The NCRN increases collaborative capacity while also providing invaluable educational and professional training related to climate change and impacts.

### Synthesis

It is critical to develop, maintain and strengthen partnerships to engage Tribes on helping them manage their agricultural and natural resources in a changing climate. In tandem, building sustainable operations and resilient landscapes also contributes to Native food security ensuring robust and local production opportunities. Here, we build on discussions from the National Adaptation Forum and highlight existing efforts within three themes: (1) development and delivery of decision-relevant resources and knowledge, (2) improvement of cultural competency among non-Tribal partners, and (3) educational and professional development of Tribal youth. We believe there are opportunities to enhance our collaborative capacity with Tribes in these three key areas with regard to agricultural and natural resource management, especially with unforeseen changes in climate. We can start to achieve this by pooling already constrained resources (i.e., financial and human capital), as well as identifying those 'hot spots' or 'hot moments' for win-win-win situations among all actors involved regardless of agency mission and organizational capacity. Ultimately, we hope these synthesized themes not only highlight on-going opportunities in Tribal agriculture and natural resources, but also demonstrate the importance of robust partnerships and collaboration among all actors.

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<sup>3</sup>Native American Range Advisory Council (NARAC): <http://rangelands.org/committees/native-american-range-advisory-council-narac/>

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