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### The Role of Native American Tribes in Transforming River Basin Governance in the U.S. West

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## **UGP 2016: The Role of Native American Tribes in Transforming River Basin Governance in the U.S. West**

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### ***Summary of Results***

The purpose of this research was to investigate the hypothesis that in the U.S. West, the presence of Native American land ownership (reservations) and capacity for tribal natural resource management supports adaptive river basin governance, and specifically, helps to balance cultural and ecological values of rivers in the federal processes of hydropower relicensing. I approached this research through a mixed methods approach of spatial (GIS) analysis, analysis of existing datasets of U.S. dam removals, and a robust literature review.

I operationalized this research through two objectives. Objective 1 involved expanding a spatial database of Tribal involvement in past, present and potential hydropower relicensing proceedings in the U.S. Expansion of this dataset included adding more site specific information regarding the tribal role in hydropower relicensing proceedings across the U.S. West. While completion of this objective is still ongoing, I have made significant progress in correlating tribal involvement, specifically, in Federal Energy Regulatory Commission (FERC) sanctioned dam removals, but also tribal involvement in dam removals more broadly. For example, Table 1 depicts results from a spatial analysis of the proximity of dam removals in the U.S. West to Native American reservations. From this information, I was able to identify which tribes have been more active in river restoration activities in an effort to balance ecological and cultural importance of rivers with development interests. I will continue work on this objective beyond the time period and support of UGP funding to continue to gather contextual data on the nature of tribal participation in each case of dam removal to pursue relative comparison across individual tribes and across cases of dam removal in the U.S. West.

Table 1. Relative distance of dam removals to Native American Reservations in the U.S. West 1999-2016 (based on 118 dam removals)

Distance Buffer around Reservations (Miles)	# of Dams within buffer around Reservations
5	10
10	23
15	28
20	35
30	60
40	76
50	96

Objective 2. included a comparison of a small set of case studies of tribal involvement in FERC hydropower relicensing in the U.S. West to build a detailed regional analysis of the influence of tribes on the specific policy process of hydropower relicensing—and specific those

that ultimate led to dam removal. The results of this objective are detailed in a peer-reviewed manuscript currently under revision at the journal *Water Alternatives*. While I found that the involvement of tribal stakeholders in FERC processes leverages powerful legal forces and the commitment of the federal government to negotiate a settlement or agreement that support tribal sovereignty, there were other important factors that explained dam removal as a result of FERC hydropower relicensing, including: (1) the presence of ESA-listed species; (2) the private dam economic cost-benefit analysis associated with continued dam operation; and (3) local politics playing a pivotal in delaying dam removal processes although not always sufficient to stop removal. In addition, the complex interactions of legal drivers, socio-cultural factors, and resource degradation are changing the nature of the FERC relicensing process with significant implications for potential private hydropower dam removals given uncertainties of climate change impacts on stream flow, water storage needs, and dam viability, as well as future funding for federal environmental initiatives in the U.S.

One critical question raised by these findings is whether and to what degree FERC dam removal is feasible when no ESA-listed species are present, despite tribal involvement. As such, we suggest that restoration scientists as well as decision makers shaping the trajectory of dam removal policy in the US would benefit from better and more accessible information regarding important sociocultural and political factors with potential to impact the outcome of dam removals, including: public perceptions of dams and dam removal; the role of scientific information and uncertainty in dam removal decision making processes; the strengths, weaknesses, and applications of various institutional arrangements associated with dam removal; and the socioeconomic impacts of dam removal beyond those felt by the dam owner alone.

### ***Products and Broader Impacts***

- *Undergraduate student research and mentorship.* Through this grant I supervised Anna Crockett, an undergraduate researcher using GIS software to perform myriad analyses to support research questions under investigation.
- *Peer-reviewed manuscript in revision.* Chaffin, B.C. and Gosnell, H.G. Beyond Mandatory Fishways: Federal Hydropower Relicensing, Dam Removal, and the Potential for Social-ecological River Restoration in the United States. *Water Alternatives*.
- *Conference presentations of both the empirical and theoretical results of this research.*
  - Chaffin, B.C. Adjudication and Tribal Water Rights Settlements as Hydro-Social Acts of Climate Mitigation. American Association of Geographers Annual Meeting, Boston, MA. 7 Apr 2017.
  - Chaffin, B.C., Garmestani, A.S., and Allen, C.R. Organized symposium: Transformations in Coupled Natural-Human Systems. Ecological Society of America Annual Meeting, Portland, OR. 10 Aug 2017.
  - Chaffin, B.C. Beyond the Next Regime: environmental law and the capacity for SES transformation. Resilience Conference, Stockholm, Sweden. 23 Aug 2017.
- *NSF proposal under development.* Chaffin, B.C., Bryan, M., Bowerman, T. Native American Water Rights Settlements and the Capacity for Social-Ecological Transformation. To be submitted to NSF Law & Social Science Directorate, 16 Jan 2017.