

Nicole Herman-Mercer¹, Karen Cozzetto², & Keith Musselman³

1. U.S. Geological Survey – Water Resources Mission Area, 2. Institute for Tribal Environmental Professionals – Northern Arizona University, 3. University of Colorado, Boulder – Institute for Arctic and Alpine Research



INTRODUCTION

The Arctic Rivers Project is a National Science Foundation – Navigating the New Arctic funded project aimed at increasing our understanding of the impacts of climate change on rivers, fish, and Indigenous communities across Northern Alaska and the Yukon River Watershed in Alaska and Canada. Our research question was developed in a co-production process facilitated by our partners at the Yukon River Inter-Tribal Watershed Council.

Research Question:

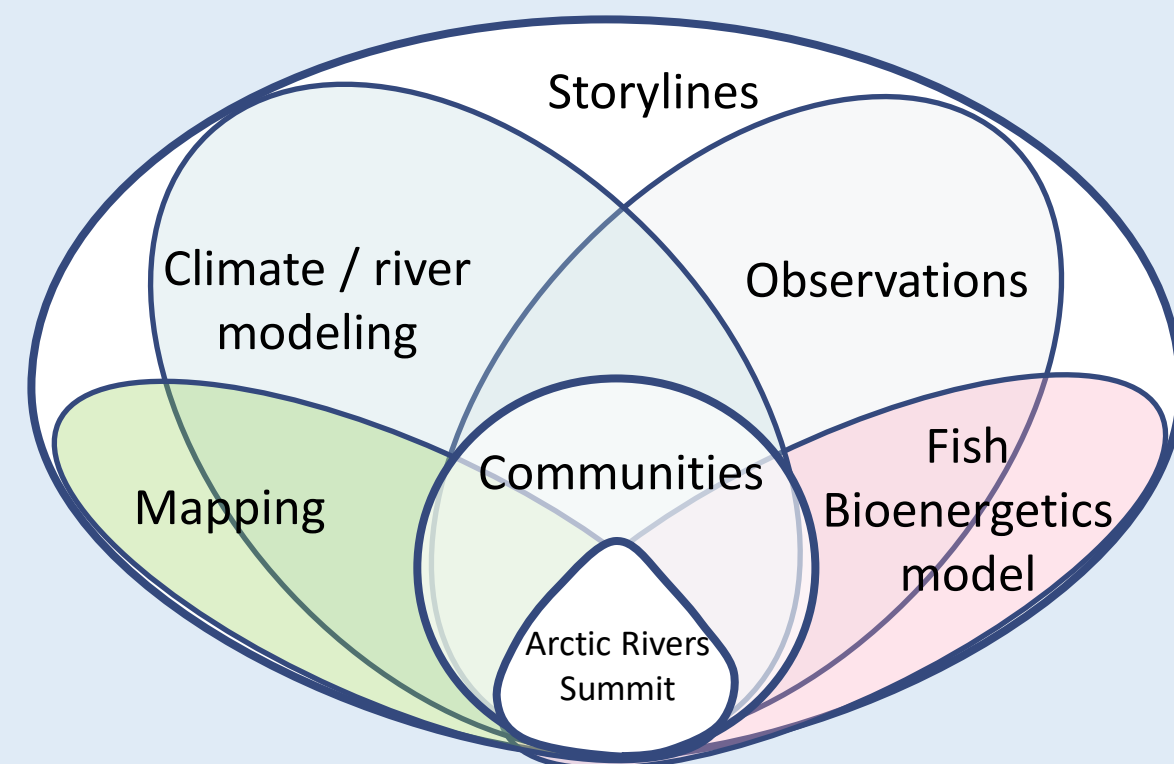
How will societally important fish habitat, and river-ice transportation corridors along Arctic rivers be impacted by climate change including permafrost degradation, transformed groundwater dynamics, shifts in streamflow, and altered river temperatures?



A variety of natural and social science methods will be employed to answer our question:

- Water quality monitoring
- Modeling – climate, river, fish
- Narratives of change from community members themselves.

To develop storylines of climate change in the Arctic



The Arctic Rivers project seeks to produce actionable science using a co-production of knowledge framework.

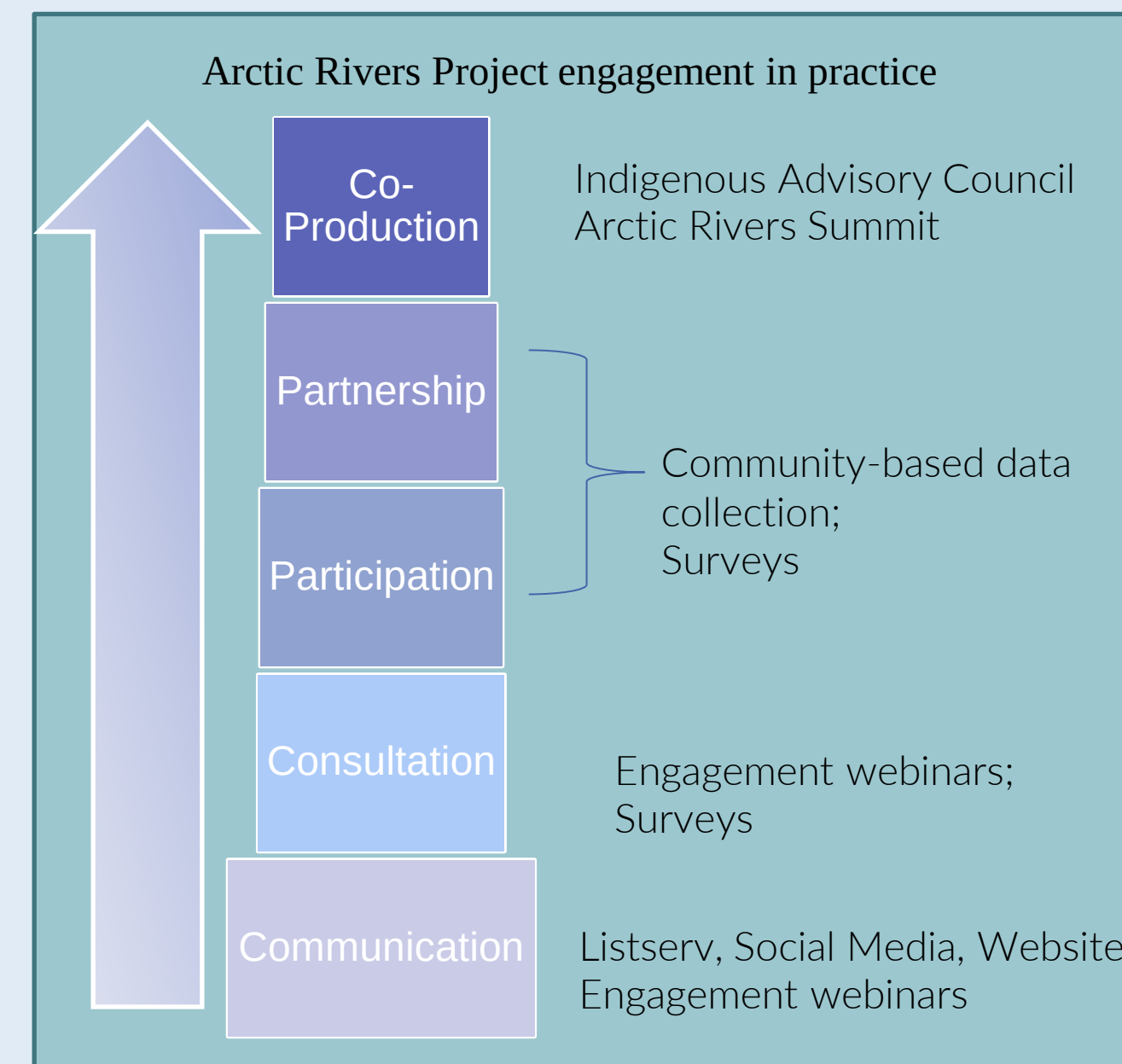
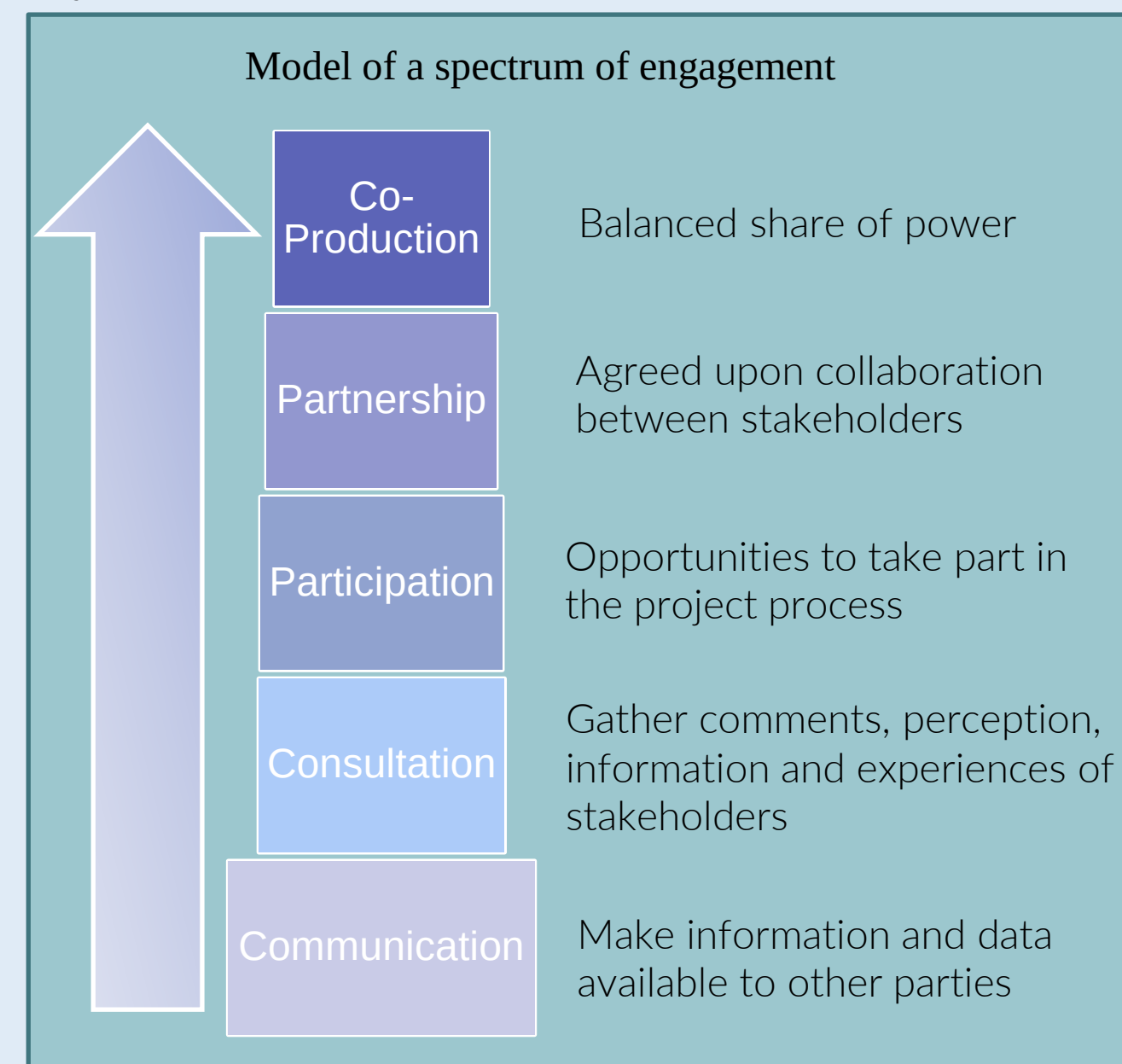
Knowledge Co-Production:

The collaborative process of bringing several sources and types of knowledge together to address a defined problem and build an integrated understanding of that problem.

This information is preliminary and is subject to revision. It is being provided to meet the need for timely best science. The information is provided on the condition that neither the U.S. Geological Survey nor the U. S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the information.

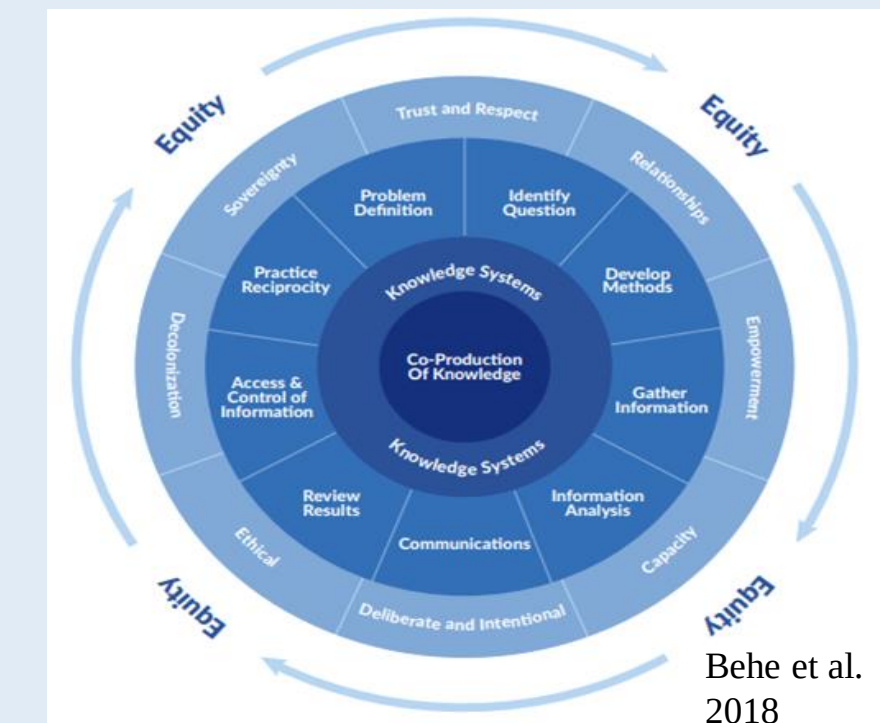
APPROACH

Knowledge co-production is the pinnacle of a spectrum of engagement approaches and includes a balanced share of power between the research team and the stakeholders. In the case of the Arctic Rivers Project – knowledge co-production includes the integration of indigenous and western knowledge systems and is housed in a framework that strives for equity between the research team and the communities we seek to support with our science. To this end we convened an Indigenous Advisory Council to guide the implementation of our project and our interactions with our primary stakeholders – Indigenous communities in the project study area.



ACCOMPLISHMENTS

- Ratified a charter governing our interactions with each other
 - Clarifies decision making process
 - Guides how the research team and IAC engage
 - Defines the project team as comprised of the IAC and the Research Team
- Developed and ratified ethical and equitable knowledge co-production guidelines for the project
- Developing the goals, objectives, and agenda for the Arctic Rivers Summit
- Provided guidance on community survey to help inform the selection of future climate scenarios



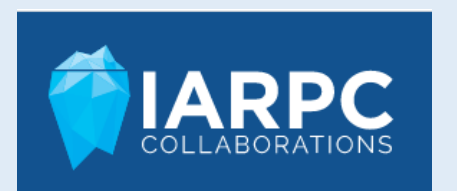
NEXT STEPS

- Work with research team to make climate modeling decisions
- Develop protocols for the inclusion and protection of Indigenous Knowledge
- Develop cultural competency training for Research Team
- Host Arctic Rivers Summit Meeting

CONCLUSION

We strive to:

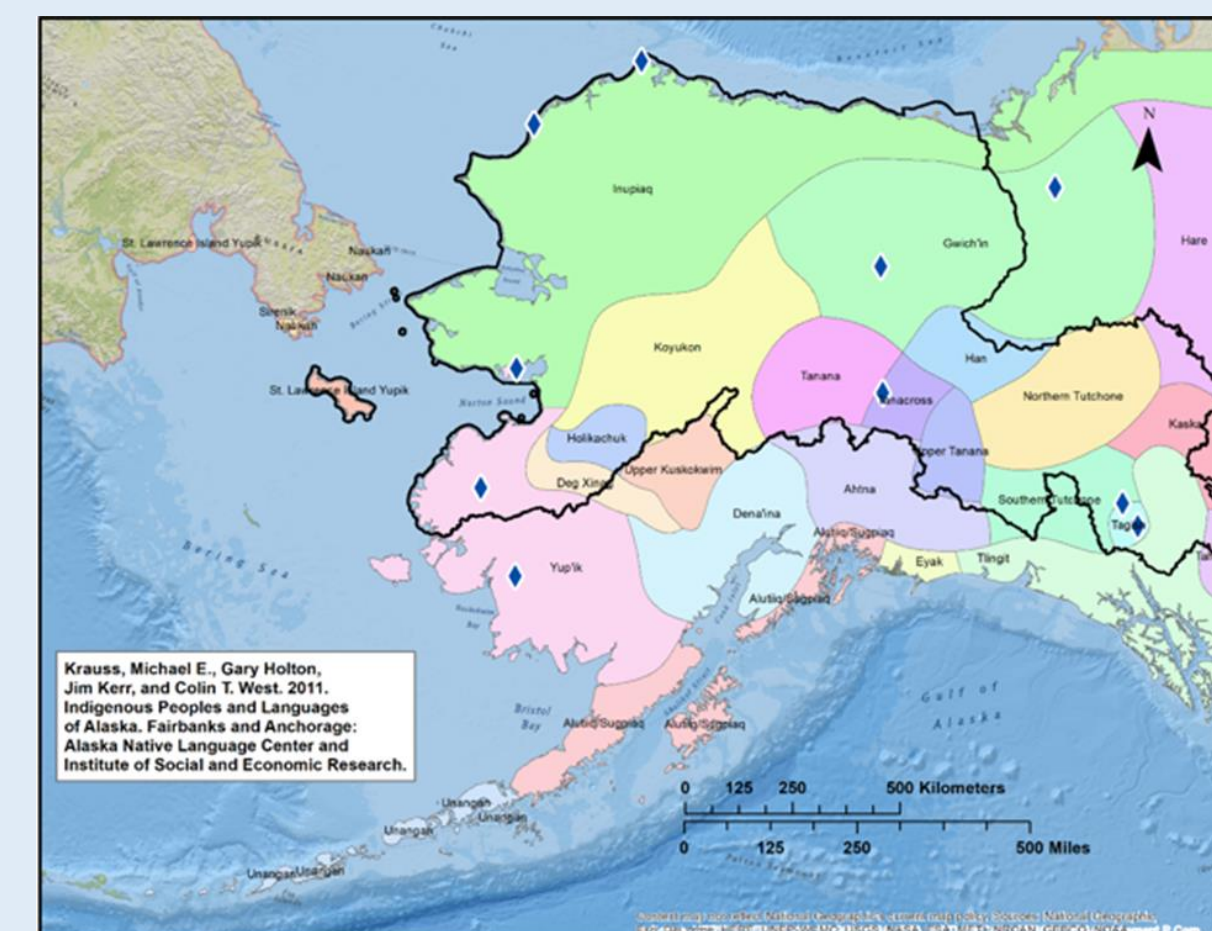
- Be **Accountable**
- Establish **Effective Communication**
- **Respect** Indigenous Knowledge & Cultures
- Build & Sustain **Relationships**
- Pursue Responsible **Environmental Stewardship**



IARPC, 2018

REFERENCES

Behe, C., R. Daniel, and J. Raymond-Yakoubian. 2018. “Understanding the Arctic through a Co-Production of Knowledge. U.S. Interagency Arctic Research Policy Committee (IARPC), 2018. “[Principles of Conducting Research in the Arctic.](#)”



Above: Cultural & Linguistic map of Arctic Rivers Project study area outlined in black. The location of Indigenous Advisory Council members are indicated with blue diamonds