Collaboration between scientists and stakeholders vital to climate readiness in Alaska

January 12 2018, by Vicky Stein

Kenai River salmon are threatened by climate change, but management decisions made with stakeholders and scientists working together could keep their populations healthy. Credit: Phil Coleman, U.S. Fish and Wildlife Service

As a U.S. state, Alaska is unique not only for its massive size but also for its reserves of natural resources and its land management. Over 60 percent of the state is federally owned, and the majority of the remainder is either state land, university land or owned by Alaska Native corporations.

Alaskan residents rely on sustenance species like salmon, caribou, and moose, but their needs can be at odds with companies mining natural resources and conservationists. The state's future will depend on collaboration between these various stakeholders, and scientists can help bridge the gap between these groups, according to researchers at Southern Oregon University.

E. Jamie Trammell, a geographer and a landscape ecologist at Southern Oregon University, has worked as a part of three "co-productive" projects in Alaska that combined community, management, and scientific involvement. He presented his work on these projects last month at the 2017 American Geophysical Union Fall Meeting in New Orleans.

"Conservation is not just about science. It's about collaboration," Trammell said. "It just makes sense to develop science that goes directly into management."

Trammell's research typically focuses on mapping and predicting ecosystem changes in Alaska. But through his work he has learned that stakeholders and managers of the systems he studies are vital to its management and conservation.

"It's really easy to do modeling and scientific development in isolation of management," Trammell said. But to create usable scientific results for managers, sustenance harvesters, companies, and other stakeholders, everybody has to have a voice, he said.

The first project Trammell discussed was a pair of two-day workshops for monitoring anthropogenic and climate change in boreal forests, held respectively in February and October of 2016 in Alaska and the Yukon. The workshops brought together more than twenty different state and federal agencies from the United States and Canada, including NOAA, the National Parks Service, the Canadian Forest Service, and many others.

Thawing permafrost along a riverbank in Noatak National Preserve, Alaska, caused a 300-meter slump after an exceptionally warm summer in 2004. Credit: NPS Climate Change response

Researchers attending the workshops created a standardized method to

determine environmental change throughout boreal forests. For example, all agencies determined one method of measuring tree growth that would be consistent between groups across the vast interior areas of Alaska and Canada, allowing all of the participants to benefit from one another's collected information. While the workshop created lasting relationships and will provide valuable data, Trammell wanted to improve.

Another of Trammell's projects looked for uncertainties in the future of Alaskan Kenai River salmon. Salmon populations have collapsed across most of the United States, but the Kenai River still produces the largest king salmon in the world. But salmon caught there now are much smaller than previous records, and climate change, land use and economic competition threaten the whole salmon population. To help the fishery, stakeholders including local land managers, federal and state officials, and scientists came together in the Kenai River watershed for two meetings in October 2015 and May 2016. Input from community and managers heavily influenced researcher's models of the river system, Trammell said.

"They feel heard, and it changes the models," he said. "So there are two benefits to involving everyone."

The third project Trammell examined was by far the most intensive, working to document the biological and physical status of the central Yukon region of Alaska as a baseline measurement to which future changes can be compared. Trammell believes that the project succeeded due to ample funding to pay participants, biweekly meetings in Alaska over two years, and an open-ended set of goals. The group intended to collect scientific information that could benefit management decisions. But rather than researchers determining the information that should be collected, the managing agencies had a hand in the questions asked and were therefore better prepared to manage the natural resources for which they were responsible.

For example, while researchers had studied Alaskan permafrost and made general observations, their results weren't useful to managers who needed maps of actual territory. Agencies like the Bureau of Land Management and the U.S. Fish and Wildlife Service are multi-use organizations, and their decisions must balance scientific output, conservation and public land use like mining.

Scientists now had the information needed to model the concerns of decision makers on accessible and useable maps, and decision makers had the information they needed to limit the most destructive activities on the most vulnerable areas in permafrost landscapes—for example, placer mining, which blasts river banks with water to reveal gold while accelerating thawing in nearby areas. Permafrost traps rainwater and melted ice in the summer and provides vital habitat for tundra plants and animals, so its destruction was of particular importance.

But the Yukon project was a substantial financial and time commitment from everyone involved. Trammell worries most scientists asked to participate in a project of similar magnitude could be intimidated by the scale, time commitment and cost.

"This whole process of co-production is really quite challenging, but very necessary," said Karen Murphy, coordinator for the Western Alaska Landscape Conservation Cooperative, who was not involved with these studies.

Provided by American Geophysical Union

Citation: Collaboration between scientists and stakeholders vital to climate readiness in Alaska