Climate & Communities
Marine Research in a Changing Arctic

EXECUTIVE SUMMARY

In all of the United States, the Alaskan Arctic is experiencing the most rapid and dramatic consequences of climate change. Alaska Native subsistence communities that rely on the Arctic environment and natural resources for survival have seen the changes first-hand. These communities possess a deep base of traditional knowledge (TK)—stemming from sophisticated environmental observations over many generations—that provides context for current changes. This TK plays an indispensable role in the research of and response to rapid Arctic change. TK and subsistence community perspectives can enhance climate change research before, during, and after projects, both by identifying research priorities and optimizing research implementation. Conversely, communities may benefit greatly from increased delivery of research results that support adaptation to changing conditions. To achieve the optimal outcome—where climate change research and TK are integrated, with trust and respect forming the basis for mutual understanding, and research results are effectively shared with those most affected—communities and researchers must meaningfully engage with one another.

The overarching goal of this report is to examine how scientists link with Alaska Natives through project conception and design, implementation, and results dissemination in order to improve marine management of the Arctic in a time of rapid climate change. Specifically, the report identifies and assesses research policies of different entities and climate change-related projects that engage the community, in order to make recommendations for best practices throughout the research process. The authors hope that this report will serve as a resource for managers, funders, researchers, and communities to improve marine research project design and implementation in order to facilitate effective and efficient adaptation to climate change in the U.S. Arctic.

This report combines research and analysis of laws, policies, and procedures related to Alaskan Arctic marine research with in-depth conversations with Alaska Natives, climate change researchers, federal agency staff, policymakers, and members of funding entities, among others. For the purposes of this report, *community members* include those who have lived or worked in Alaskan tribal communities and self-identify as a tribal member. *Researchers* include those who have planned, designed, or implemented social or natural science projects in the Alaskan Arctic.

While this report greatly benefits from and would not exist without the input of those interviewed, and the project partner the Alaska Eskimo Whaling Commission (AEWC), the authors highlight that any errors in the report are the sole responsibility of the Environmental Law Institute (ELI).

Climate Change Research Priorities

Holders of TK understand the interconnectedness of ecosystems and the importance of each component on a subsistence lifestyle. They incorporate knowledge about present conditions with knowledge of past conditions to form projections for the future. Today, TK input variables are shifting so dramatically that it could stress communities' abilities to adapt. A constant theme of interviews was that, given the rapid, unprecedented changes in the Arctic, the many variables that affect subsistence resources may be affected by climate change. Therefore, community research priorities encompass all aspects of the subsistence lifestyle and the environmental factors that affect it.

The specific research needs identified vary from community to community and are dependent on the subsistence resources that are most important to each community. In one meeting, research needs identified stemming from concerns about abundance and availability of subsistence resources include stock assessments, population studies, migration tracking, and projections related to these analyses. Other research needs identified by meeting participants and interviewees include the effects of shipping, noise, and seismic exploration mining, among other things, on subsistence resources.

In addition, myriad federal institutions engage in and/or support Arctic research in order to meet science-based management objectives and expand understanding of the Arctic. The following themes recur across the federal institutions' research policies: sea ice forecasting and effects of decreasing sea ice, cooperation and coordination, marine ecosystem processes, species and habitat data, vessel traffic, effects of mineral extraction, climate, community resilience, adaptation and food security, and cooperation and coordination.

While the specific research project needs identified by researchers and communities are numerous, one overarching theme that literature, interviewees, and meeting attendees identified is the need for communication and engagement between researchers and communities. In short, information flow can be as important as information generation. Given the increased presence of researchers, along with the expected increase in development and environmental change, a key climate change research need is linking science and communities in the research process.

Climate Change Research Policies

Research communication policies have the potential to structure community-researcher interactions in a way that is more productive, from creating more efficient research designs to spurring more effective research implementation and information dissemination. The National Science Foundation, which funds many projects in the region, has a strong policy on paper and

has demonstrated a commitment to engagement with the Alaska Native community. Other research funding entities have some policies in place as well. However, interviewees consistently identify community-researcher linkages as a primary point of weakness in the Arctic research framework.

Several Alaska Native communities are passing ordinances detailing specific outreach requirements. The research policies developed by Alaska Native organizations and regional and local institutions focus on the Alaska Native perspective for how researchers undertaking projects that involve Alaska Natives should interact with communities, from the earliest moments of conceptualizing anticipated research to dissemination of results. Interviews indicate that the communication policy framework has yet to solve information flow challenges related to climate change research.

Climate Change Research Practices

Fair dealing and open communication is at the heart of Arctic research policies. To make the policies meaningful, they must be translated into practice from the inception of research ideas through the completion of projects and dissemination of results. At the same time, the existing limits of research funding may constrain the ways that researchers are able to effectively engage with communities.

Before projects, examples of engagement identified include researchers attending local meetings, developing collaborations with tribal councils or regional bodies, and conducting local reviews of project proposals, among other strategies.

During projects, there is a need for ongoing engagement at the research site and in the community. Practical strategies that have been used in the Arctic include using local guides, involving community members in research projects, holding public lectures, using radio to describe research plans, and utilizing social media and electronic outreach to engage community members in ongoing research projects.

After projects, efforts to disseminate results are essential to ensure information flow. A primary climate change research need described by Alaska Native communities is for research results to make their way back to involved and/or affected communities. Strategies include outreach methods like flyers, posters, and summaries, presenting at local, regional, or state-wide meetings, lecturing at local schools, and conducting electronic outreach through newsletters or social media.

Across all stages of the research process, funding, capacity, and resource allocation can present obstacles to effective engagement. Communication efforts require adequate resources, both

financial investment and personnel time. At any time, but especially in light of today's tightly constrained budgets, resources for outreach and communication must be specifically built in to the funding process if researchers and communities are going to have the capacity to engage.

Research Opportunities and Recommendations

The first step in realizing meaningful communication and engagement is establishing robust policies. The second is ensuring they are implemented in practice. Opportunities exist for researchers, community members, and institutions operating in the Alaskan Arctic to optimize research practice to the benefit of specific projects and community-researcher relations generally.

General Issues	
Theme	**Options**
Building Trust, Demonstrating Respect	(1) Develop training programs, manuals, and/or fact-sheets that educate researchers on effective communication with Alaska Native communities. (2) Gather examples of effective visual presentations and research summaries. (3) Establish a mentor program that provides new Arctic researchers with the option to contact researchers who have worked successfully in the region.
Building Relationships and General Outreach	(1) To help develop long-term relationships that build mutual trust and respect, researchers should, when possible, attend meetings to make presentations and interact with community members. (2) Research projects (and researchers when appropriate) should establish a social media and traditional website presence. (3) To the extent possible, researchers should strive to establish long-term research programs in the Arctic, rather than one-time projects.
Coordination	(1) Develop a database that gathers and sorts proposed and approved projects in the region, with an option for researchers to submit projects at the pre-proposal stage as well. (2) Communities and regions could develop research guidelines, which could be sorted into a similar database for community needs and research requirements.

Before Projects	
Theme	**Options**
Funding Entity Policy	(1) Agencies and funding entities could include explicit outreach requirements before, during, and after projects in all RFPs or project descriptions, with an additional requirement that community-targeted outreach reports are returned back to communities after projects are completed. (2) Funding entities and agency budgeting could condition part of project funds on outreach, with a provision that the funds cannot be allocated for any other purpose. (3) Agencies and funding entities could require reports of outreach methods that detail positives and negatives of each approach, which can subsequently be communicated to communities and other researchers. (4) Consider providing mini-grants to communities or researchers to develop community-oriented projects. (5) Allow grant recipients to use part of their funding to support community boards to review, provide input on, and solicit ideas for project design and implementation.
Designing Projects	(1) Researchers should include community partners on RFPs and project plans. (2) When possible, researchers should include research partnerships with community members that facilitate the inclusion of Alaska Native co-authors. (3) Researchers should strive to include a TK component in all proposals. (4) Consider soliciting and vetting ideas in communities and at meetings.
Preparing for Research	(1) Researchers should reach out early, a year in advance of project initiation if possible, to the tribal council or other community representatives. (2) Communities and agencies should consider developing a database of contacts.

During Research	
Theme	**Options**
Community Involvement	(1) When possible, contact tribal councils or other community contacts to make local hires. (2) Researchers should compensate for TK, or make it clear at the beginning of a discussion when there is no compensation.
Ongoing Outreach and Engagement	(1) Researchers should provide understandable, plain language information related to project progress through posters, summaries, museum-like signs, and lectures, among other strategies. (2) When possible, researchers should make themselves available in the community. (3) Researchers should capitalize on every opportunity to conduct ongoing outreach and engagement, including sharing past project results when conducting outreach related to a new project.

After Research	
Theme	**Options**
Sharing Results	(1) Researchers should provide summary documents, visual presentations and posters, and publish an online report that is relevant to communities. (2) Communities should be given an opportunity to review and comment on draft research reports.
Transparency and Accountability	(1) Researchers should report back to communities and relevant agencies/funding entities with one document that describes the methods of outreach used, effectiveness of that outreach, and how community input influenced the project.

Most of all, **throughout the research process**, there is a need for open and transparent communication between researchers and communities. All of these points speak to the importance of researchers and communities taking active steps to engage with one another from project inception to results dissemination, in a manner that demonstrates respect and builds trust. Given the pressing threats posed by climate change, it is important that researchers and communities engage effectively to best inform climate change knowledge and management.

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