NRF Report

Plenary session II: The New Geography of a Warming North

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Following the Assembly's first day of discussions on the infrastructure of and opportunities for northern political cooperation, presenters in this plenary surveyed the dynamic northern landscape, including locating telling aspects of its physical, climatic, social, health, cultural, economic, leadership, and knowledge characteristics. These studies were presented in the context of both 1) changing communities and climates and 2) attempts to engage local knowledge with approaches from outside the communities.

Dr. Gudfinna Adalgeirsdóttir of the Danish Meteorological Institute surveyed the scale of high latitude ice sheets, noting the potential sea level rise if Greenland, Antarctica, and other land-based ice were to melt. The ice volume of both Greenland and Antarctica could contribute dramatically to global sea level, but ice anywhere, including the Arctic Ocean, contributes to the Earth's heat balance because of its surface reflectivity. Most ongoing observations of ice extent are conducted via satellite, although aircraft and land-based surveys provide a longer-term record by several decades. The global trend is one of net ice sheet melt at least in the past decade and of accelerating melt over the past few years. New calving mechanisms have been observed in some locations in Greenland. Model projections forecast greater melting rates in the future.

Dr. Mary Albert, Cold Regions Research and Engineering Laboratory and Dartmouth College, described Earth as a system of interconnected systems, and noted the increased public attention Arctic climate change is receiving. She highlighted past rapid climate changes and the magnitude of their impact on human society, as well as humanity's power to impact the natural world. Indeed, a new research program she co-initiated, a Integrative Graduate Education and Research Traineeship in polar science and the human

aspects of climate change, is based on the inextricable connection of local communities and the physical environment in Greenland. The goals of this new project include incorporating local knowledge and western science to better understand polar environmental change. Graduate students will learn to conduct ethical, effective field research in partnership with Greenland residents.

Dr. Lawrence Weiss, of the Alaska Center for Public Policy, emphasized the need of a robust public health infrastructure to respond to the needs of Arctic populations in a warming climate. He argued that uncertainties in the impacts of climate change on human health bolstered the need for major improvements to an already inadequate safety net. Anticipated risks include increased indoor air pollution, limited access to food, fuel, transportation infrastructure (including ice roads and loss from flood damage) and medical care, as well as increased exposure to disease, potentially from range expansions from disease vectors or heat-related contamination risks. Many risks may disproportionately impact vulnerable populations. Dr. Weiss identified key constraints on preparing for these risks, including funding, health care access, infrastructure, and trained health care providers and asserted that Alaska was less prepared than most other circumpolar regions. He acknowledged the challenges of mental health and of procuring healthful food in rural Alaska during plenary discussion.

Russell Fielding, a NRF Young Researcher from the Louisiana State University Geography Department, located the north in reference to the south in his study of food procurement in artisanal whaling communities in the Faroe Islands. Faroese whalers have maintained written records of pilot whale harvest since the 1584, providing the longest continuously documented wild harvest records. Fielding presented evidence that the practice of whaling in the Faroe Islands faces an imminent threat posed by health risks to human consumers of mercury- and persistent organic pollutant- contaminated whale meat. Whaling, aside from its cultural role, is a primary food source and would have to be supplanted by (an) alternative food source(s) if discontinued. Adaptation to global-scale environmental pollution is being planned in a community that has seen large historical variations in past catch, but never a cessation of whaling.

Dr. Audrey Giles, Assistant Professor at the University of Ottawa School of Human Kinetics and NRF Young Researcher, examined the risks of drowning in the Arctic and of Native people's attitude towards that risk. Giles argued that not only are drowning incidents poorly monitored in the Arctic, but public safety institutions outside the Arctic poorly understand their causes and context. In turn, public safety campaigns that are not designed with local input are often irrelevant and ignored. Giles highlighted better success when safety messages and images were designed in partnership with local elders and in the context of Arctic social changes and economic inequities.

Karen Hibbard-Rode, a NRF young researcher from the University of Alaska Fairbanks Biology and Wildlife Department, positioned her integrative study of the Teshekpuk Lake caribou herd population dynamics to offer insight to policy makers anticipating changes in critical areas for caribou under climate change and possible future oil and gas development. She compiled an extended and descriptive history of local caribou populations from archival research and local interviews. Future work will include genetic mapping of the Teshekpuk Herd. The goal of this broader and deeper investigation is to provide useful information about the resilience and adaptation of this dynamic, newly recognized herd.

Dr. Elena Piterskaya, a NRF young researcher from the Institute of Ethnology and Anthropology in Moscow, presented contemporary human health in Native Arctic communities in historical context and suggested solutions should also be sought in that context, including traditional knowledge. Changes in life patterns have ushered in new diseases, including obesity, heart disease, arthritis, and Fetal Alcohol Syndrome. Additionally, largely external ecological changes have introduced greater risks from persistent bioaccumulative pollutants in the food supply. Although traditional medicine was largely displaced during Russian settlement, access to western medical services is very limited in the region, especially following Perestroika. Dr. Piterskaya emphasized that no solution to improve human health in this region is complete without consideration of local lifestyle, ecological, medical, and economic changes and resources.

This plenary demonstrated the complex interplay of human and environmental systems in a dynamic northern geography, often by utilizing local examples and knowledge. Communicating and observing this complexity was identified as a key challenge, and panelists emphasized strategies of identifying the best information, listening to stories, depoliticizing the use of local knowledge, and improving communication between potential partners.