

## **Role of Bering Sea Sub-Network (BSSN) to map subsistence use and explore climate change impacts and adaptations**

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Subsistence activity in the Bering Sea is facing many challenges as a result of climate change. Changing environmental conditions can affect subsistence by disrupting food webs and increasing weather variability. Melting sea ice and warming ocean waters have increased interests in development including marine transport, offshore oil and gas exploration and commercial fishing. Development can have both positive and negative impacts to the indigenous groups who occupy the area. Although development can potentially bring economic activity to depressed rural areas, development that disrupts subsistence activity has the potential to affect food security, cultural continuation and well-being of indigenous groups. In order to understand impacts of development, maps of subsistence use locations are needed. Subsistence mapping is commonly done using focus groups of experts who draw lines around areas they use to hunt and gather food. This process may lead to an incomplete picture of community harvest areas. Phase two of the Bering Sea Sub-Network, community-based research, endeavours to address this issue by sampling a consensus of 'high harvesters' within a community. In order to deal with the abundant mapped data an innovative technique of density mapping is being used. Density mapping using Geographic Information Systems displays, on an interval scale, areas from high density subsistence use to low. The power of these maps lies in their ability to allow decision makers to rate a project's desirability based on its potential to disrupt subsistence activity. During year three of this seven year project 1706 interviews were conducted with 546 people in 6 indigenous Alaskan and Russian villages bordering the Bering Sea. Communities included Sand Point (Eastern Aleut/Unangas), Togiak (Central Yup'ik), Gambell (Siberian Yupik), Kanchalan (Chukchi), Tymlat (Koryak) and Nikolskoye (Western Aleut/Unangas). Respondents circled locations where they harvest and answered questions about those locations. Questions focused on observed changes in the environment, challenges faced while harvesting and general questions about the species harvested. These data can not only facilitate the mapping of harvest locations, but allow researchers to spatially explore the effects of climate change to subsistence activity and resulting adaptations.

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