Notice of the Final Oral Examination
for the Degree of Master of Science

of

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BA (Colby College, 2009)

“Assessing the Cumulative Effects of Environmental Change on Wildlife Harvesting Areas in the Inuvialuit Settlement Region through Spatial Analysis and Community-based Research”

School of Environmental Studies

Friday, December 4, 2015
2:00PM
David Turpin Building
Room B255

Supervisory Committee:
Dr. Trevor Lantz, School of Environmental Studies, University of Victoria (Supervisor)
Dr. Natalie Ban, School of Environmental Studies, UVic (Member)

External Examiner:
Dr. Rosaline Canessa, Department of Geography, UVic

Chair of Oral Examination:
Dr. Catherine Althaus, School of Public Administration, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies
Abstract

Arctic ecosystems are undergoing rapid environmental transformations. Climate change is affecting permafrost stability, vegetation structure, and wildlife populations, and increasing human development is impacting a range of ecological processes. Arctic indigenous communities are particularly vulnerable to environmental change, as subsistence harvesting plays a major role in local lifestyles. In the Inuvialuit Settlement Region (ISR), in the western Canadian Arctic, indigenous land-users are witnessing a broad spectrum of environmental changes, which threaten subsistence practices. Local cumulative effects monitoring programs acknowledge the importance of subsistence land use; however there are few cumulative effects assessments that measure the impact of environmental change on land-based activities. My MSc addresses this gap with a broad-scale spatial analysis of the mainland ISR that measures the distribution of multiple disturbances, and assesses their overlap with community planning areas, land management zones, and caribou harvesting areas. I also generated nine future disturbance scenarios that simulate increases in both human development and wildfire occurrence, in order to understand how additional environmental change may affect the availability of un-impacted harvesting lands. I used the conservation planning software, Marxan, to assess the impact of increasing environmental perturbations on the availability and contiguity of 40 subsistence harvesting areas. Results show that the study region is already impacted by multiple environmental disturbances, and that these disturbances overlap considerably with wildlife harvesting areas. This limits the success of Marxan selections when attempting to conserve high percentages of subsistence use areas. It becomes increasingly difficult to conserve large, contiguous assortments of wildlife harvesting areas when using Marxan to assess conservation potential in future disturbance scenarios.

In a separate study, I conducted 20 semi-structured interviews in the communities of Inuvik, Aklavik, and Tuktoyaktuk that explored the impact of environmental change on Inuvialuit land-users. Participants in my study indicated that wildlife harvesting in the region is being affected by a range of environmental disturbance types and that this change is typically considered to be negative. Climate change-related disturbances were noted to affect travel routes, access to harvesting areas, wildlife dynamics, and the quality of meat and pelts. Human activity, such as oil exploration, was noted to impact both wildlife populations and harvesters’ ability to use the land. These observations are an important contribution to local cumulative effects monitoring because they highlight local accounts of environmental change, which are often missed in broad-scale assessments, and they emphasize the concerns of local land-users. This underscores the importance of including indigenous insights in cumulative effects monitoring and suggests that combining quantitative assessments of environmental change with the knowledge of local land-users can improve regional cumulative effects monitoring.