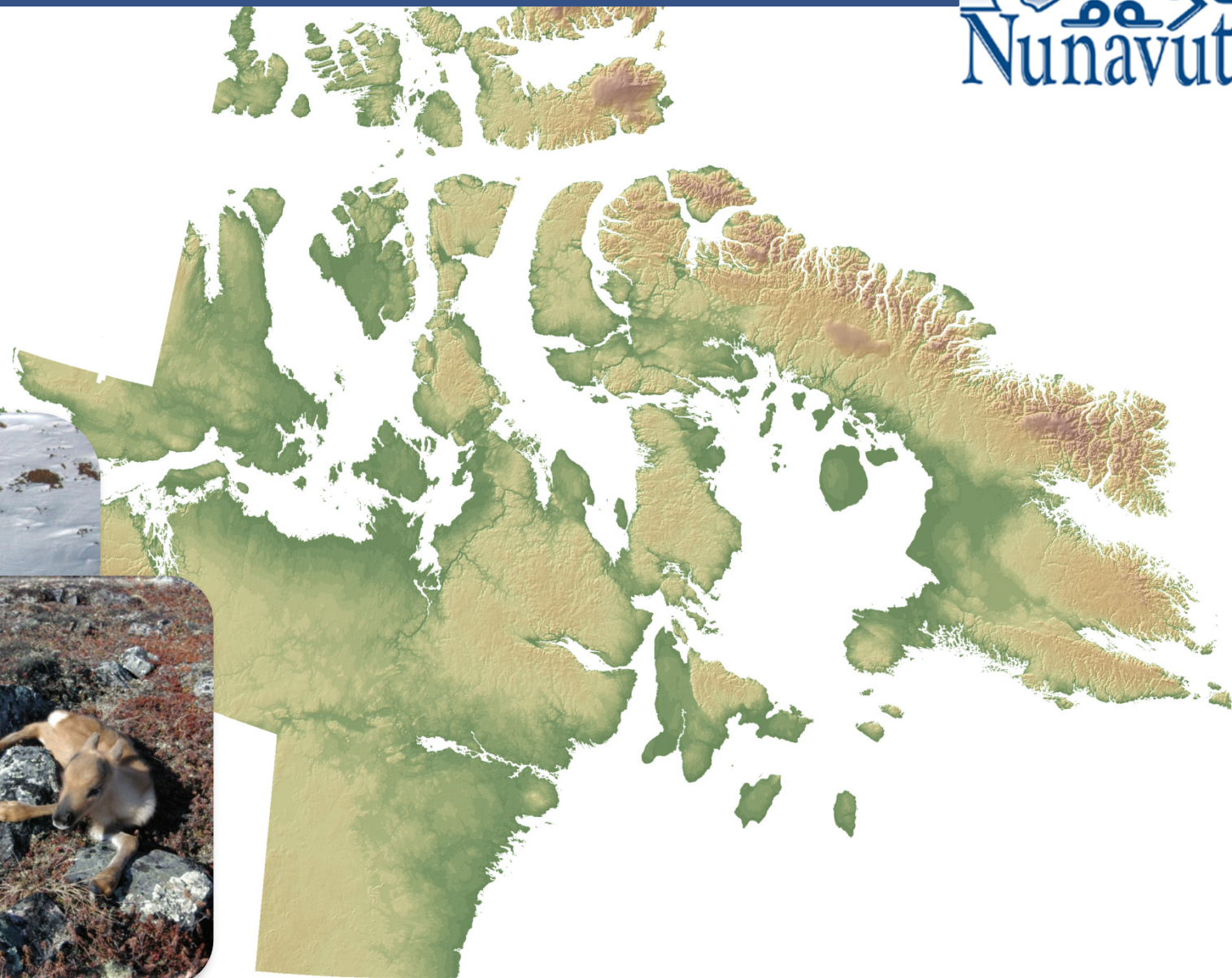




KIVALLIQ ECOLOGICAL LAND CLASSIFICATION MAP ATLAS: *A WILDLIFE PERSPECTIVE*



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Cover Photos

Mitch Campbell (caribou calf, albino muskoxen, river rapids and wetland); Martin Gebauer (cottongrass and willow catkins)

Document Photos

The majority of the photos within the atlas were taken by Mitch Campbell, Government of Nunavut. Exceptions for this have credit directly on the photo.

Design and Production of the Atlas



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Beverly caribou crossing Dubawnt River in late July

1 Introduction

1.1 Background

The Government of Nunavut Department of Environment (DoE) has conducted a multi-year program to develop an Ecological Land Classification (ELC) for the Kivalliq region based on the classification of Landsat imagery. This mapping facilitates the identification of ecological land classes and ultimately the identification of important vegetation communities. The identification of these habitats is critical to the sustainable management of both the Kivalliq's ecological communities and the wildlife species that utilize these habitats. The full ELC consists of 36 classes which, in some cases, have been grouped for presentation purposes in the atlas. For example, the Heath Upland class consists of the following: Heath/Lichen Tundra, Ericaceous Shrub, and Ericaceous Shrub/Lichen. Full details related to the ELC class descriptions are provided in Section 3.7.

In addition to the ELC mapping, a database of wildlife locations and distribution has been developed for the region. This database has been derived primarily from aerial surveys, sighting data, classification data, and GPS and satellite telemetry data. When used in combination with the ELC dataset, it has provided insight into habitats important to caribou, muskoxen, grizzly bear, polar bear and other wildlife species. The resultant information provides an important decision-support tool for wildlife conservation and the sustainable management of land use activities. In addition, the ELC datasets provide a baseline that can be used to identify and track changes in the vegetation and landscape of the region as they occur over time. These can be used for a variety of purposes, including quantifying and monitoring cumulative effects, or assessing potential climate change impacts. The establishment of protected areas also benefit from this type of integrated knowledge base as decisions can be based on quantitative information.

1.2 Objectives

The objective of the atlas is to present the results of the ELC mapping program, and associated wildlife analyses, in a format designed to allow wildlife biologists, environmental planners, local community groups, industry and members of the general public to easily understand the data and how it can be utilized. Examples of its use include:

- **The identification and quantification of important wildlife habitats.** Habitat quality, quantity and availability largely govern the distribution and abundance of many ecologically and economically important species of wildlife. It is increasingly clear that migratory caribou populations are regulated by the abundance of high quality forage in their calving grounds. An understanding of the locations and size of distinct vegetation classes containing high quality forage, and how these classes relate to wildlife, are critical to a manager's assessment and prediction of a population's status.
- **Providing inter-jurisdictional and jurisdictional management boards and wildlife biologists with a tool to make informed decisions concerning land use impacts on wildlife habitat.** The identification of vegetation classes important to wildlife, coupled with a map displaying the size and location of these vegetation classes, will assist wildlife managers in their assessment of the potential impacts of land use on wildlife through the modification of their habitat. Mines, water development projects, urban expansion, pipelines, road construction, chemical contamination, noise pollution etc. are increasing land use and ecological management challenges across Nunavut; a trend that is anticipated to only intensify with time. Managers need to be provided with more sophisticated tools to deal with the increased pressures placed on wildlife habitat if wildlife and their habitats are to be conserved for future generations.
- **Being better prepared to respond to the root of wildlife challenges through an initial analysis of habitat condition and availability in a logistically efficient and cost-effective manner.** Habitat analysis in the Kivalliq is logistically complex due to the size and remote nature of the region as well as challenging climatic conditions. Stratifying terrestrial habitats into broad vegetation classes eases logistic and financial constraints by providing biologists with the ability to sample representative strata. The atlas provides an important tool that will also shorten response times when timely management intervention is required and facilitate the development of environmental management plans (e.g., it can be used as a reference to assist in site selection or route planning). Successful planning for wildlife and habitat management is contingent upon adequate information and access to the data. The atlas displays these results in a concise format that is easy to interpret.

The atlas, and associated datasets, provide a cost effective tool to help understand and respond to wildlife challenges pertaining to ecosystem health. The identification of vegetation classes important to wildlife, coupled with maps displaying the size and location of these vegetation patterns, provide wildlife managers with useful quantitative data to help evaluate land use alternatives. The information in the atlas also provides the communities of the Kivalliq with information to make more informed decisions on the potential impacts of development and climate change - decisions that can lead to a sustainable future.

1.3 Contents and Organization

The contents of this atlas cover the entire mainland of the Kivalliq Region of Nunavut. This region encompasses the territory used by people living in the communities of Arviat, Baker Lake, Chesterfield Inlet, Rankin Inlet, Repulse Bay, and Whale Cove. Map 1-1 provides a general overview of the Kivalliq and neighbouring Kitikmeot and Qikiqtaaluk regions within Nunavut. The primary geographic features in the Kivalliq Region (see Map 1-2) include the southern portion of Melville Peninsula, and the lands on the northwest shores of Hudson Bay across to the border with the Northwest Territories in the west. The hydrography of the region includes Nuetlin, Dubawnt, and Baker lakes as well as the Thelon and Kazan heritage rivers. The Kivalliq region supports the Qamanirjuaq, Wager Bay, Lorrillard, Eastern Kitikmeot, Southampton Island and Coats Island barren-ground caribou subpopulations and includes a series of National parks, territorial parks and bird sanctuaries such as the Iqalugaarjuup Nunanga Territorial Park, Ukkusiksalik National Park, and the majority of the Thelon Game Sanctuary.

The remainder of the atlas is organized into the following sections:

- *Section 2: Ecoregion Summary* describes the ecological setting of the study area at a broad scale detailing the ecozones and associated ecoregions and their characteristics.
- *Section 3: Ecological Land Classification Summary* outlines the approach to the mapping program and presents the legend for the ELC classes in full detail.
- *Section 4: Detailed Ecological Land Classification Map Series* includes over 186 maps that cover the study area at a scale of 1:225,000.
- *Section 5: Wildlife Information* expands on the connection between wildlife and the ELC mapping by displaying seasonal distribution and sensitivity maps for select species.

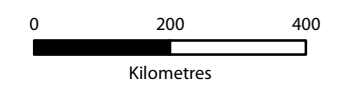
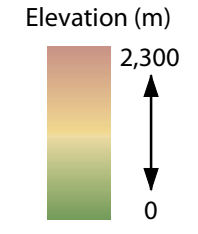
In addition, the atlas includes references, a glossary and an index to aid in navigating to specific maps based on place names. A list of the cover types associated with each ELC class within each ecoregion has been provided as an appendix.

Map 1-1 Nunavut



Legend

- Nunavut Settlement Area boundary
- Region boundary







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Data Sources:
 Natural Resources Canada, Caslys Consulting Ltd.
 Department of Environment (Government of Nunavut)

Prepared by:

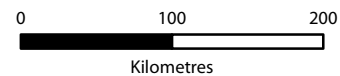
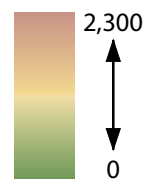
Nunavut
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 Department of Environment
 Ministère de l'Environnement
 CASLYS CONSULTING

Map 1-2 Kivalliq Region of Nunavut

Legend

-  Nunavut Settlement Area boundary
-  Region boundary
-  Park or Protected Area
-  Heritage River

Elevation (m)



Canada Lambert Conformal Conic WGS 84

Data Sources:

Natural Resources Canada, Caslys Consulting Ltd.
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Prepared by:

