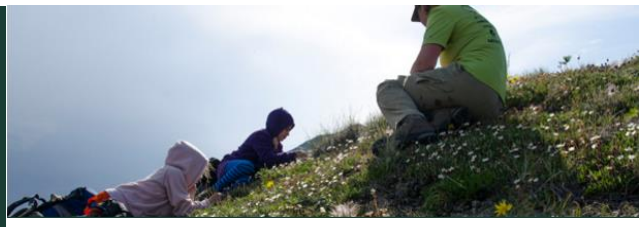
Yukon State of the Environment: Reporting on environmental indicators - 2018

HIGHLIGHTS



ABOUT THE REPORT

State of the environment reporting demonstrates to the public how Yukon is progressing towards the goal of maintaining and improving the quality of Yukon's natural environment for current and future generations. The reports reflect on the status of the environment and help guide future decision-making. They also:

- Provide early warning and analysis of potential environmental problems;
- Chart the achievement of the objectives set out in the *Environment Act*; and
- Provide baseline information for enviro**n**mental planning, assessment and regulation.

Under Yukon's *Environment Act*, the Minister of Environment must table a full state of the environment report in the legislature every three years, as well as interim reports in the intervening years. In 2016, the report transitioned to an accessible and interactive online version that has been regularly updated. The current online report can be accessed through this link 2018 SOER or http://www.env.gov.yk.ca/publications-maps/stateenvironment.php

The report provides information on climate change, air, water, land, and fish and wildlife. Analysis is provided through key indicators used to monitor, describe, and interpret changes in the environment. The report uses the most recent and best information available.

The State of the Environment Report is a collective effort involving scientific experts and specialists from government agencies and non-governmental organisations who have provided information, data and advice.

CLIMATE CHANGE

The Yukon government recognizes that climate change is happening, that human behaviour is a major contributor, and that a coordinated response is needed.

The Intergovernmental Panel on Climate Change is the leading international body for the assessment of climate change. This panel of scientists states that:

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- Global climate change is the most significant threat our environment faces today;
- The human influence on the climate system is certain and growing;
- Climate change is affecting the Arctic at a pace greater than elsewhere on the planet; and
- Impacts of climate change include atmosphere and ocean warming, reduced extents of snow and ice, a higher sea level, and an increase in the frequency of heavy precipitation events (Intergovernmental Panel on Climate Change, 2014).

In Yukon, we are already seeing the effects of climate change across all aspects of the environment. Changes have started to, and are expected to continue to, impact the distribution and abundance of vegetation, fish and wildlife in Yukon, as well as impact Yukon infrastructure, economy and communities.

The *Climate Change Action Plan* was released in 2009 and later updated in progress reports released in 2012 and 2015.

The effects of climate change are wide-reaching and touch all other areas of this report. Indicators that measure Yukon's contribution to climate change and the impacts of climate change on Yukon's environment are identified in other sections by a:  icon.

CHAPTER: AIR

Temperature

Indicator	Highlight
 Long-term temperature variation	The Arctic is warming more quickly than other regions, and the warming trend in Yukon is expected to continue.

Air quality and emissions

Indicator	Highlight
 Trends in Yukon greenhouse gas (GHG) levels	Yukon's overall greenhouse gas emission levels have been decreasing since 2009. Yukon's total GHG emissions for 2015 were 0.573 megatonnes (573 kilotonnes) of CO_2e. This represents a 0.5 per cent decrease in emissions from 2009. Reductions in Yukon GHGs since 1990 (National Inventory

	Report) are mainly due to changes in the nature and extent of industrial activity. The cyclical nature of Yukon's resource economy is reflected in the territory's greenhouse gas emission levels. Transportation accounts for the largest share of greenhouse gas emissions in Yukon: 63 per cent of the total in 2015. On-road gasoline and on-road diesel contribute equally to transportation emissions, at approximately 40 per cent each. This means that passenger vehicles are a significant source of emissions in the territory. After transportation, space heating from fuel oil and propane is the next highest source of GHG emissions in Yukon.

CHAPTER: WATER

Precipitation

Indicator	Highlight
 Long-term precipitation variation	Precipitation amounts change from year to year, but there is a trend of increasing precipitation in Yukon. Precipitation has increased by about six per cent over the past 50 years.

Lakes and Rivers

Indicator	Highlight
 River ice break-up dates	Yukon river ice break-up at Dawson City now occurs on average, seven days earlier, since record-keeping began in 1896. Eight of the ten earliest recorded break-up events at Dawson City have occurred in the past 30 years.
Water quality index ratings	The water quality measured at seven Yukon stations is excellent (one station), good (four stations), and fair (two stations).

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Frozen water

Indicator	Highlight
Arctic sea ice extent and volume	September sea ice loss averages 90,000 km2 per year, although there is significant variability from one year to the next. Approximately 300 km3 of sea ice volume is lost per year. Existing sea ice is becoming thinner. Arctic sea ice is melting; summer sea ice will likely disappear within decades.
Snow accumulation	The significant increase at 6 of the 14 long-term snow survey stations analysed in snow accumulation in the last several decades indicates an increase in winter precipitation. Sites with increasing trends in snow over time occurred in the Mayo-Dawson region and towards the Yukon-B.C. border.

CHAPTER: LANDSCAPE

Planning

Indicator	Highlight
Population of Yukon	Overall, Yukon's population is on the rise. Over the past 10 years (June 2007 to June 2017), the population increased by 6,243 people, or 19.4 per cent. Over the past year (June 2016 to June 2017), the total Yukon population increased by 597 people, or 1.6 per cent. The increase in population is mostly due to growth in the Whitehorse/Marsh Lake area. Population density is only 0.1 people per square kilometre.
Regional land use planning	There are seven planning regions identified in Yukon with plans completed for one region.
Forest resource management plans	Forest resource management plans are in place for the Traditional Territories of Tr'ondëk Hwëch'in, Teslin Tlingit Council, and Champagne and Aishihik First Nation.
Community and local area planning	In order to plan for long-term sustainability, all eight Yukon municipalities have official community plans and there are local area plans for eight of Yukon's unincorporated communities.

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Forests

Indicator	Highlight
 Area of fire burned annually and number of Yukon wildland fires	Dramatic fluctuations in area burned occur annually. Fires greater than 200 hectares usually represent a small percentage of all fires, but account for most of the overall area burned.
Fire ignition points	Human caused fires are clustered near settlements and roads; in most cases, the area burned by human caused fires is small in relation to the area burned by naturally occurring fires.
Forest health	Aspen decline refers to mortality or damage to Aspen forests due to unknown causes, including a possible combination of biotic and abiotic factors.

CHAPTER: FISH & WILDLIFE

Mammals

Indicator	Highlight
Caribou population and distribution	Both of the barren-ground caribou herds that occur in Yukon are increasing in size. Of the 26 woodland caribou herds in Yukon, four are increasing in size, seven are relatively stable and 3 are declining. Population trends are unknown for 12 of the woodland caribou herds. Northern Mountain woodland caribou are designated as a Threatened Species under Canada's Species at Risk Act. Yukon's boreal caribou are considered "self-sustaining" (i.e., at least stable), under Environment and Climate Change Canada's boreal caribou recovery guidelines. Yukon's boreal caribou are small in number and represent a small fraction of the overall boreal caribou population in Canada and are contiguous with boreal caribou in the Northwest Territories.
Caribou mercury levels	Monitoring shows that the concentration of mercury in the kidneys of the Porcupine caribou herd continues to be low. In 2016, samples were collected from 23 Porcupine caribou.

Density of snowshoe hares	The snowshoe hare is a keystone species in the boreal forest; changes in hare population cycles can be an early warning system for ecosystem changes due to climate change. The amplitude of the snowshoe hare cycle has been diminishing over the last 30 years in Yukon, demonstrated by research in the Kluane area going back to 1973. 2006 was the last peak in the snowshoe hare cycle; recent data suggests another peak occurred in 2016, but the hare numbers have remained relatively high in 2017.
Winter tick surveillance	Winter ticks have not caused serious problems for Yukon wildlife. However, given their distribution across several Yukon species, they are likely here to stay. Since 2012, the Animal Health Unit has examined cervid hides to monitor tick host and geographical distribution over time.

Fish

Indicator	Highlight
Lake trout sustainability	The majority of the recreational lake trout harvest in Yukon was sustainable, with most water bodies maintaining quality fisheries. In 2016, the Yukon Fish and Wildlife Management Board recommended regulation changes for Fox, Frenchman, Kusawa, and Twin lakes to reduce catch and possession limits for lake trout in order to maintain a sustainable fishery in Kusawa Lake and to allow the depleted populations in Fox, Frenchman, and Twin lakes to recover. These changes came into effect on April 1, 2017. An evaluation of these changes are planned for future years.
Mercury levels in fish	There is a correlation between the length of a fish and its mercury concentration. Most fish from Yukon's lakes have mercury levels well below Health Canada's maximum limit. Two lakes are monitored annually by the Northern Contaminants Program for mercury and other contaminants in southern Yukon, Lake Laberge and Kusawa Lake. If

	mercury levels are high in sampled fish, a fish consumption advisory is issued.

Birds

Indicator	Highlight
Monitoring breeding waterfowl	Monitoring waterfowl presence and abundance gives a good indication of the ecological health of the area; as waterfowl depend on wetland areas for food, nesting areas and safety. Overall, waterfowl populations in Old Crow Flats and the Southern Lakes region are stable, though there is annual variation in populations among species.
Trumpeter Swans	Trumpeter swans were considered endangered in the 1970s. Monitoring efforts shows that their numbers continue to increase in Yukon. All Canadian areas of the Rocky Mountain and Pacific Coast Swan Populations exhibited growth since the 2010 survey. The 2015 North American Trumpeter Swan Survey estimate for the Canadian portion of the Rocky Mountain Population was 16,143, an 80 per cent increase compared to the 8,950 estimate for 2010. The 2015 estimate for the Canadian portion of the Pacific Coast Population was 2,979, a 106 per cent increase compared to the 1,443 estimate for 2010.

Species at risk

Indicator	Highlight
Number of species at risk in Yukon	As of 2017, COSEWIC has identified 769 populations of 753 species at risk in Canada, of which 36 occur in Yukon. The number of species at risk in Yukon has increased over time (Figure 1), and is expected to continue to increase as more species are assessed. Three fish populations and the Bearded Seal are considered Data Deficient, not enough information is available to assess their status. Thirty-five additional Yukon species have been assessed as Not At Risk including Peregrine Falcon and Grey Whale (Eastern North Pacific Population) that were reassessed in 2017.