

Interim State of the Environment Report 2024



A report on environmental indicators

**Yukon**

Acknowledgements

Reviewers and contributors

Government of Yukon

Department of Environment:

Patrick Huggins, Julien Schroder, Alexandre Mischler, Anthony Bier, Jonathan Kolot, Holly Goulding, Ghislain de Laplante, Emilie-Jeanne Bercier, Devon O'Connor, Aaron Barker, Brendan Mulligan, Cole Fischer, Norbert Botca, Shannon Trott, Amy Law, Tyler Kuhn, Caitlin Willier, Randi Mulder, Kelsey Russell, Mike Sutor, Cameron Sinclair, Jane Harms and Maud Henaff

Department of Energy, Mines and Resources: Mark Pedersen

City of Whitehorse: Sara Bos

Yukon Environmental and Socio-economic Assessment Board: Heidi Rumscheidt and Erin Spiewak

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Published 2024

ISBN: 978-1-55362-921-4

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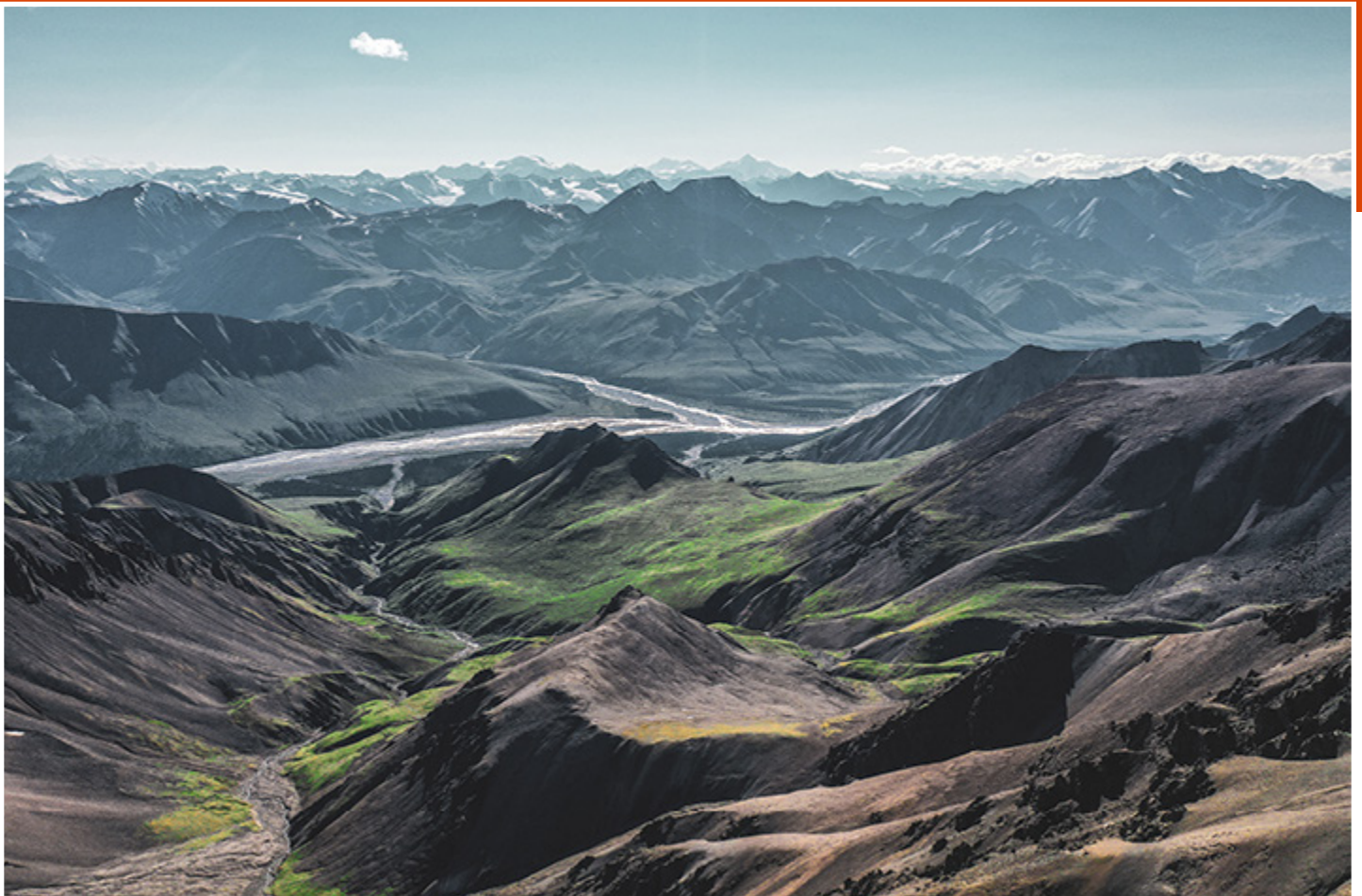
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Introduction

The 2024 Interim State of the Environment Report is a reflection on the status of the environmental conditions in the Yukon. It is a collection of information on climate change, land, air, water and wildlife from scientific experts, governments, and partners. The indicators presented in this report are based upon data available at the conclusion of 2023. Indicators are used to evaluate and demonstrate which environmental conditions are improving, remaining stable or declining.

The 2024 Interim Report is intended to be read in conjunction with the 2023 State of the Environment Report for a comprehensive understanding of the indicators and their significance. The indicators presented in this interim report do not provide all information on a given topic, but they can be used to track, interpret and monitor changing environmental conditions. Full state of the environment reports are published on a triennial basis. The next full report will be published in 2026 based upon environmental data available at the conclusion of 2025.



A view into Kluane National Park



A wetland of the M'Clintock River near Mount Lorne

Highlights



Climate change

The extent and volume of sea ice in the Arctic have continued their long-term trend of decline, highlighting the continuing impacts of rising global temperatures and climate change on the North and the people who live here. Average temperature and precipitation in the Yukon have increased in the past several decades and are projected to continue increasing.



Air

No new data was available in 2023. Refer to the [Yukon State of the Environment Report 2023](#) for the latest reporting information on these indicators.



Water

There is a general increase in the volume of snowpack across the Yukon. There has also been an increase in annual minimum river flows in the territory, as well as some increases in maximum river flows. Ice breakup on the Yukon River near Dawson City occurred in early May of 2023. This was later than in 2022, but still early compared to the historical record.



Trumpeter swans at Tagish Lake

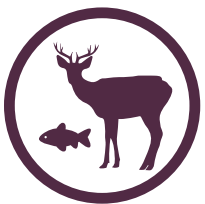


Land

The population of the Yukon grew by 3.3 per cent in 2023, primarily in the Whitehorse area. This rate of growth is consistent with previous years.

In 2023, waste diverted from the Whitehorse Waste Management Facility increased by approximately 6 per cent.

Approximately 21 per cent of the territory has been declared as protected under the Canadian Protected and Conserved Areas Database.



Fish and wildlife

The Yukon continues to have one of the lowest percentages of introduced species and the Department of Environment is continuing work on an invasive species observation database.

The number of Chinook salmon that returned to the spawning grounds in the upper Yukon River, though higher than the historic low in 2022, was lower than the escapement goal for the fourth year in a row.

Climate change



1. Arctic sea ice extent and volume

The year 2023 saw lower sea ice extent and volume than the previous year. The declining trends show the impacts of climate change in the Arctic Ocean and Northern seas, and highlights the widespread effects of climate change on the environment.

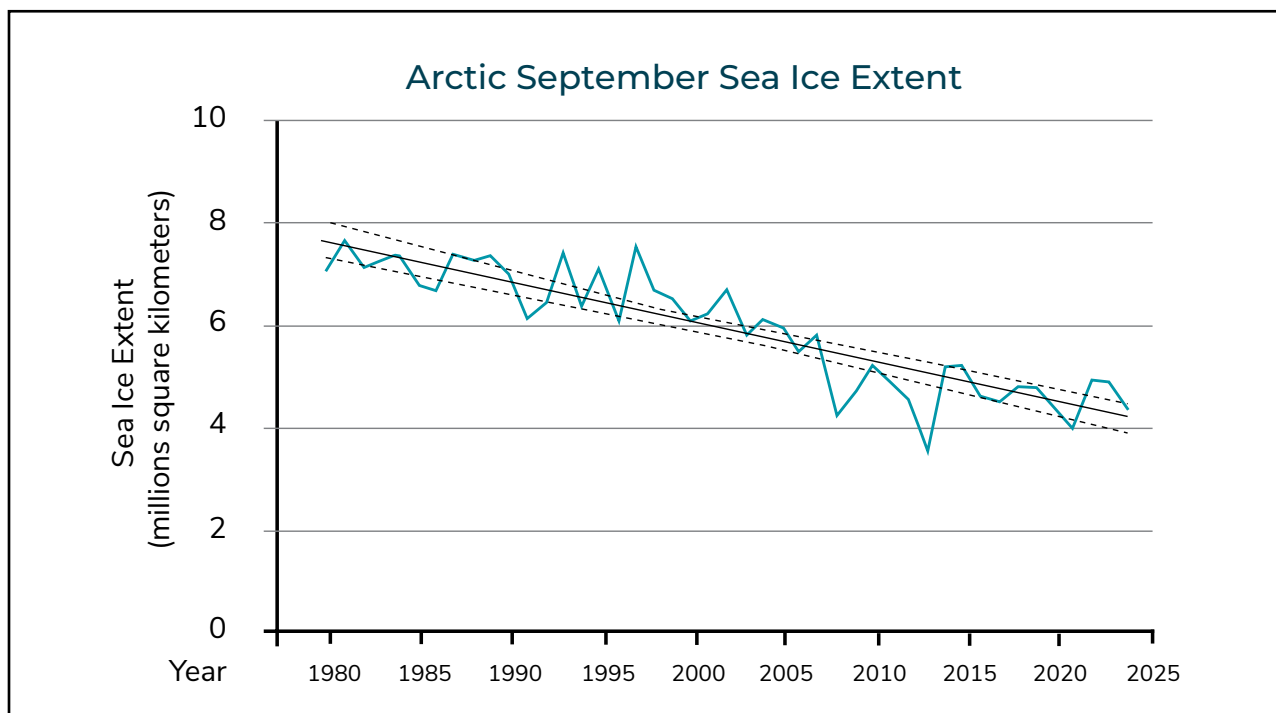


Figure 1: September sea ice area (million km²). The solid black line represents the trend, and the dashed lines indicate the confidence interval of the trend line.



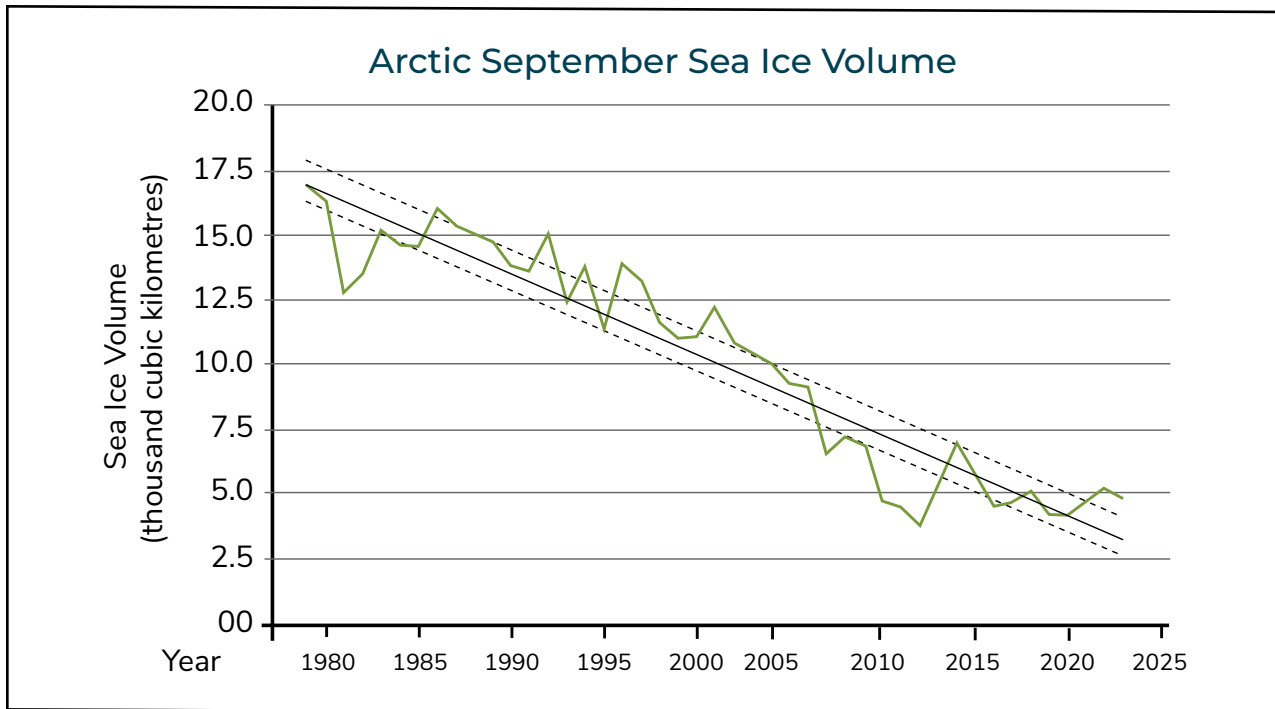


Figure 2: September sea ice volume (thousand km³). The solid black line represents the trend, and the dashed lines indicate the confidence interval of the trend line.

References

Fetterer, F., K. Knowles, W.N. Meier, M. Savoie, and A.K. Windnagel. 2017, updated daily. Sea Ice Index, Version 3. Boulder, Colorado USA. Ice Extent. NSIDC: National Snow and Ice Data Center. Available from: <https://nsidc.org/data/g02135/versions/3>.

Polar Science Center. 2021. PIOMAS Ice Volume Data, 1979-present. University of Washington. Available from: <https://psc.apl.uw.edu/research/projects/arctic-sea-ice-volume-anomaly/>.

Schweiger, A., R. Lindsay, J. Zhang, M. Steel, and H. Stern. 2011. Uncertainty in Modeled Arctic Sea Ice Volume. *Journal of Geophysical Research: Oceans*, Aug. Available from: [Uncertainty in modeled Arctic sea ice volume - Schweiger - 2011 - Journal of Geophysical Research: Oceans - Wiley Online Library](#)



2. Long term precipitation and temperature variation

The Government of Yukon is collaborating with Environment and Climate Change Canada to enhance temperature and precipitation indicators for the North by improving historical data quality, monitoring efforts, and developing guidance to ensure scientists may use these indicators with confidence.

As the Yukon faces direct impacts of climate change, the Government of Yukon is actively working to reduce the Yukon's greenhouse gas emissions and adapt to the novel challenges facing the territory through the implementation of *Our Clean Future: A Yukon strategy for climate change, energy, and a green economy*. For more information on the Government of Yukon's climate change plan, including targets, actions and the work our partners are doing, refer to the *Our Clean Future Annual Report*, available from: <https://our-clean-future.yukon.ca/>.

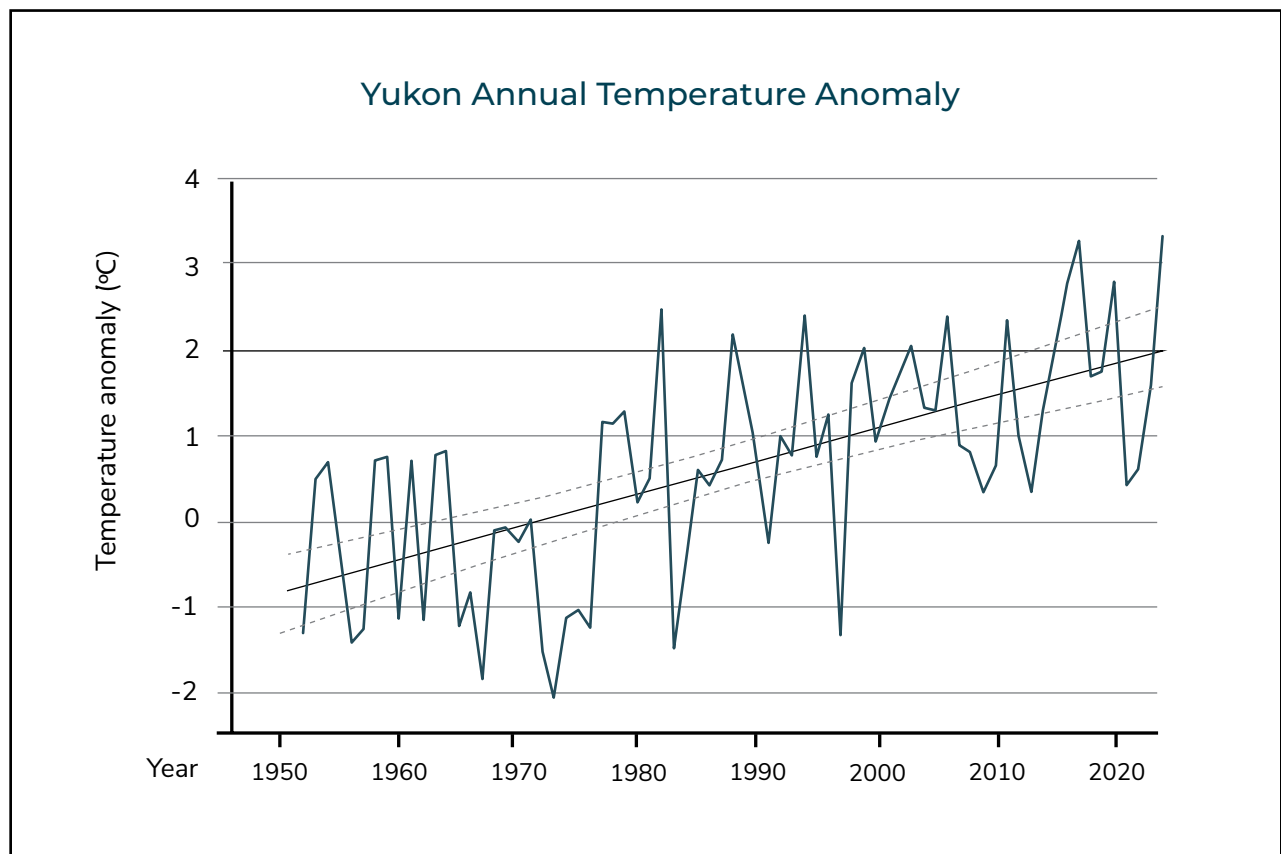


Figure 1: Yukon annual temperature anomaly, 1948 to present, compared to a 30-year climate baseline (1961 to 1990).



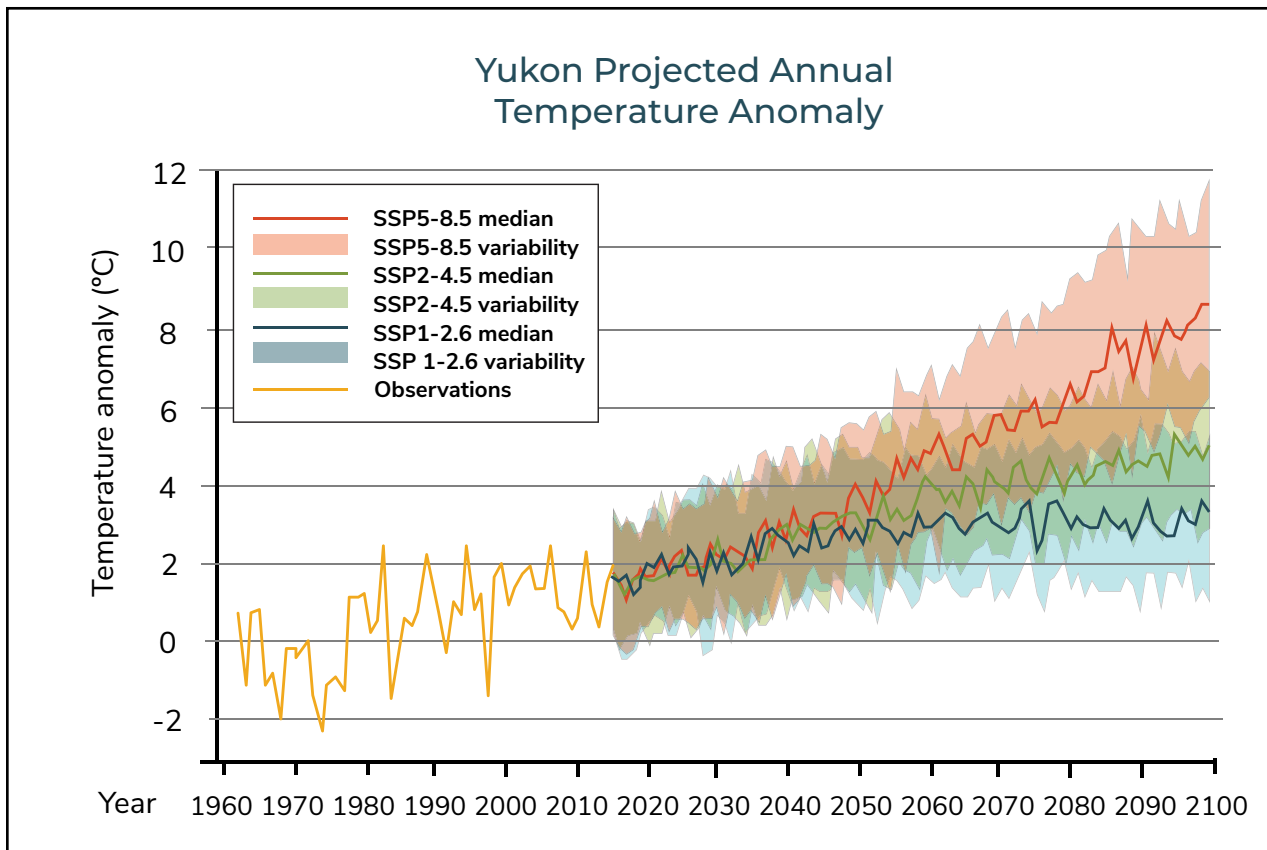


Figure 2: Yukon projected annual temperature anomaly, with three future scenarios. Projections of Temperature and Precipitation models are calculated based on a set of scenarios representing potential future conditions called Shared Socio-economic Pathways (SSPs). Each SSP is based on levels of projected global CO₂ emissions – either best-case reductions (SSP 1-2.6), medium reductions (SSP 2-4.5) or a significant increase in CO₂ (SSP 4-8.5).



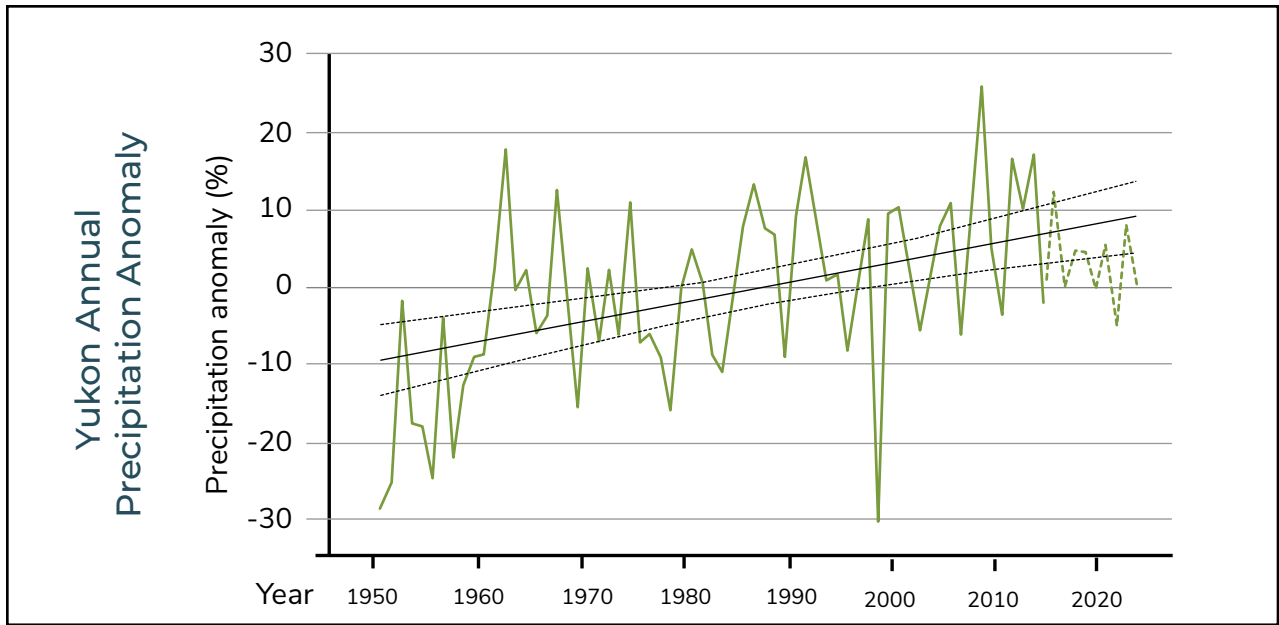


Figure 3: Yukon annual precipitation anomaly, 1948 to present, compared to a 30-year climate baseline (1961 to 1990). There is a gap in official data from 2015 to 2022, represented by the dashed line, so other datasets were analyzed to approximate the precipitation variation.

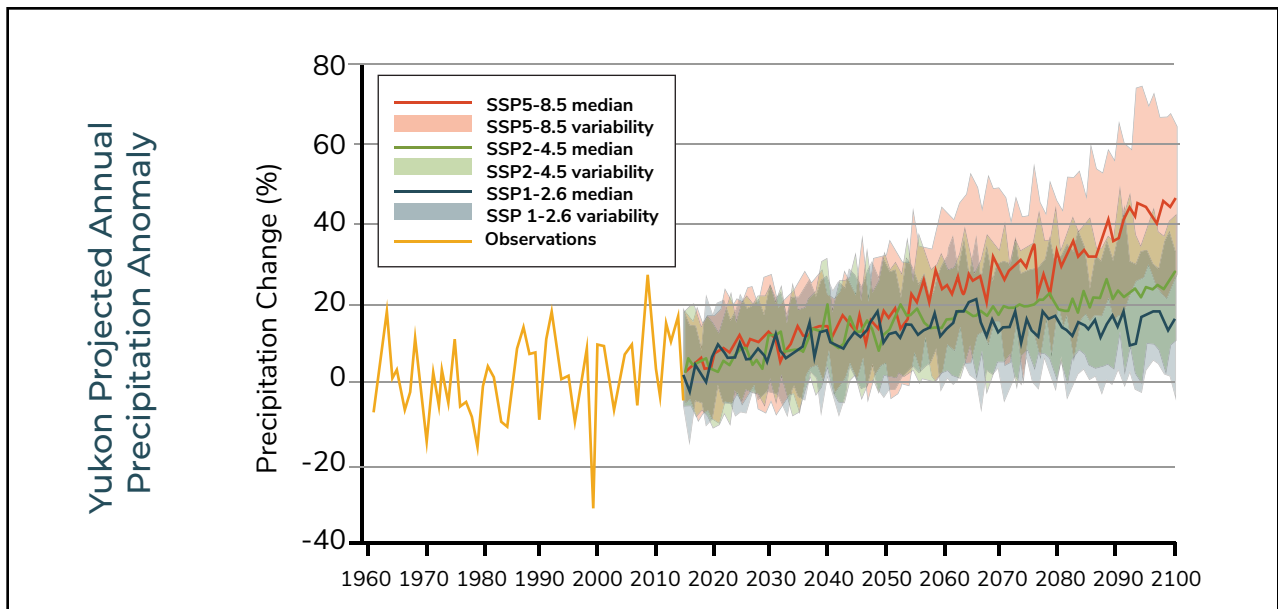


Figure 4: Yukon projected annual precipitation anomaly, with three future scenarios. Projections of Temperature and Precipitation models are calculated based on a set of scenarios representing potential future conditions called Shared Socio-economic Pathways (SSPs). Each SSP is based on levels of projected global CO₂ emissions – either best-case reductions (SSP 1-2.6), medium reductions (SSP 2-4.5) or a significant increase in CO₂ (SSP 4-8.5).



References

Schneider, Udo; Becker, Andreas; Finger, Peter; Meyer-Christoffer, Anja; Rudolf, Bruno; Ziese, Markus (2011): GPCP Full Data Reanalysis Version 6.0 at 0.5°: Monthly Land-Surface Precipitation from Rain-Gauges built on GTS-based and Historic Data. DOI: 10.5676/DWD_GPCP/FD_M_V7_050.

Available from: https://opendata.dwd.de/climate_environment/GPCP/html/fulldata_v7_doi_download.html

Accessed on January 21, 2024.

Understand how SSPs differ from RCP scenarios and learn about key considerations when using SSPs in climate risk assessments. Available from: <https://climatedata.ca/resource/understanding-shared-socio-economic-pathways-ssps/>.

Accessed on April 25, 2024.



Air



3. Levels of particulate matter

No new data was available in 2023. Refer to the [Yukon State of the Environment Report 2023](#) for the latest reporting information on this indicator.

4. Organic pollutants

No new data was available in 2023. Refer to the [Yukon State of the Environment Report 2023](#) for the latest reporting information on this indicator.



Water



5. Snow accumulation

Manual snow surveys are carried out at 52 locations in the Yukon, two in British Columbia and three in Alaska. The manually collected data is augmented by seven strategically located snow pillow stations that collect real-time snow depth and snow water equivalent (SWE) data. In 2023, two new automated stations were installed to augment the manual survey sites at Log Cabin, British Columbia and on Montana Mountain near Carcross. These sites were set up by the Government of British Columbia and the Carcross/Tagish First Nation with assistance from the Government of Yukon.

Trend analysis confirms that snowpack is generally increasing in many parts of the territory (Figure 1). Averaged across all 57 manual snow survey locations, there is an increase in maximum SWE of 4.6 per cent per decade, totaling to a 19.7 per cent increase since 1980. All snow survey data are available at <https://open.yukon.ca/data/datasets/yukon-snow-survey-network>.

References

Snow Conditions and Water Supply Bulletin - Province of British Columbia.

Available from: <https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/drought-flooding-dikes-dams/river-forecast-centre/snow-survey-water-supply-bulletin>

Snow Bulletins and Water Supply Forecasts - Yukon Territory.

Available from: <https://yukon.ca/en/snow-surveys-and-water-supply-forecasts>

Snow Bulletins and Water Supply Forecast - State of Alaska.

Available from: <https://www.nrcs.usda.gov/alaska/snow-survey>



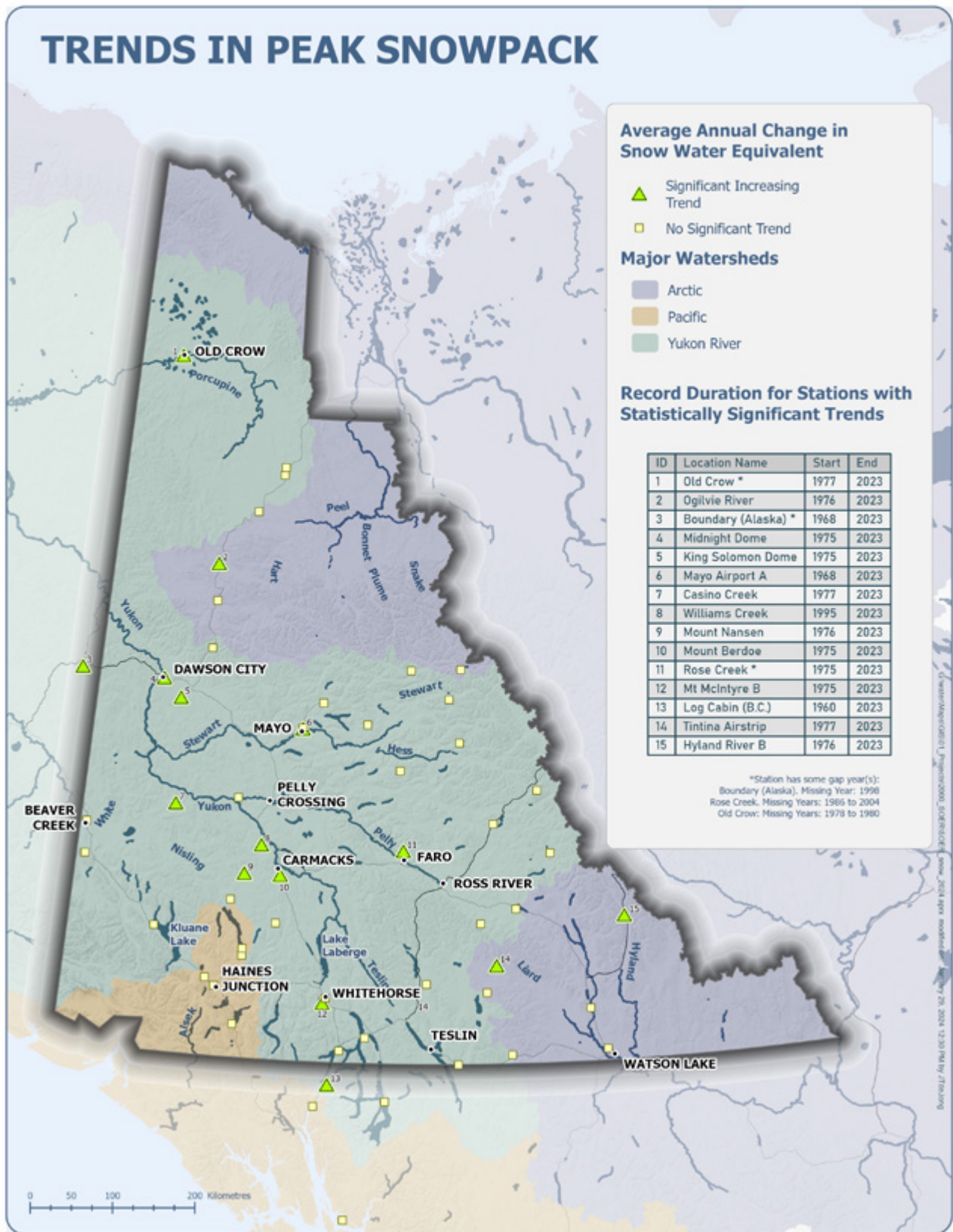


Figure 1: Trends in peak snowpack



6. Extreme high and low water in lakes and rivers

Water level gauges and associated discharge measurements are carried out at 75 locations by Environment and Climate Change Canada through the Canada-Yukon Agreement for Hydrometric Monitoring and at 16 additional Government of Yukon stations.

River flows

In 2023, 54 locations were analysed for minimum flow trends (Figure 1) and 65 for maximum flow trends (Figure 2). Most of these locations are monitoring hydrological conditions on large rivers (rivers that have drainage areas greater than 1,000 km²) in the following basins:

- ▶ Tàgé Cho / Tágà Shāw (Yukon River) basin
- ▶ Alsek River basin
- ▶ Liard River basin
- ▶ Teetł'it Gwinjik (Peel River) basin
- ▶ Ch'ōdènjik (Porcupine River) basin

Annual minimum flows showed statistically significant increases at 42 locations over their respective periods of record which ranged from 10 to 71 years, while the other 12 locations showed no statistically detectable change (Figure 1). This paints a clear picture of increasing winter base flows across the territory.

Tàgé Cho, the Northern Tutchone name for the Yukon River, translates into Great River.

Tágà Shāw, the Southern Tutchone name for the Yukon River, translates into Great River.

Ch'ōdènjik (Porcupine River) translates into “porcupine quills river”.

Teetł'it Gwinjik the Gwitch'in name for the Peel River translates into: Teetł'it - headwaters region;

Gwinjik - along the course of river.



Annual minimum and maximum water levels were analysed for five lakes¹:

- ▶ Atlin Lake (B.C.)
- ▶ Bennett Lake
- ▶ Łù'àn Mǎn (Kluane Lake)
- ▶ Tthechàl Mǎn (Sekulmun Lake)
- ▶ Teslin Lake

Bennett Lake and Łù'àn Mǎn show declines in minimum winter levels, while minimum levels have slightly increased in Tthechàl Mǎn. A decrease in summer maximum water levels is only evident on Łù'àn Mǎn, and this change is directly linked to the diversion of meltwaters from the Kaskawulsh glacier to the Alsek River drainage in 2016 owing to glacial retreat (Shugar et al. 2017).

Tthechàl Mǎn means “stone scraper lake” in Southern Tutchone, while Łù'àn Mǎn means “big white fish lake”.

¹ Lakes influenced by hydroelectric generation are excluded from consideration due to the confounding effect of increased river flows.



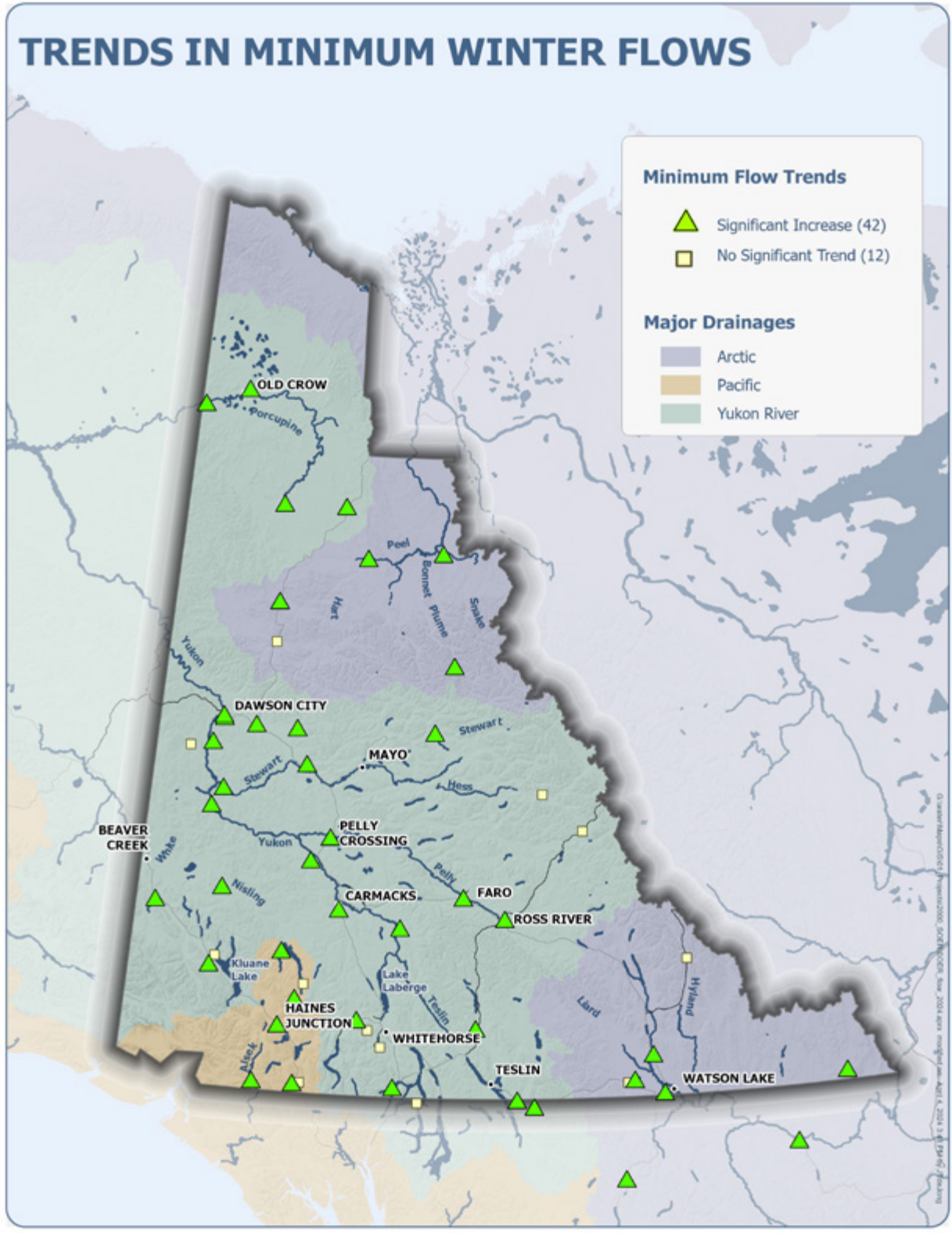


Figure 1: Trends in annual **minimum** river flows.



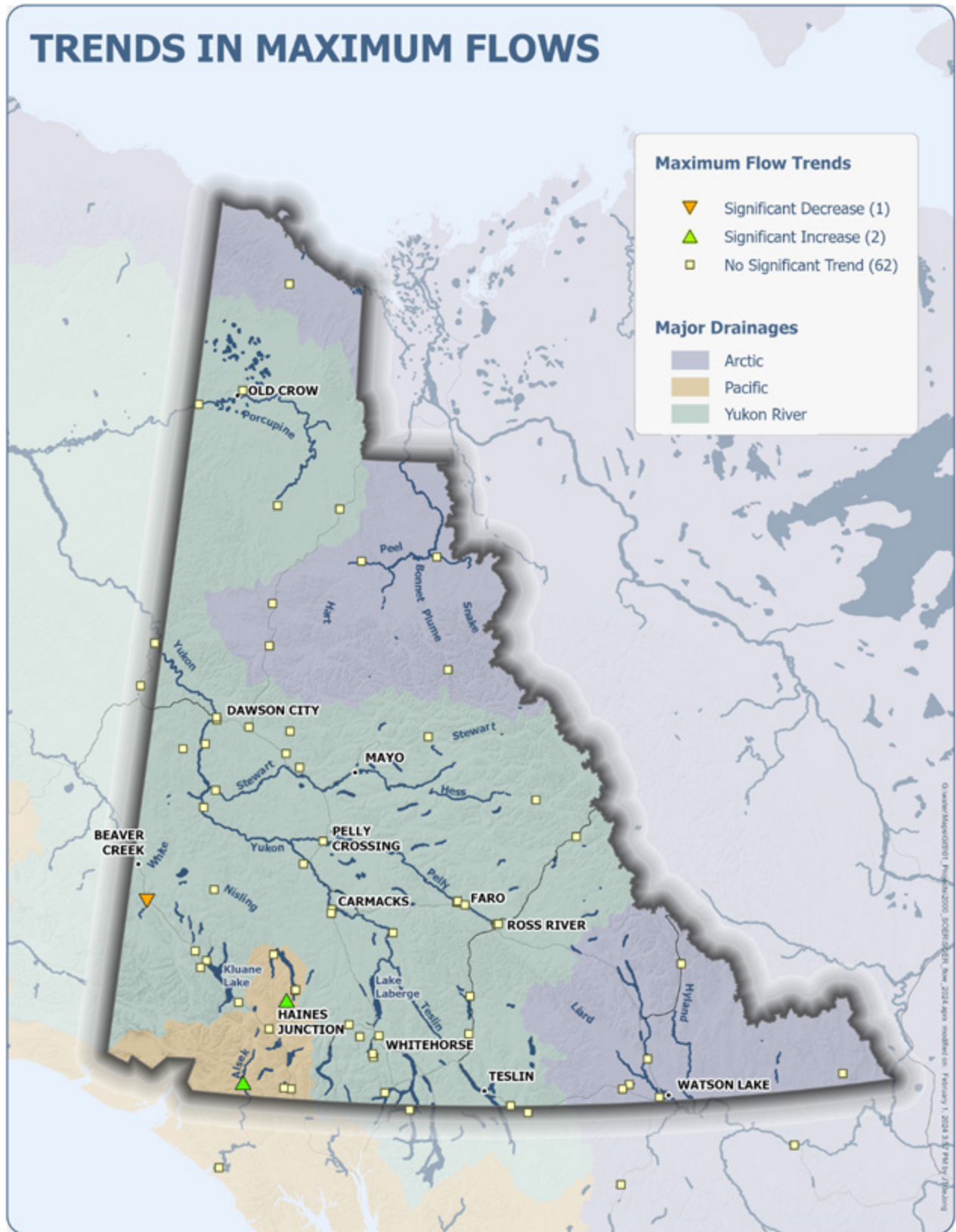


Figure 2: Trends in annual maximum river flows.





Hydrologist Emilie-Jeanne Bercier collecting a flow measurement at Blind Creek near Faro (Alexandre Mischler, 2023).

References

Shugar, D., Clague, J., Best, J. et al., 2017. River piracy and drainage basin reorganization led by climate-driven glacier retreat. *Nature Geosci* 10, 370–375. Available from: <https://doi.org/10.1038/ngeo2932>

Yukon Geographical Names Program. 2022. Gazetteer of Yukon. Available from: <https://yukon.ca/sites/yukon.ca/files/tc/tc-gazetteer-of-yukon.pdf>



7. Yukon River ice breakup at Dawson City

Ice breakup on the Yukon River (named Chu Kon' Dëk in the Hän language, meaning “sparkling water river”) at Dawson City now occurs almost eight days earlier on average since data collection began in 1896 (Figure 1). The Government of Yukon uses satellite images, remote cameras, a network of monitoring stations and computer models to forecast the timing and potential severity of breakup on the Yukon River at Dawson City.

River ice processes are evolving with climate change, affecting the timing and intensity of breakup and the severity of ice jams. To better understand these changes and improve forecasting tools, the Government of Yukon is working with researchers from Yukon University to develop and strengthen breakup models for Dawson City and other communities.

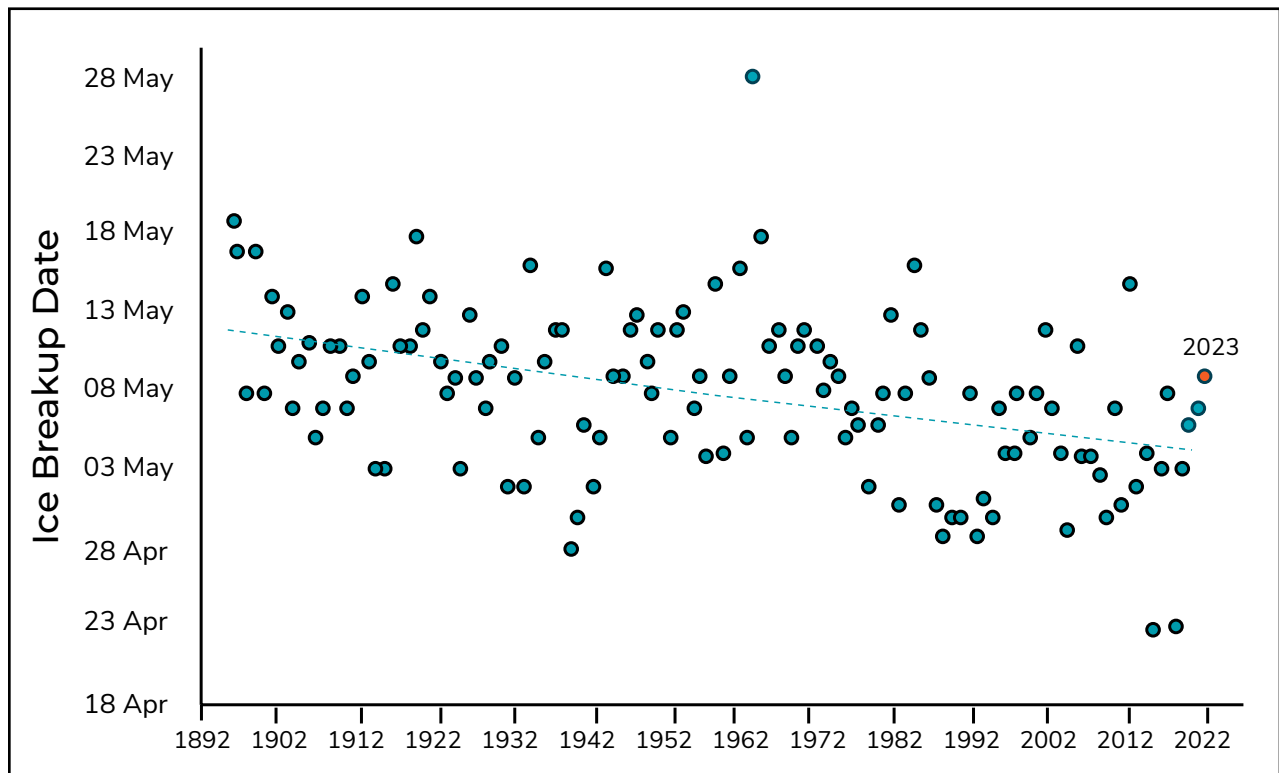


Figure 1: Yukon River at Dawson City breakup date by year, 1896 to 2023.





The Yukon River ice jam below Fortymile (Anthony Bier, May 11, 2023).



References

An annual photo documentary of the spring breakup at the confluence of the Yukon and Klondike rivers, Dawson City, Yukon. Available from: <https://yukonriverbreakup.com/>

Historical Dawson City River ice breakup data, courtesy of IODE Dawson Chapter.
Available from: <https://www.iodedawson.com/>



Breakup ice jam at the Yukon and Fortymile River confluence (Anthony Bier, May 11, 2023)



8. Water quality

Water Resources Branch staff and partners collect monthly water quality samples from 13 rivers across the territory. These partners include members of the Daylu Dena Council, the Tr'ondëk Hwëch'in Government, Vuntut Gwitchin Government, and the First Nation of Na-Cho Nyäk Dun.

Data from these samples are available on a federal portal, which can be found by selecting the online data tab at: <https://www.canada.ca/en/environment-climate-change/services/freshwater-quality-monitoring.html>

Environment and Climate Change Canada performs analysis of the data using consecutive 3-year periods. The most recent Water Quality Indexes were calculated using only two years of data (2021 and 2022), as too few samples were collected in 2020 due to the pandemic (Table 1).

Water Quality Guidelines:

Scope: the number of parameters not meeting water quality guidelines.

Frequency: the number of times these guidelines are not met.

Amplitude: the amount by which the guidelines are not met.

Excellent (95-100)	Aquatic life is not threatened or impaired. Measurements never or very rarely exceed water quality guidelines.
Good (80-94)	Aquatic life is protected with only a minor degree of threat or impairment. Measurements rarely exceed water quality guidelines and, usually, by a narrow margin.
Fair (65-79)	Aquatic life is protected, but at times may be threatened or impaired. Measurements sometimes exceed water quality guidelines and, possibly, by a wide margin.
Marginal (45-64)	Aquatic life frequently may be threatened or impaired. Measurements often exceed water quality guidelines by a considerable margin.
Poor (0-44)	Aquatic life is threatened, impaired or even lost. Measurements usually exceed water quality guidelines by a considerable margin.



Location	Year 2005 -07	Year 2006 -08	Year 2007 -09	Year 2008 -10	Year 2009 -11	Year 2010 -12	Year 2011 -13	Year 2012-14	Year 2013 -15	Year 2014 -16	Year 2015 -17	Year 2016 -18	Year 2017 -19	Year 2018 -19	Year 2019 & 21	Year 2021 -22
Klondike River upstream of Bonanza Creek	66.8	66.4	67.4	74.2	74.2	74.2	74	73.8	73.7	73.7	86.6	80.1	80.4	80.2	80.1	80.6
Liard River at Upper Crossing	87.2	93.6	93.6	87.2	85.5	80.6	80.6	N/A	80.6	80.6	80.5	80.6	80.6	80.6	74.1	72.9
South McQuesten River downstream of Flat Creek	64.4	64.3	64	70	69.5	70.1	70.4	70.6	70	63.8	63.7	63.5	64.1	64.1	70.8	82.2
Yukon River upstream of Takhini River	100	100	100	93.6	93.6	93.6	93.6	93.6	93.6	100	100	93.6	93.6	93.6	100	87.1
Ogilvie River above Engineer Creek	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	72.9	73.2	73.5	67.2
Alsek River above Bates River in Klwane National Park	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	87.3	87.6	93.4	87.7
Porcupine River above Old Crow River	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	70.4	70.3	70.3	75.7

Table 1: Environment and Climate Change Canada Water Quality Index scores for Yukon monitoring stations calculated as three-year rolling averages.



9. Groundwater levels in the Yukon Observation Well Network

The Yukon Observation Well Network (YOWN) is a groundwater monitoring program operated by the Government of Yukon. In 2023, peak annual groundwater levels decreased in most wells (Figure 1).

Sixteen monitoring wells were added to YOWN in 2023. Five existing wells were adopted to the network and eleven wells were commissioned by Water Resources Branch. Many of the new wells were installed to strengthen understanding of fundamental groundwater behaviour in aquifers underlying communities (including Beaver Creek, Dawson City, Haines Junction, Mayo, and Ross River) within the municipal footprints.

Telemetry systems were installed at two YOWN wells to enable near real-time monitoring of groundwater levels at these locations. The locations were chosen because of the interest in groundwater-surface water interactions in areas at risk of flooding (in these cases, Carmacks and Army Beach). These are the first telemetry systems to be installed at wells in the network.



Change in Peak Groundwater Levels (2022-2023)

All YOWN wells with sufficient data quality and quantity for analysis (35/81)

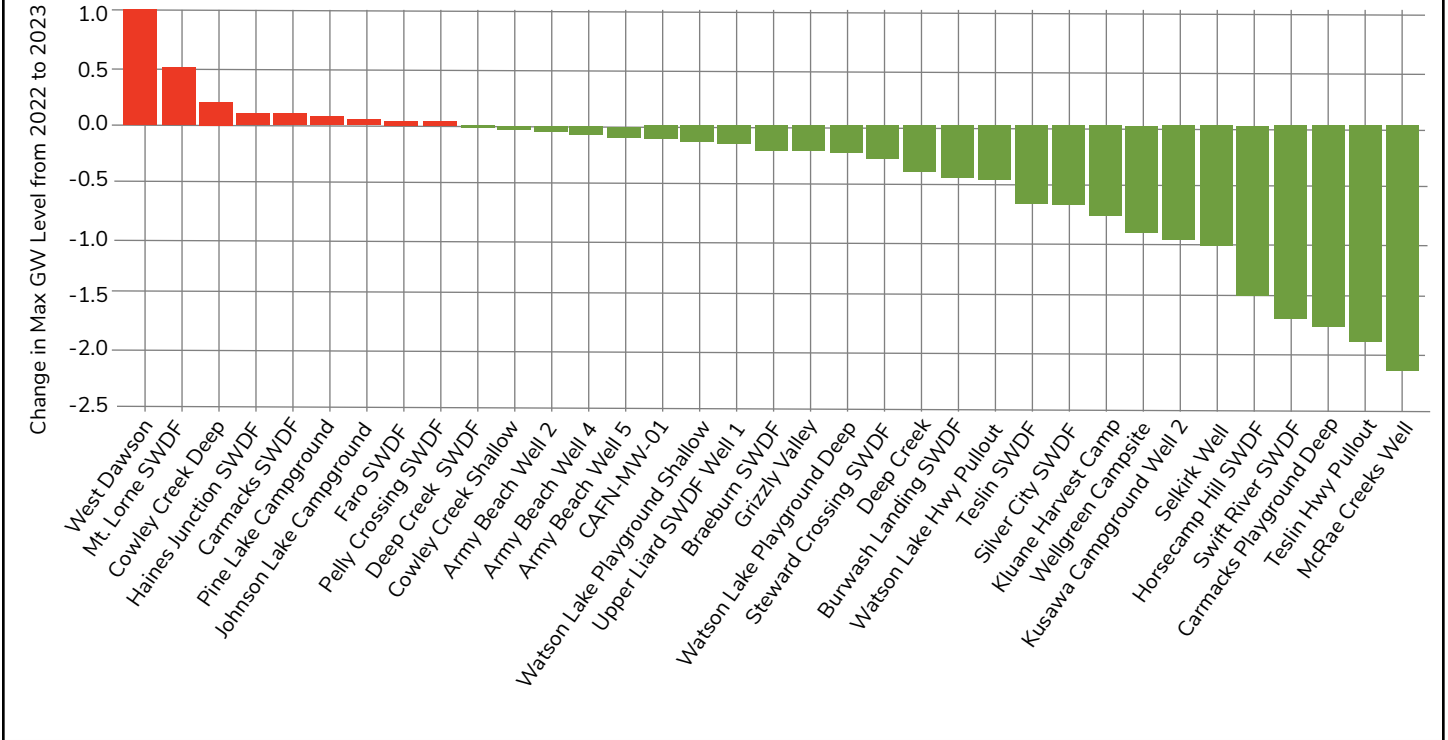


Figure 1: Changes in peak groundwater levels (2022-2023). Plot generated: 2023-12-06 by the Yukon Observation Well Network.





Groundwater Technologists Norbert Botca (right) and Cole Fischer (left) pictured after the installation of a telemetry system on a monitoring well at the Carmacks playground (Brendan Mulligan, 2023).



Land



10. Population of the Yukon

The estimated population of the Yukon increased by 3.3 per cent in 2023; from 44,160 on September 30, 2022, to 45,597 on September 30, 2023. The distribution of the population remains uneven across the territory, with the majority of both the population and growth occurring in the Whitehorse area (Figure 1).

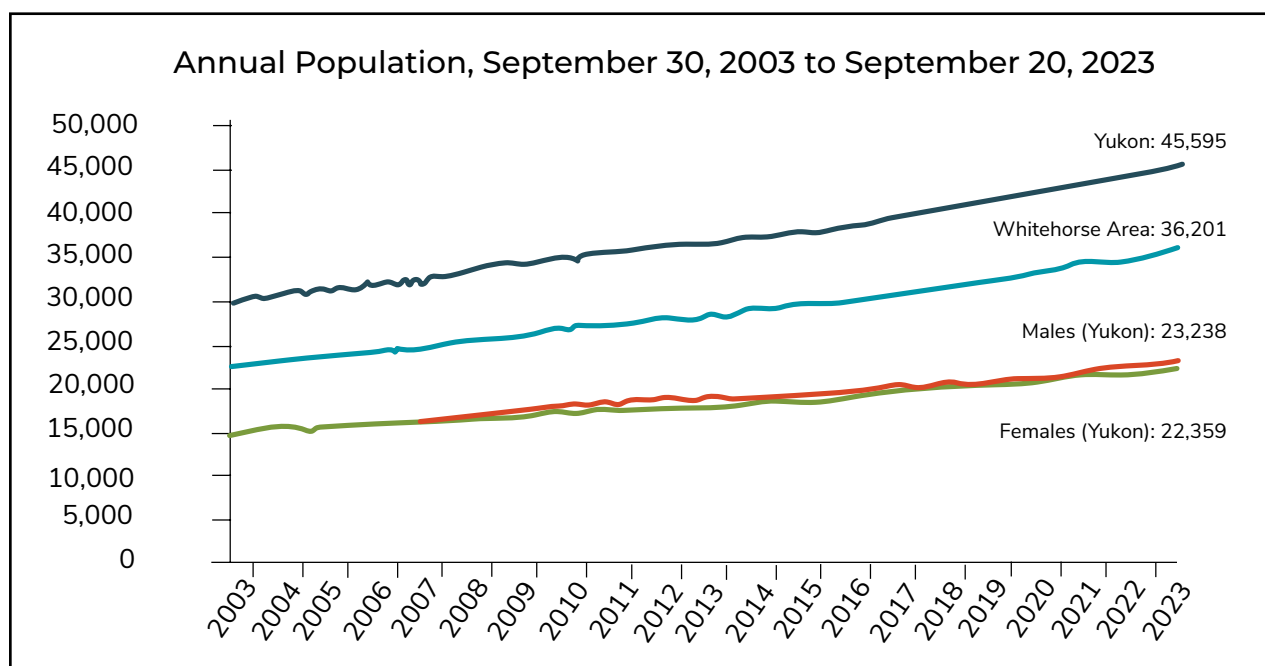


Figure 1: Yukon total and Whitehorse area annual population from 2003 to 2023

References

Population Report Third Quarter, 2023. Yukon Bureau of Statistics. Available from: <https://yukon.ca/sites/yukon.ca/files/ybs/fin-population-report-q3-2023.pdf>



11. Regional Land Use Planning

The Dawson Regional Land Use Plan is in the approval process following joint public engagement from both the Government of Yukon and the Tr'ondëk Hwëch'in Government. The plan recommends protection for Special Management Areas, identifies important caribou and wetland stewardship areas, outlines integrated stewardship areas, and includes three areas for future sub-regional planning.

The Yukon Land Use Planning Council has recommended that future planning occur in the Northern Tutchone Region. The Council has formally recommended a General Terms of Reference for a Na-Cho Nyäk Dun Regional Planning Commission, and sent that recommendation to the First Nation of Na-Cho Nyäk Dun and the Government of Yukon for consideration in late 2023.

A progress report on the implementation of the *Peel Watershed Regional Land Use Plan* was released in August of 2023.

References:

Yukon Land Use Planning Council (n.d.) Available from: <https://planyukon.ca/>

Dawson Regional Planning Commission (n.d.) Available from: <https://dawson.planyukon.ca/>

The Peel Watershed Plan: progress report. (August 22, 2023) Yukon Land Use Planning Council and the Peel Plan Implementation Committee. Available from: <https://planyukon.ca/peel-watershed-plan-progress-report/>



12. Community and local area planning

No new data was available in 2023. Refer to the [Yukon State of the Environment Report 2023](#) for the latest reporting information on this indicator.

13. Status of parks and protected areas

In 2023, the amount of land in recognized conservation areas in Yukon increased from 99,788 km² to 108,268 km². This increased the area of lands and waters protected in the Yukon to 21.1 per cent. These increases came in part from the *Aullaviat/Anguniarvik Traditional Conservation Area Agreement* and the inclusion of Special Management Areas within the *Peel Watershed Regional Land Use Plan*.

References:

Peel Watershed Regional Land Use Plan (August 22, 2019).

Available from: <https://yukon.ca/en/peel-watershed-regional-land-use-plan>

Aullaviat/Anguniarvik Traditional Conservation Area Agreement. Wildlife Management Advisory Council North Slope (n.d.). Available from: <https://wmacns.ca/yukon-north-slope/land/aullaviat/>



14. Number, type, and location of environmental and socio-economic assessments

Throughout 2023, 170 project proposals were submitted to the Yukon Environmental and Socio-economic Assessment Board (YESAB) for assessment, across multiple sectors and areas of the territory (Figures 1-2). From 2019 to 2023 the most common recommendation (71 per cent) has been that projects proceed with terms and conditions under section 56(1)(b) of the *Yukon Environmental Assessment Act*.

In 2023, one proposal on the Callison Generating Station was submitted for screening to the Executive Committee of YESAB, while three other proposals to the Executive Committee from 2022 remain in progress. Information regarding individual projects can be found on the YESAB Online Registry (yesabregistry.ca).

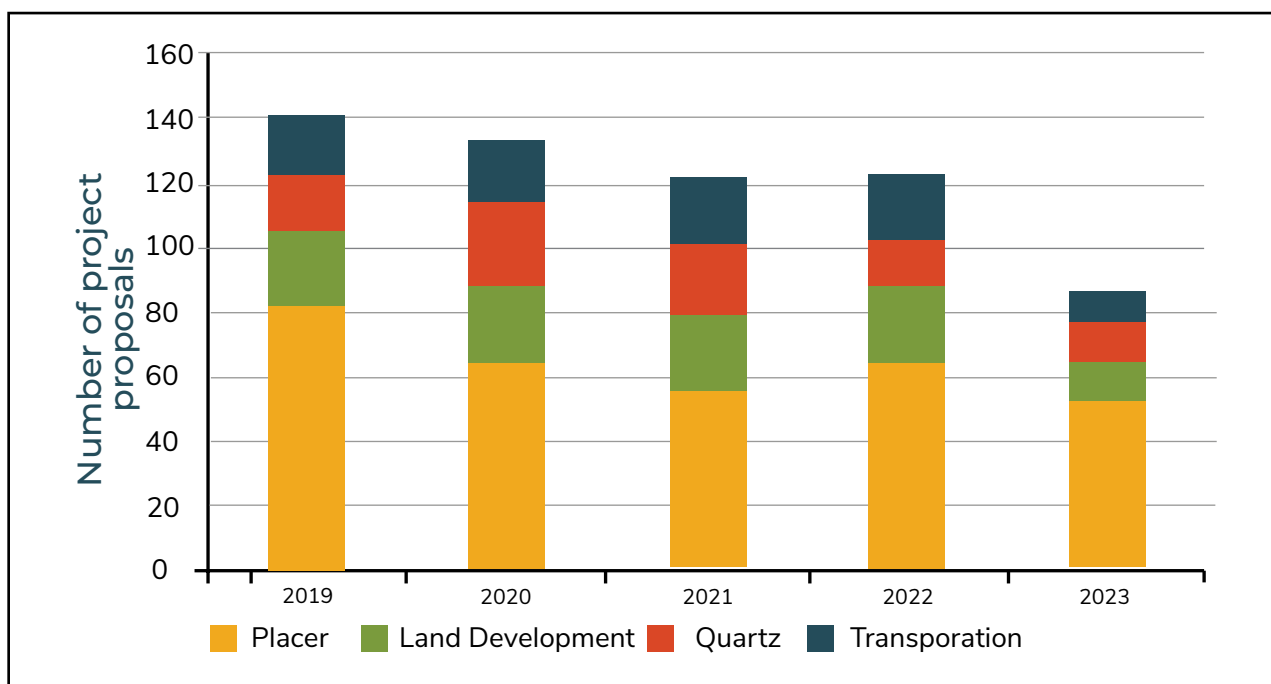


Figure 1: Number and type of project proposal submitted to the YESAB 2019-2023



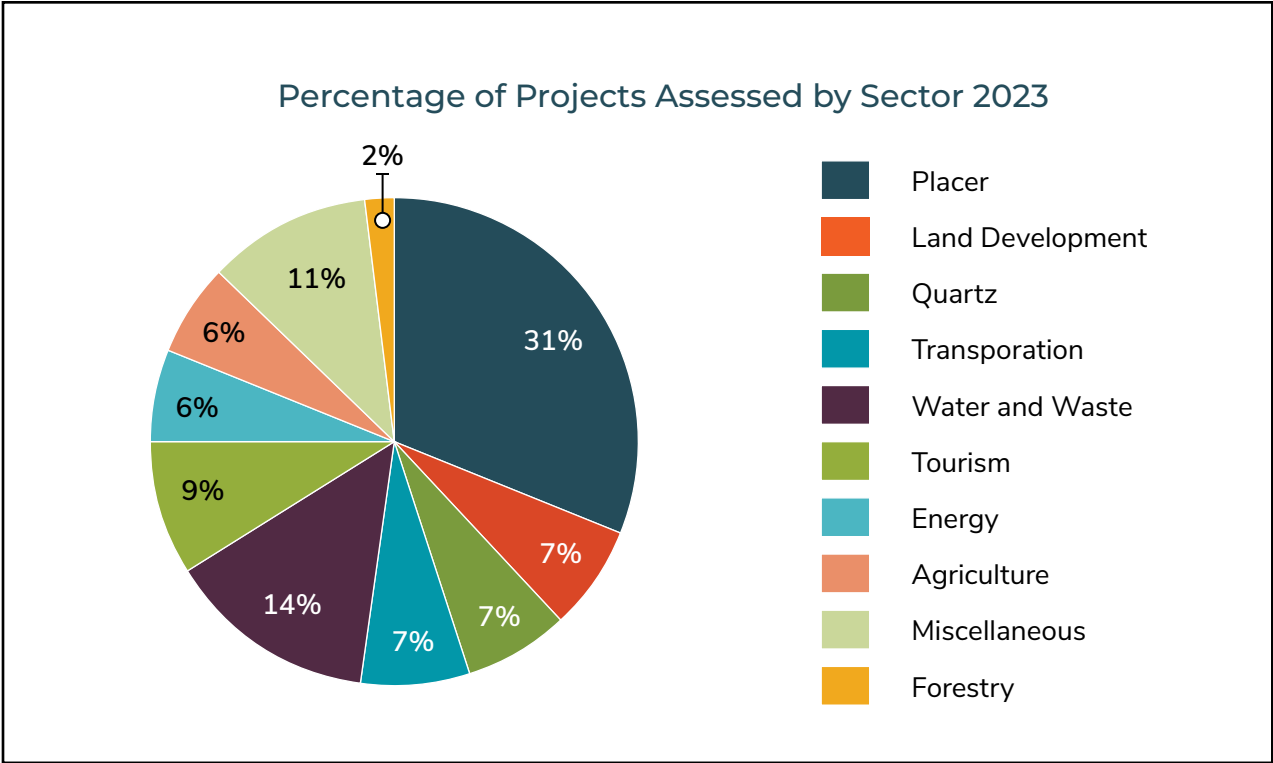


Figure 2: Percentage of projects assessed by sector in 2023



15. Recreational land use and parks

Overnight visitation through campground registration, including repeat visitors, is tracked annually at Yukon parks (Figure 1). The 2023 camping season saw an increase in visitors from the previous year. Yukon parks hosted 88,604 visitors for 60,341 campsites-nights (Figure 2) at 42 road-accessible campgrounds. In 2023 the percentage of campground visitors who were non-residents was approximately 67 per cent.

In 2023, some existing campgrounds were expanded, and maintenance and infrastructure upgrades occurred in many others.

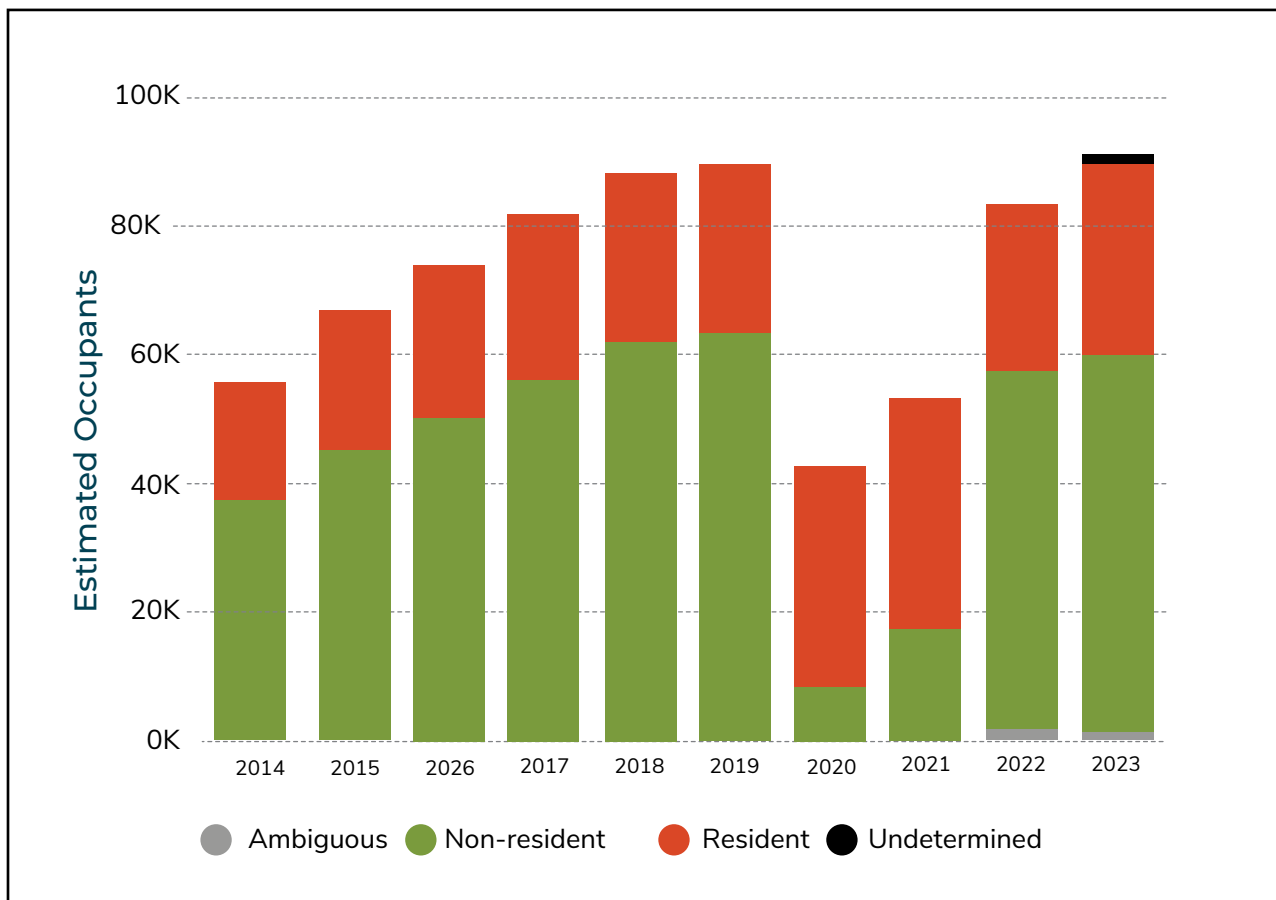


Figure 1: Number of occupants of territorial campgrounds



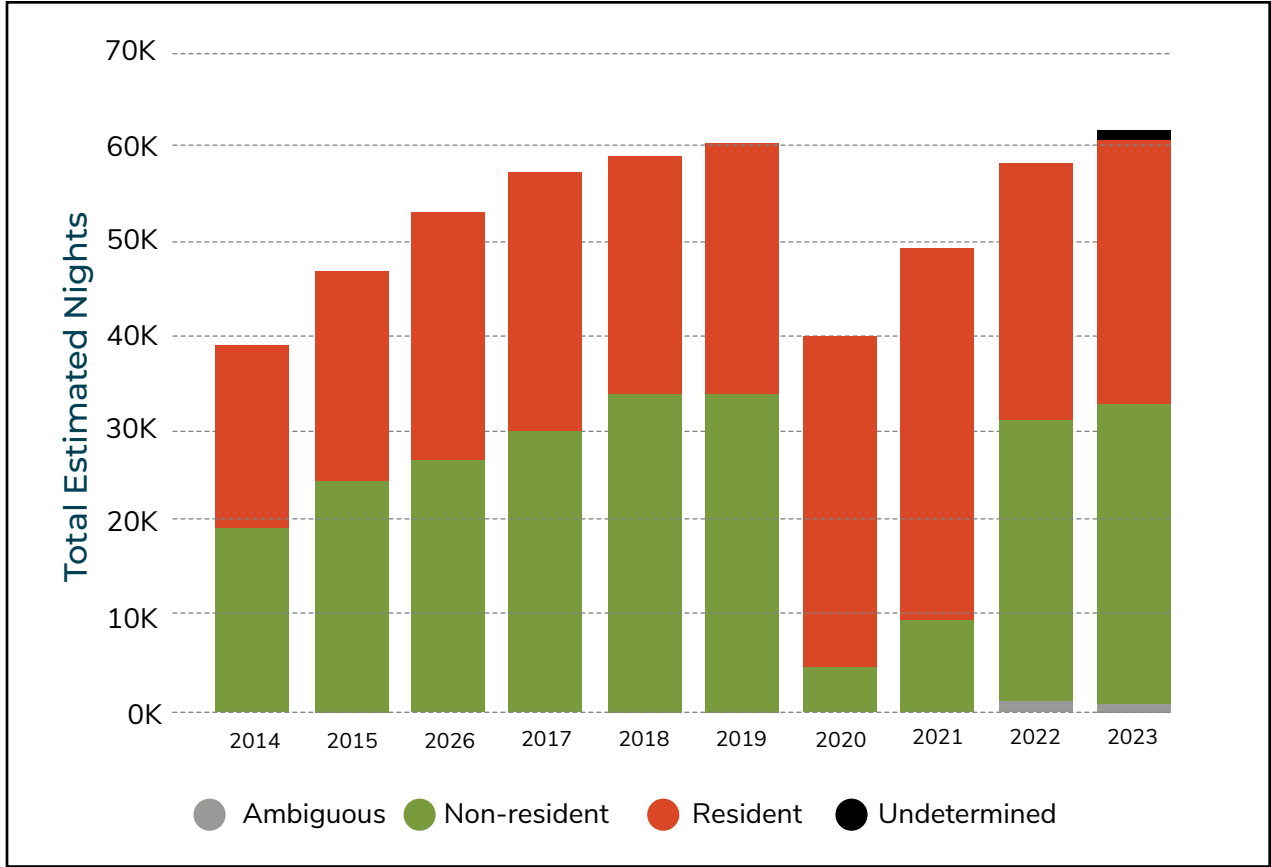


Figure 2: Total campsite nights at territorial campgrounds





Tent sites at Wolf Creek Campground.





A new dock was installed at Pine Lake Campground.



A new dock and boat launch was installed at Twin Lakes Campground.

References:

Yukon Parks Strategy (September 24, 2020). Available from: <https://yukon.ca/en/yukon-parks-strategy>



16. Whitehorse waste management facility

The waste diversion rate at the Whitehorse Waste Management Facility increased in 2023, with a modest increase in organics diversion and a larger increase in recycling diversion (Figure 1). Initiatives such as the two-season waste audit and transfer station upgrades play integral roles in achieving the City of Whitehorse's environmental objectives.

The transfer station upgrades at the Whitehorse Waste Management Facility are progressing. These upgrades will improve operational efficiency, enhance overall waste management infrastructure, and will ensure that the facility remains equipped to handle the evolving needs of the community and maintain high standards of waste management.

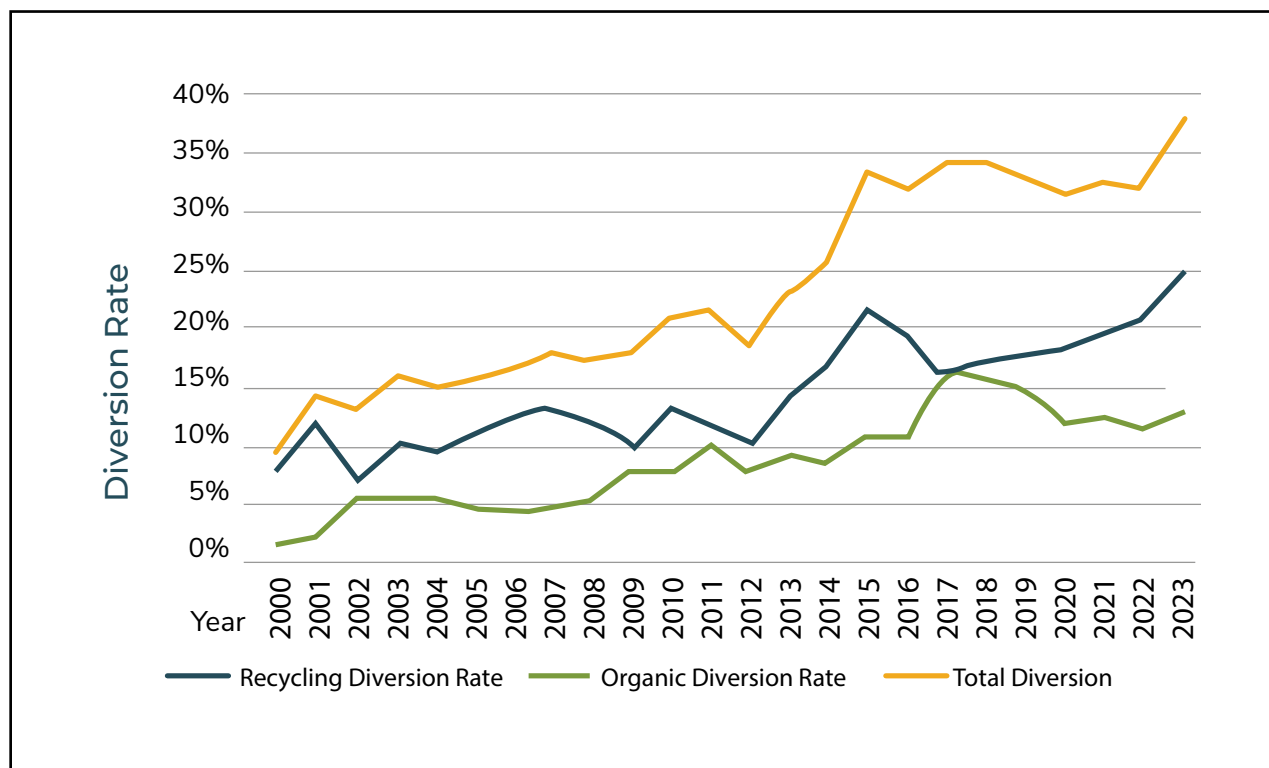


Figure 1: Diversion rate of recycling and organic materials from the City of Whitehorse Waste Management Facility from 2000-2023.



17. Forest health

The Forest Management Branch monitors several different species of native and invasive insects, the spread of forest diseases and abiotic factors across Forest Health Zones (Map 1). In 2023, Forest Health Zone 1 was surveyed, and the resulting data on the number of hectares impacted by each factor is summarized in Table 1.

The Government of Yukon also proactively monitors mountain pine beetle in northern British Columbia via aerial surveys of a border zone consisting of high hazard lodgepole pine that extends 25 km into British Columbia. To date, the mountain pine beetle has not been detected in this region.

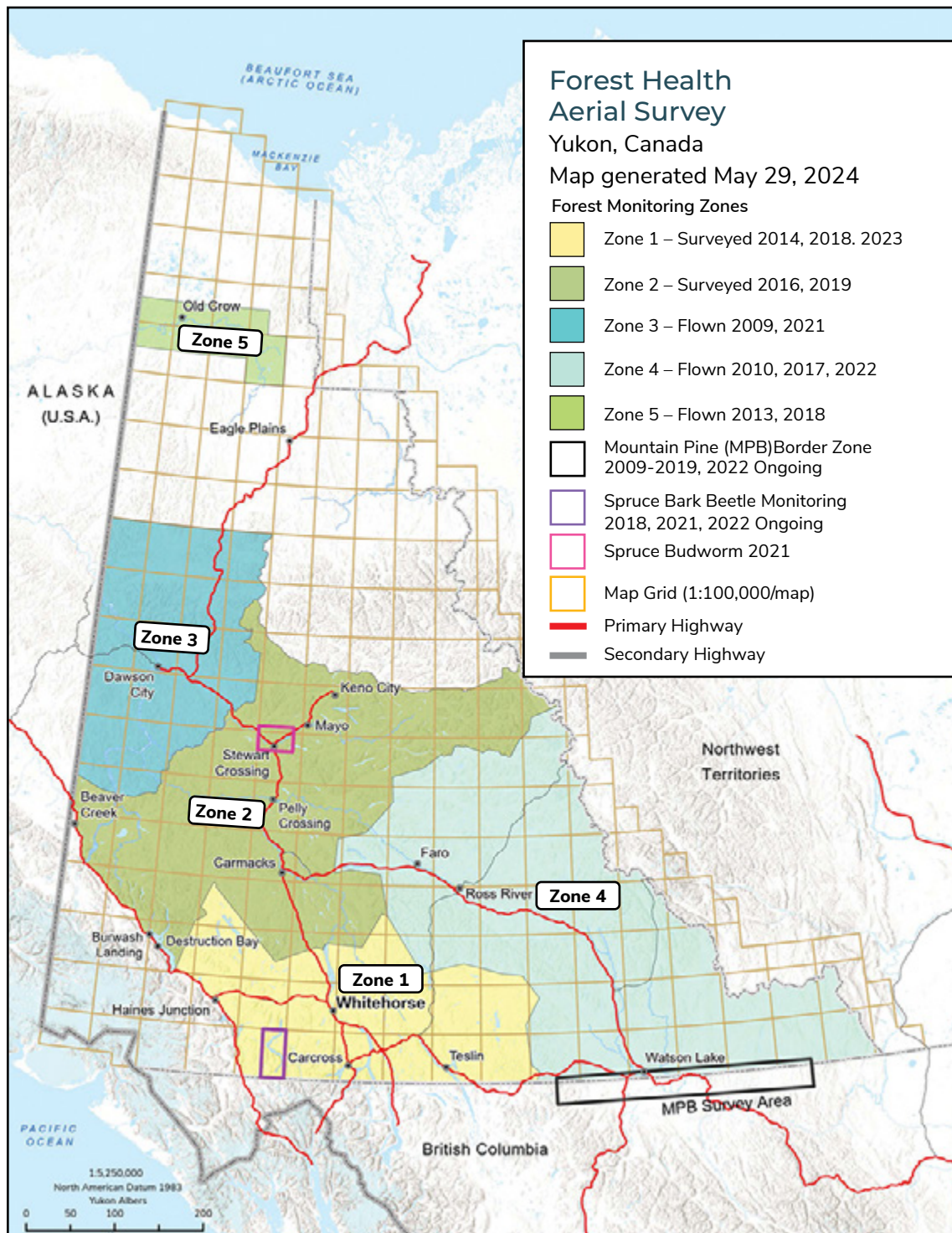
Disturbance Type	Zone 1 (hectares)			
	2009	2014	2018	2023
Biotic				
Aspen Serpentine Leaf Miner	111,720	400	3,257	3,570
with Aspen Decline	0	0	0	1,138
with Large Aspen Tortrix	0	0	0	1,248
Large Aspen Tortrix	0	6,120	2,292	1,248
Large Aspen Tortrix/Aspen Decline	0	0	140	2,350
Spruce Beetle	3,130	2	1,196	927
Western Balsam Bark Beetle	1,465	2,760	1,816	243
Northern Balsam Bark Beetle	0	0	0	0
Willow Leaf Miner	65	0	246	0
Pine Needle Cast	0	0	780	299
Spruce Needle Rust	0	0	45	0
Abiotic				
Flooding and High Water	640	608	346	370
Windthrow	40	10	38	68
Drought	0	0	0	1
Frost	0	0	0	24
Avalanche	0	0	0	2



Disturbance Type	Zone 1 (hectares)			
	2009	2014	2018	2023
Pest Complexes				
Aspen Decline	0	0	2,102	1,500
Porcupine/Lodgepole Pine Beetle/Lps	180	815	1,466	655
Total hectares affected by forest health disturbances	117,240	10,715	13,724	13,562

Table 1. Summary of area affected (hectares) by forest health disturbances in Forest Health Zone 1 in 2009/2014/2018/2023.





Map 1: Yukon Forest Health Zones.





Severe defoliation caused by large aspen tortrix near Eagle Bay, Teslin Lake.





Patches of windthrow near Thirty Mile Lake, northeast of Johnson's Crossing.





Stands with aspen decline symptoms and large aspen tortrix defoliation along the Nisutlin River near Thirty Mile Range, east of Johnson's Crossing.

References:

Forest Health Brochures featuring main pests and pathogens of Yukon (n.d.). Available from: <https://yukon.ca/en/science-and-natural-resources/forests/learn-about-forest-pests-and-diseases>

Canadian Council of Forest Ministers. Forest Pest Working Group (2022). Available from: <https://www.ccfm.org/>

Yukon Forest Health Report. Yukon Energy Mines and Resources. Forest Management Branch. Available from: <https://yukon.ca/en/science-and-natural-resources/forests/learn-about-forest-health>

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British Columbia Ministry of Forests, Lands and Mines and Canadian Forest Service (2023). Available from: <https://www2.gov.bc.ca/gov/content/governments/organizational-structure/ministries-organizations/ministries/forests>



18. Wetlands

The Government of Yukon's Policy for the Stewardship of Yukon's Wetlands was released in 2022. Implementation of the policy will help gather data on the health and extent of Yukon's wetlands. Available information shows that within areas with adequate data in existing protected areas in the Yukon, there are 5,811 km² of wetlands.



Open water in a Yukon wetland. Photo credit Caitlin Willier



References:

Government of Yukon. 2022. A policy for the stewardship of Yukon's wetlands. Government of Yukon, Whitehorse, Yukon, Canada

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The North Yukon Regional Land Use Plan. (June 26, 2009). Government of Yukon and Vuntut Gwitchin Government. Available from: <https://yukon.ca/en/north-yukon-regional-land-use-plan>

Peel Watershed Regional Land Use Plan (August 22, 2019). Available from: <https://yukon.ca/en/peel-watershed-regional-land-use-plan>

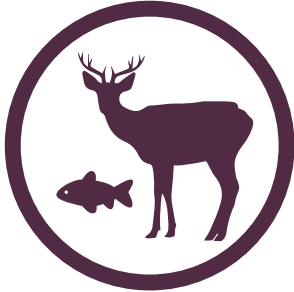
Information sheet: placer mining in the Indian River area. (June 24, 2021). Government of Yukon. Available from: <https://yukon.ca/en/information-sheet-placer-mining-indian-river-area>



Department of Environment staff collecting samples from McClean Creek.



Fish and wildlife



19. Presence of alien and introduced species

The combined effects of climate change and invasive species expanding their ranges and establishing themselves in new areas pose serious threats to global biodiversity, ecosystems and human well-being. The Yukon has a low number of introduced species, with just under two per cent (153) of 8,419 known wild species considered introduced or having introduced populations; a slight increase from the 150 species considered introduced in 2022. Thirty-three of the identified introduced species, predominantly plants, are considered to have a high to medium invasiveness rank in the Yukon.

The Department of Environment is building an invasive species observation database (Figure 1), using existing observations from previous years. As expected, most of the observations are located along Yukon highways and roads due to easy access, and because the transportation network functions as a pathway for invasive species to spread. The Department of Environment is currently working on incorporating iNaturalist observations into the database to extend the range of observations (<https://www.inaturalist.org/places/yukon-ca>).

Native species are those species that are indigenous to a particular area or region. Species that have become established in areas outside their natural range are known as “alien species”. Generally, alien species do not pose a significant risk, and many are even beneficial. However, when alien species are capable of causing significant harm to the environment, the economy or to society, they are referred to as “invasive alien species”





A dense cluster of the invasive species sweetclover. Photo credit Bruce Bennet.



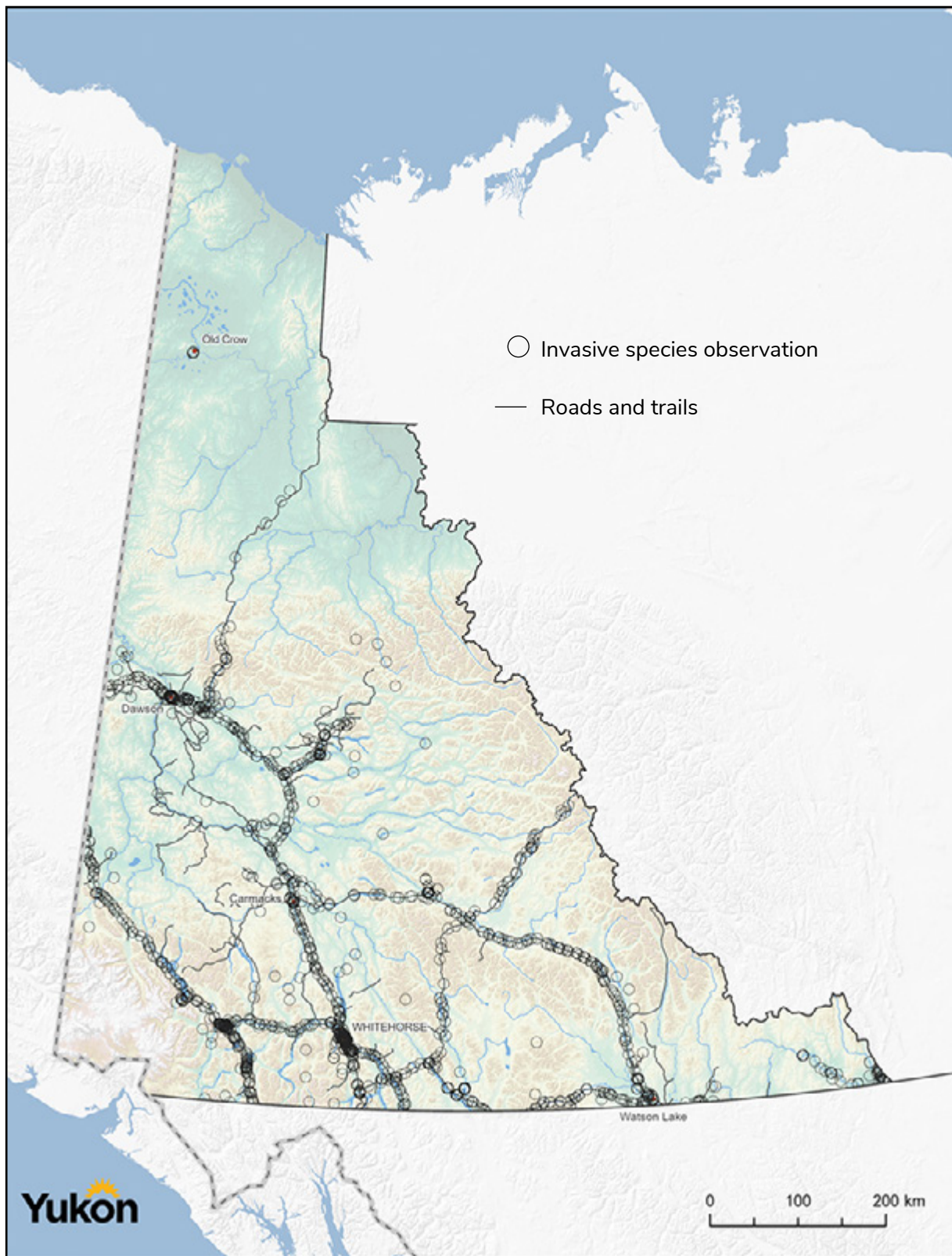


Figure 1: Observations of invasive species in the Yukon.



References:

An invasive alien species strategy for Canada. Environment and Climate Change Canada, 2004. Available from: <https://www.canada.ca/en/environment-climate-change/services/biodiversity/invasive-alien-species-strategy.html>

Government of Yukon. 2013. Management Plan for Yukon Amphibians. Fish and Wildlife Branch, Yukon Department of Environment, Whitehorse, Yukon. ISBN: 978-1-55362-611-4.

Available from: <https://yukon.ca/en/management-plan-yukon-amphibians>

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Available from: <https://cdnsiencepub.com/doi/10.1139/a11-020>

Walther, G.-R., Roques, A., Hulme, P.E., Sykes, M.T., Pyšek, P., Kühn, I., Zobel, M., Bacher, S., Botta-Dukát, Z., Bugmann, H., Czúcz, B., Dauber, J., Hickler, T., Jarošík, B., Kenis, M., Klotz, S., Minchin, D., Moora, M., Nentwig, W., Ott, J., Panov, V.E., Reineking, B., Robinet, C., Semchenko, V., Solarz, W., Thuiller, W., Vilà, M., Vohland, K., and Settele, J. 2009. Alien species in a warmer world: risks and opportunities. *Trends Ecol. Evol.* 24(12): 686–693.

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Available from: <https://www.sciencedirect.com/science/article/abs/pii/S0169534709002031?via%3Dihub>



20. Species management plans

Management plan for the Chisana caribou herd

In November 2023, the Government of Yukon and co-management partners took a revised draft of the *Management Plan for the Chisana Caribou Herd 2010-2015* out for public engagement. Community meetings were held in Burwash Landing, Beaver Creek, and Destruction Bay. The feedback from those public meetings will help inform direction to the draft plan.

Conservation and action plan for the Aishihik bison population

In 2023, the Government of Yukon consulted with Champagne and Aishihik First Nations, Kluane First Nation, Little Salmon/Carmacks First Nation, and White River First Nation on the final draft plan.

In March and April 2023, the Yukon Fish and Wildlife Management Board led a public engagement process about the plan with assistance from the Government of Yukon and the Dän Keyi, Aisek, and Carmacks Renewable Resources Councils. The Yukon Fish and Wildlife Management Board recommended that the Minister of Environment accept the plan in July 2023.

21. Caribou population and distribution

Woodland caribou (one Boreal herd, 26 Northern Mountain herds)

The Government of Yukon monitors several woodland caribou herds each year to assess overall status and trends. In 2023, the Government of Yukon conducted and/or collaborated on:

- ▶ One population survey (fall mark re-sight survey for the Aishihik herd);
- ▶ Eleven fall rut composition surveys to estimate adult sex ratios and fall calf recruitment (Coal River, Finlayson, Wolf Lake, Carcross, Ibex, Laberge, Chisana, Klaza, Tatchun, Ethel Lake, and Hart River herds);
- ▶ Deployment of solar-powered satellite collars on caribou in the Klaza and Clear Creek herds;
- ▶ Four satellite collar deployment programs (Pelly, Klaza, Clear Creek, and Hart River herds); and,
- ▶ Continued monitoring of habitat use, movement, survival, calving, etc. for herds with ongoing collar programs (Aishihik, Carcross, Chisana, Coal River, Hart River, Little Rancheria, Tay River, and Wolf Lake herds).



Migratory caribou (Porcupine, Fortymile, and Nelchina herds)

Monitoring and research of these large migratory herds happens in collaboration with several agencies and Indigenous governments in Canada and Alaska. In 2023, deployment of specialized camera collars on Porcupine caribou continued in collaboration with the United States Geological Survey.

Counts in summer 2023 identified less than 9,000 caribou in the Nelchina herd, which is a precipitous decline from its peak of over 50,000 in 2019. Although almost all monitoring of the herd occurs in Alaska, the Government of Yukon continues to contribute to herd monitoring and management when possible and necessary.

The Fortymile herd has declined from a high of 84,000 in 2017 to its current population size of 35,000 caribou. Evidence from ongoing research has identified habitat limitations as a key aspect of the decline. The Government of Yukon will continue work to better understand the impact of other key environmental factors.



Caribou calves.





Caribou grazing. Photo credit: Patrick Gibeau.



A lone Aishihik caribou. Photo credit: Caitlin Willier.



22. Caribou mercury levels

No new data was available in 2023. Refer to the [Yukon State of the Environment Report 2023](#) for the latest reporting information on this indicator.

23. Density of snowshoe hares

No new data was available in 2023. Refer to the [Yukon State of the Environment Report 2023](#) for the latest reporting information on this indicator.

24. Winter tick surveillance

No new data was available in 2023. Refer to the [Yukon State of the Environment Report 2023](#) for the latest reporting information on this indicator.

25. Sustainability of lake trout fisheries

In 2023, the Department of Environment completed a review on the status of freshwater fish populations in Little Atlin Lake (Savage, P.L et. al, 2023). This review indicated that the small, vulnerable lake trout population is not adequately protected under the current regulatory regime and provided targeted recommendations to ensure this population remains sustainable for future generations. This report also highlighted the increased angling pressure on Little Atlin Lake, and the high levels of northern pike captured and released.

The Department of Environment is working closely with the Carcross/Tagish First Nation, Carcross/Tagish Renewable Resources Council, the Teslin Tlingit First Nation and the Yukon Fish and Game Association to continue educating the public on these concerns and to encourage best practices to keep our lake trout populations sustainable.





Crews setting lake trout nets on Kluane Lake.



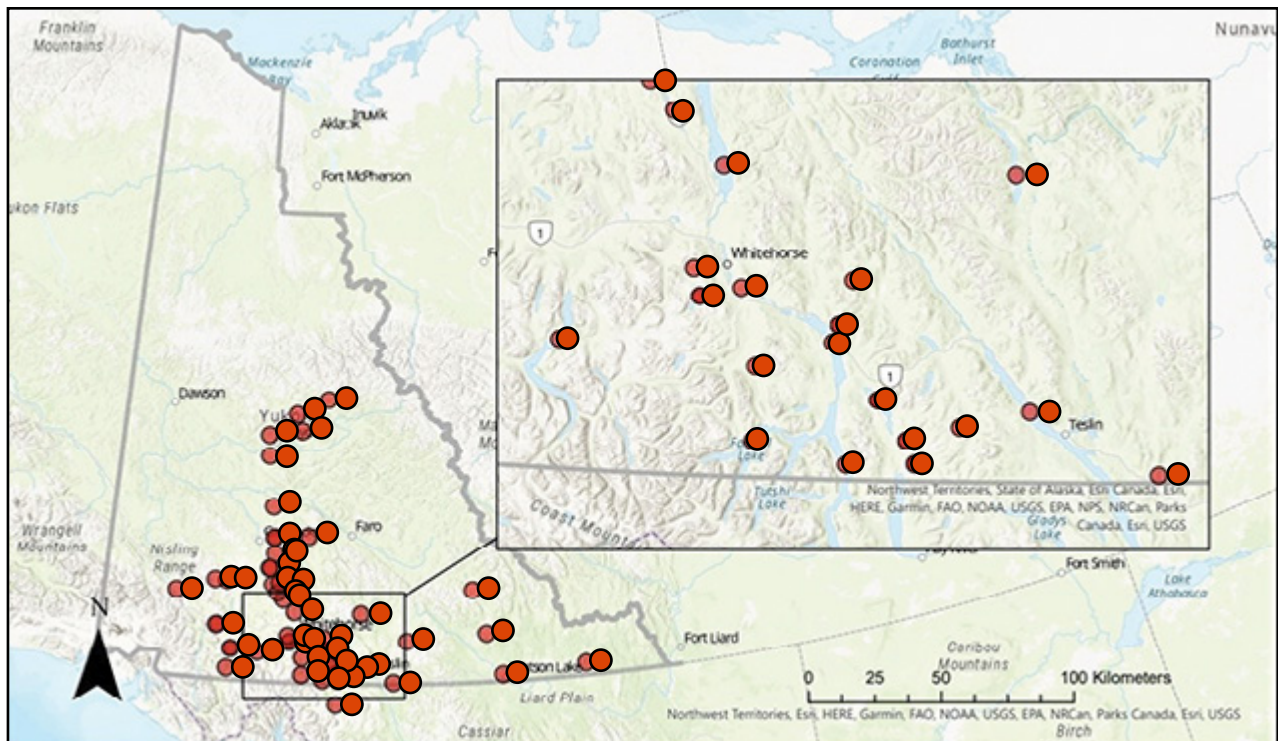


Figure 1: Locations of all lake trout population assessments conducted by the Fish and Wildlife Branch, since 2010.

References

Savage, P.-L. et al. 2023. Fisheries Status Report: Little Atlin Lake. Yukon Fish and Wildlife Branch Report SR-23-11 Whitehorse, Yukon, Canada. Available from: <https://yukon.ca/en/fisheries-status-report-little-atlin-lake-summary>

Sinclair, C.L., and P. Savage. 2023. Lake Trout and Lake Whitefish Monitoring Program: 10-year adaptive monitoring strategy (2023-2032), (SR-23-14). Government of Yukon, Whitehorse, Yukon, Canada. Available from: <https://open.yukon.ca/information/publications/plans-and-reports-lake-trout-monitoring-program/resource/db1e08aa-555d-41a3>



26. Number of spawning Chinook salmon

The estimate of the 2023 Canadian-origin Chinook salmon run in the mainstem Yukon River was 15,820 fish. This was below the 2023 preseason outlook range of 26,000–43,000 fish.

In 2023, the Department of Fisheries and Oceans (DFO) maintained the long-term closure of the Yukon River Chinook salmon commercial fishery. Yukon First Nations fisheries followed conservative management plans, with many requesting no harvesting of Chinook salmon, or closing the fishery entirely. The actions of the DFO and Yukon First Nations resulted in a significantly lowered harvest compared to historical averages.

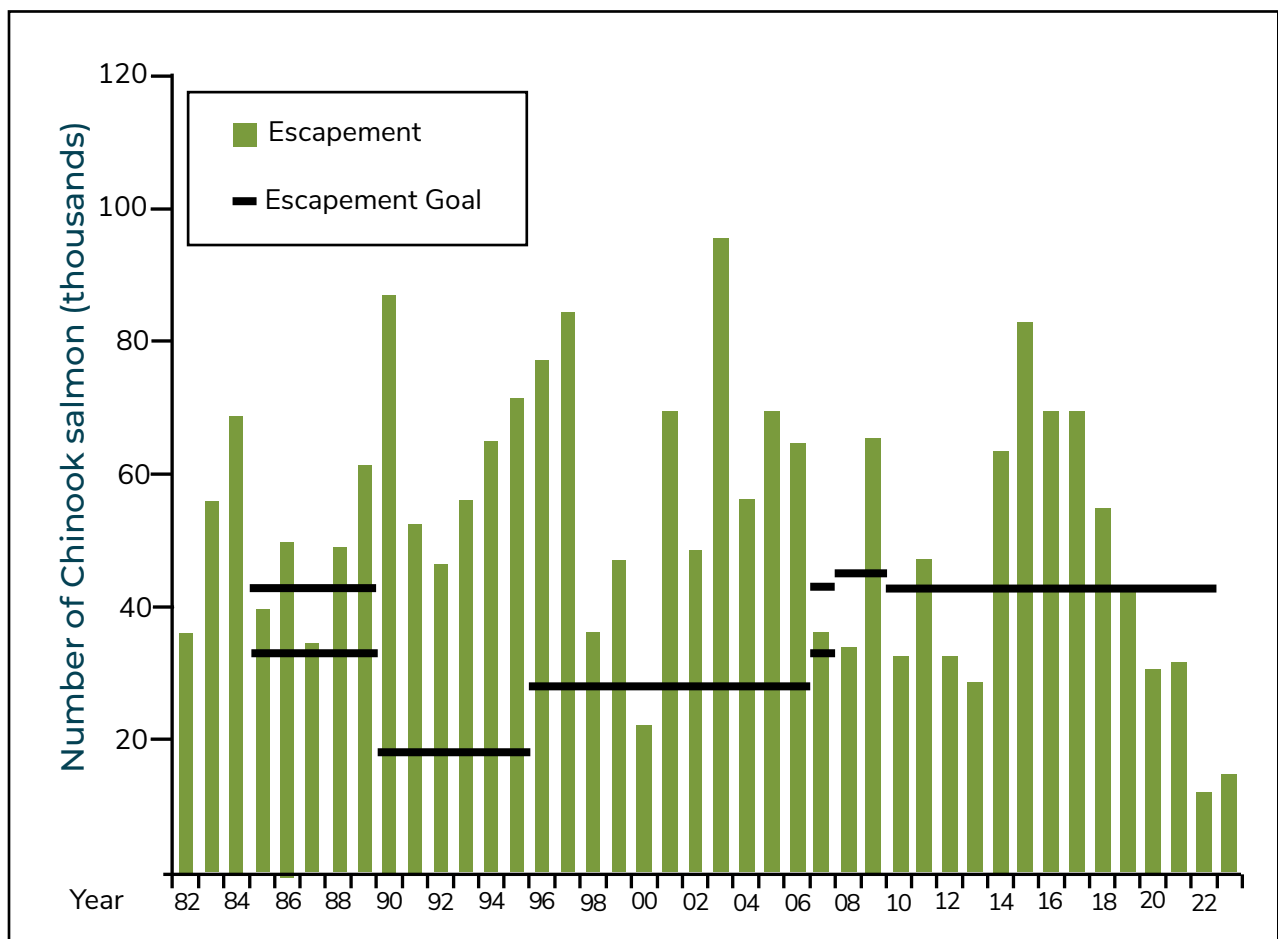


Figure 1: Estimated spawning escapement estimates and escapement goals (minimum or range) for Canadian-origin Yukon River mainstem Chinook salmon, 1982–2023.





Chinook salmon seen through the viewing window at the Whitehorse fish ladder.

References:

Yukon River Salmon 2023 Season Summary and 2024 Season Outlook. Prepared by The United States and Canada Yukon River Joint Technical Committee March 2024 Yukon JTC (24)-01. Available from:
<https://www.yukonriverpanel.com/publications/yukon-river-joint-technical-committee-reports/>



27. Trumpeter swan population monitoring

In 2023, the peak swan count at the Swan Haven Interpretive Centre on McClintock Bay was approximately 2,500 birds. The peak numbers of swans came a few days later than the average trend (Figure 1). The single day count on April 30th was also higher than the average (Figure 2).

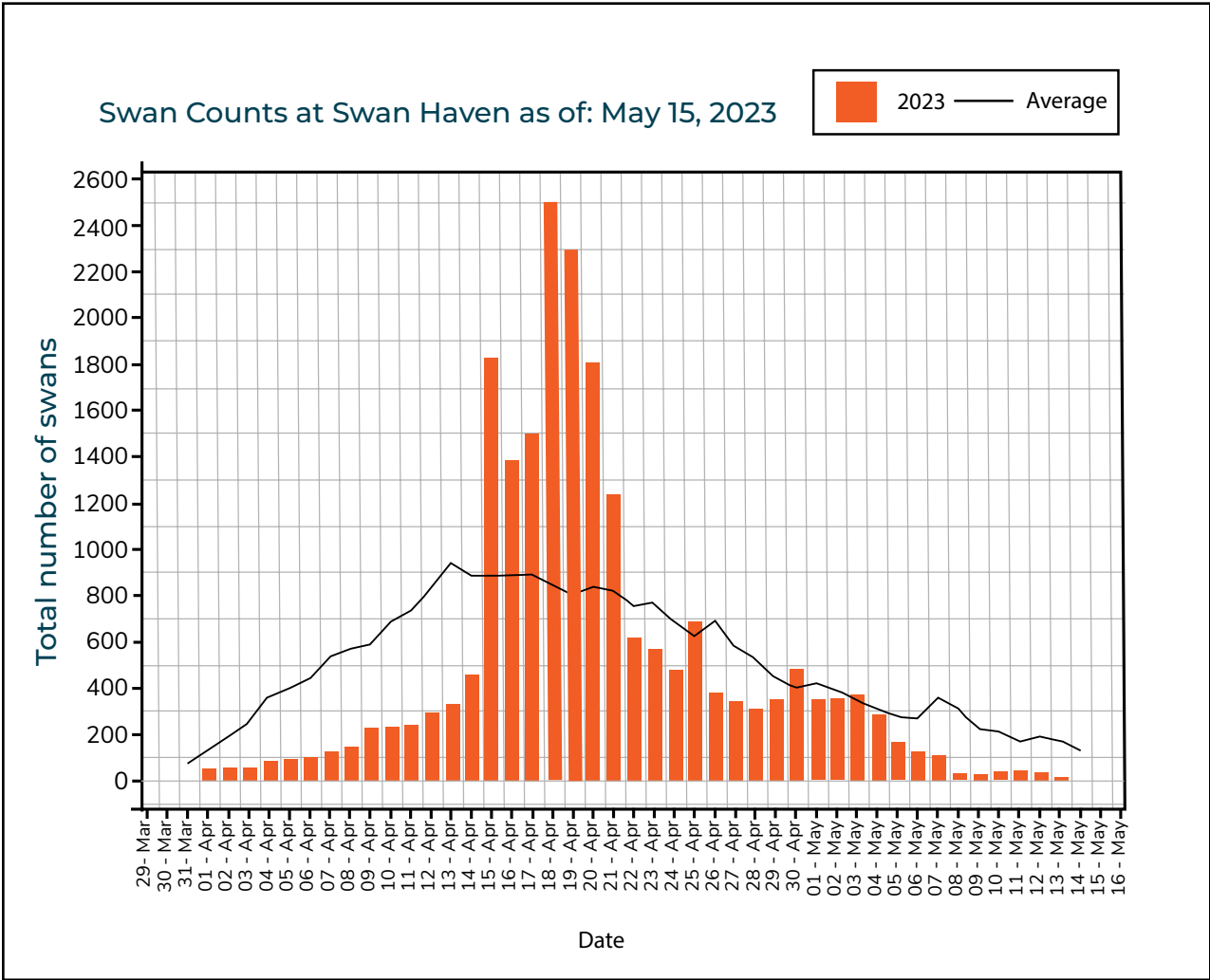


Figure 1: Daily swan count at Swan Haven, McClintock Bay, Yukon in spring 2023. Bars show daily counts, black line is the average daily count for all years (2000 – 2022). Note that there was no count on May 14 and only seven swans counted on May 15. Created by Margaret Campbell – Canadian Wildlife Services-Environment and Climate Change Canada.





Waterfowl at the Swan Haven Interpretive Centre.

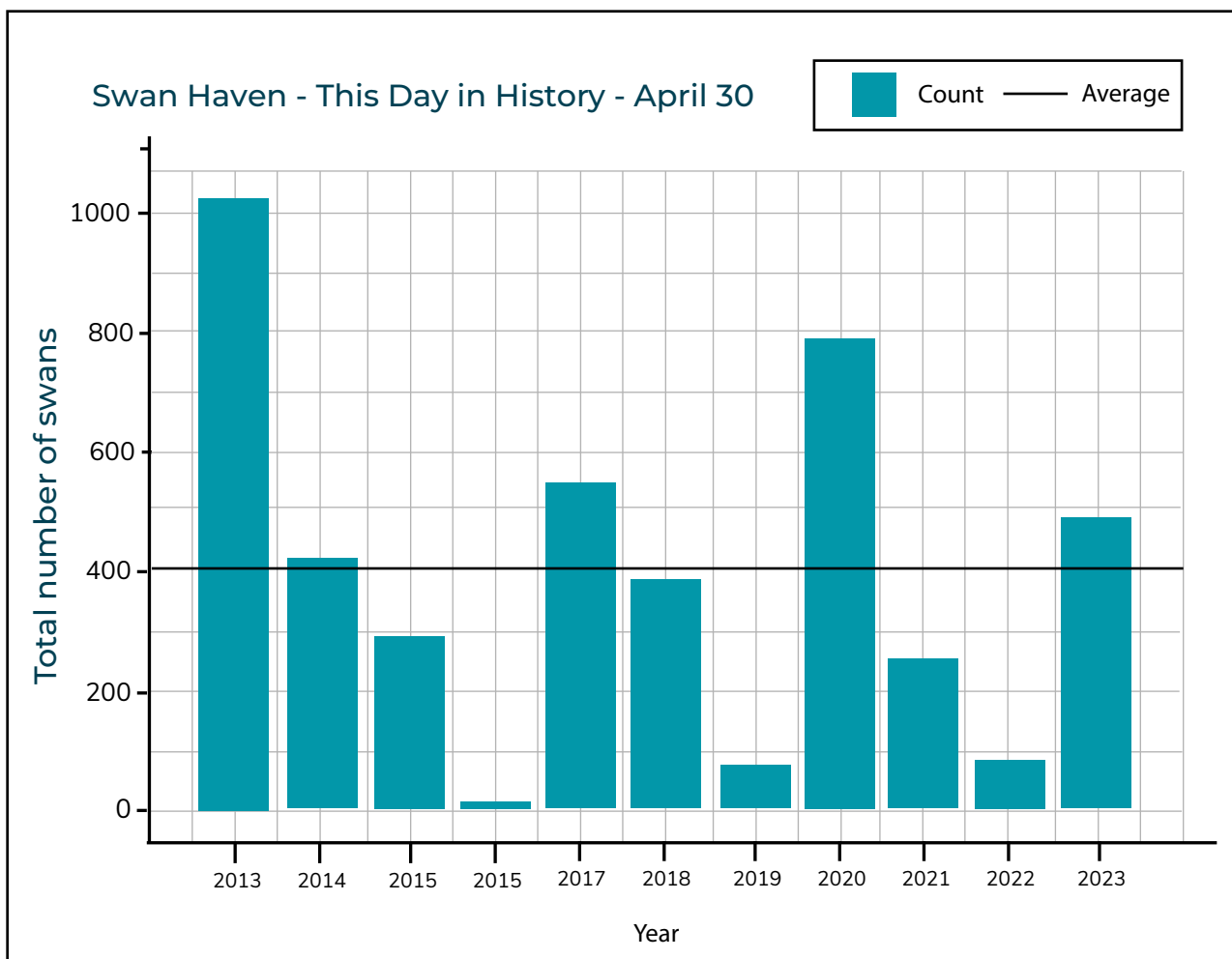


Figure 2: A comparison of the daily swan count on April 30 for the past 10 years. Created by Margaret Campbell – Canadian Wildlife Services-Environment and Climate Change Canada.





Trumpeter swans at Tagish Lake.



28. Monitoring breeding waterfowl

In 2023, waterfowl in the Old Crow Flats were counted by the Canadian Wildlife Service branch of Environment and Climate Change Canada for the annual Waterfowl Breeding Population and Habitat Survey. The Old Crow Flats, which are an important area to the Vuntut Gwitchin First Nation for hunting, trapping and other cultural activities, is the only location in the Yukon included in this annual survey. The North American Waterfowl Management Plan sets conservation goals for waterfowl across the continent, and the Yukon surveys contribute to information for continent-wide population monitoring and harvest management.

References:

North American Wetlands Conservation Council (Canada). 2018. North American Waterfowl Management Plan. Available from: <https://nawmp.wetlandnetwork.ca/>

CWS Migratory Birds Regulatory Report Number 58: Population status of migratory game birds in Canada – 2023. Canadian Wildlife Service Waterfowl Technical Committee. Available from: <https://www.canada.ca/en/environment-climate-change/services/migratory-game-bird-hunting/consultation-process-regulations/report-series/population-status-2023.html>



29. Avian influenza surveillance

In spring 2022, a collaborative monitoring program was initiated to test wild birds in the Yukon for avian influenza virus. The Animal Health Unit collected oral and cloacal swab samples from sick or dead wild birds and submitted them for testing.

Eighty-two samples were tested in 2022 and 49 samples in 2023, encompassing 43 avian species and five species of mammal (red fox, coyote, wolverine, American marten and short-tailed weasel) (Figure 1). In 2023, there was only one preliminarily positive case¹ (in a raven), and no confirmed positive cases. As of December 2023, the only Yukon mammal to test positive for this virus was a single red fox in 2022.

¹ Preliminarily positive cases are those where the sample has tested positive for avian influenza virus, and the Animal Health Unit is awaiting confirmation that the sample is the H5N1 strain of the virus.



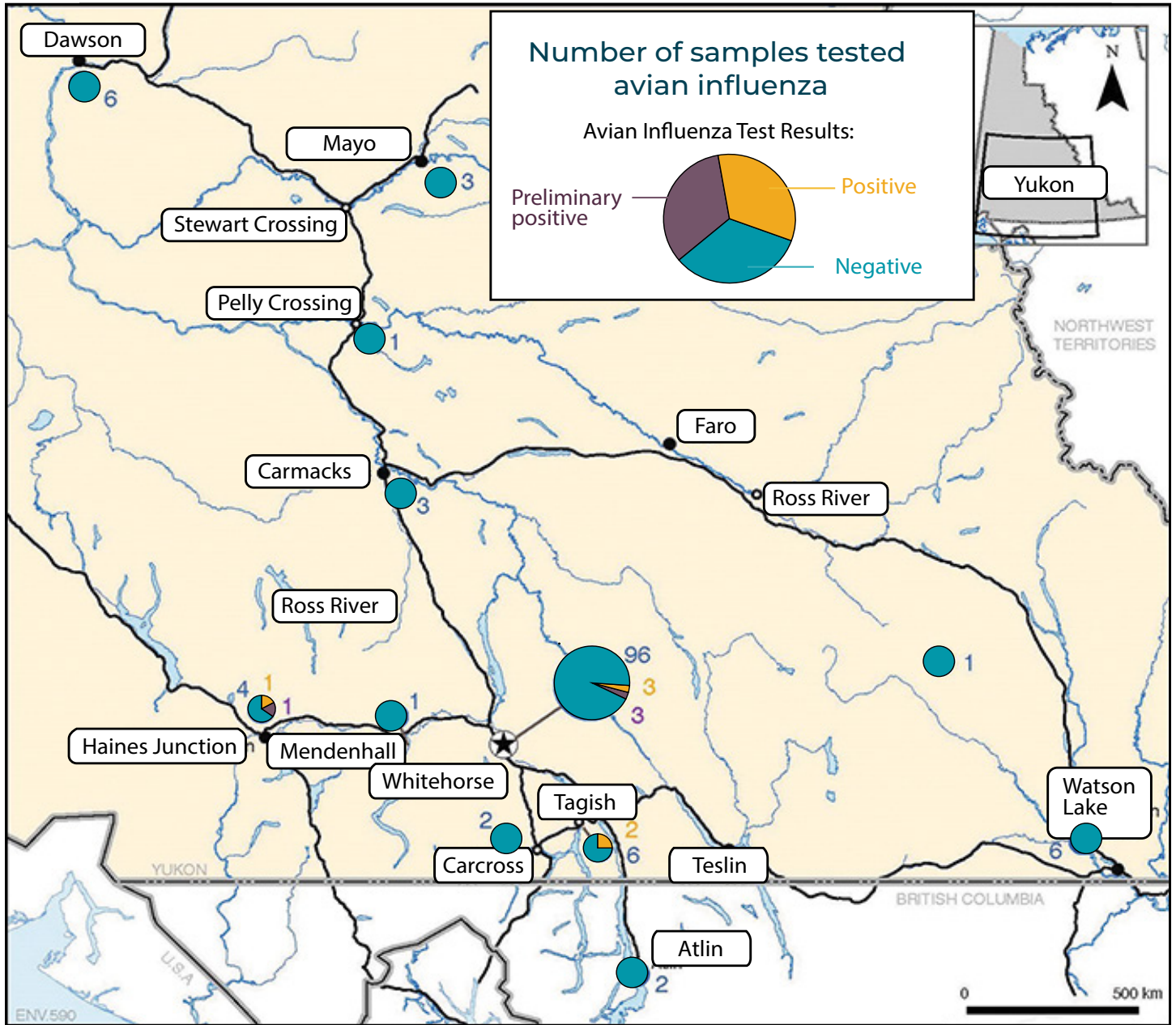


Figure 1: Map showing the number and distribution of samples collected for avian influenza virus testing in the Yukon in 2022 and 2023. The discs represent approximate locations.



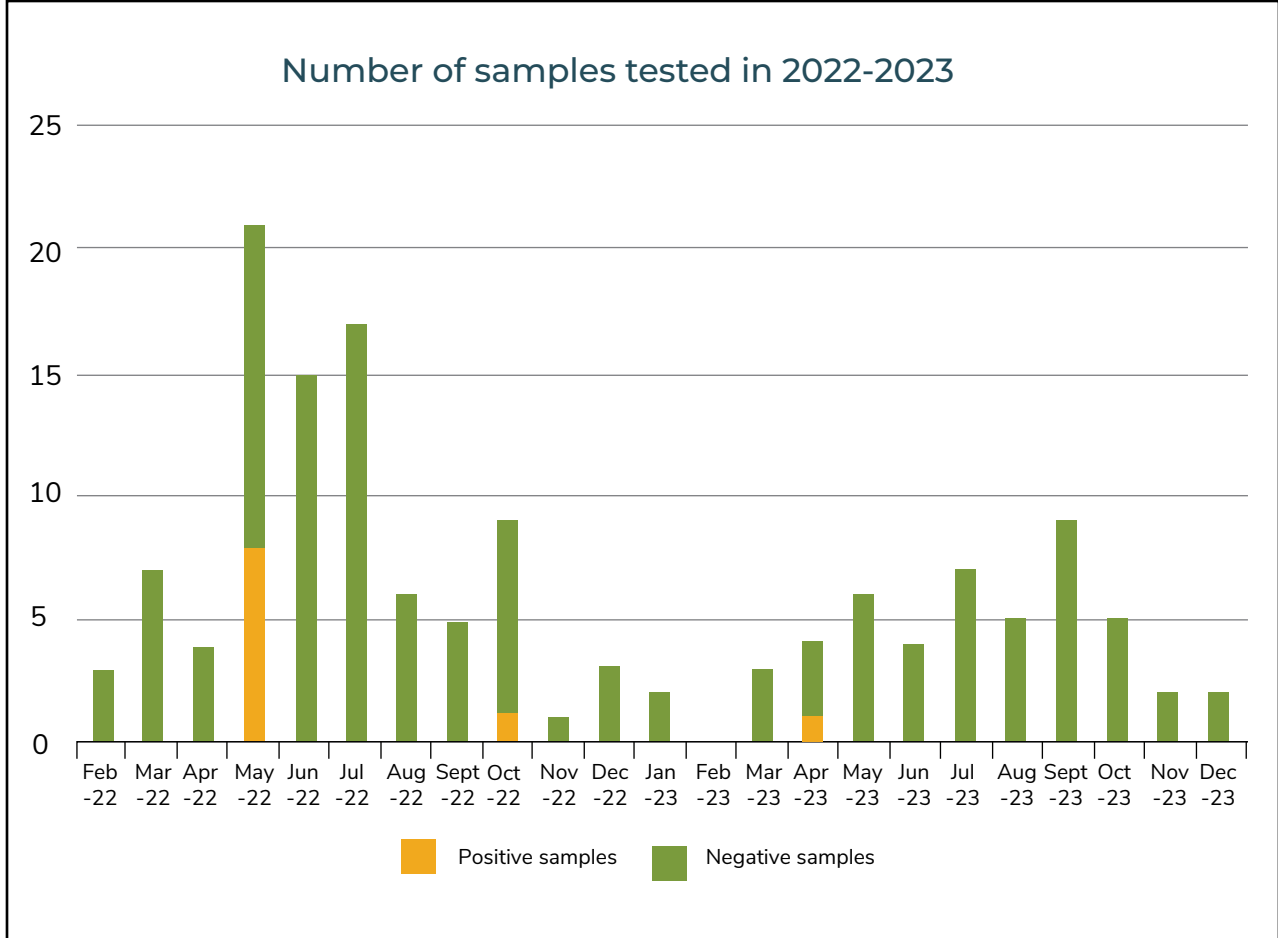


Figure 2: The number of samples tested per month for presence of avian influenza virus from Yukon wild birds and wildlife in 2022 and 2023. The single positive sample in 2023 was from a raven.

References:

Environment and Climate Change Canada (n.d.). Avian influenza in wild birds. Available from: <https://www.canada.ca/en/environment-climate-change/services/migratory-game-bird-hunting/avian-influenza-wild-birds.html>

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Available from: <https://www.aphis.usda.gov/livestock-poultry-disease/avian/avian-influenza/hpai-detections>



30. Monitoring respiratory pathogens in Yukon wildlife

In 2023, 289 individual animals were tested for *Mycoplasma ovipneumoniae* (*M. ovi*), the majority being thinhorn sheep (98) and caribou (107). All samples were negative with the exception of three moose who tested positive for a similar, but genetically distinct *Mycoplasma* bacteria.

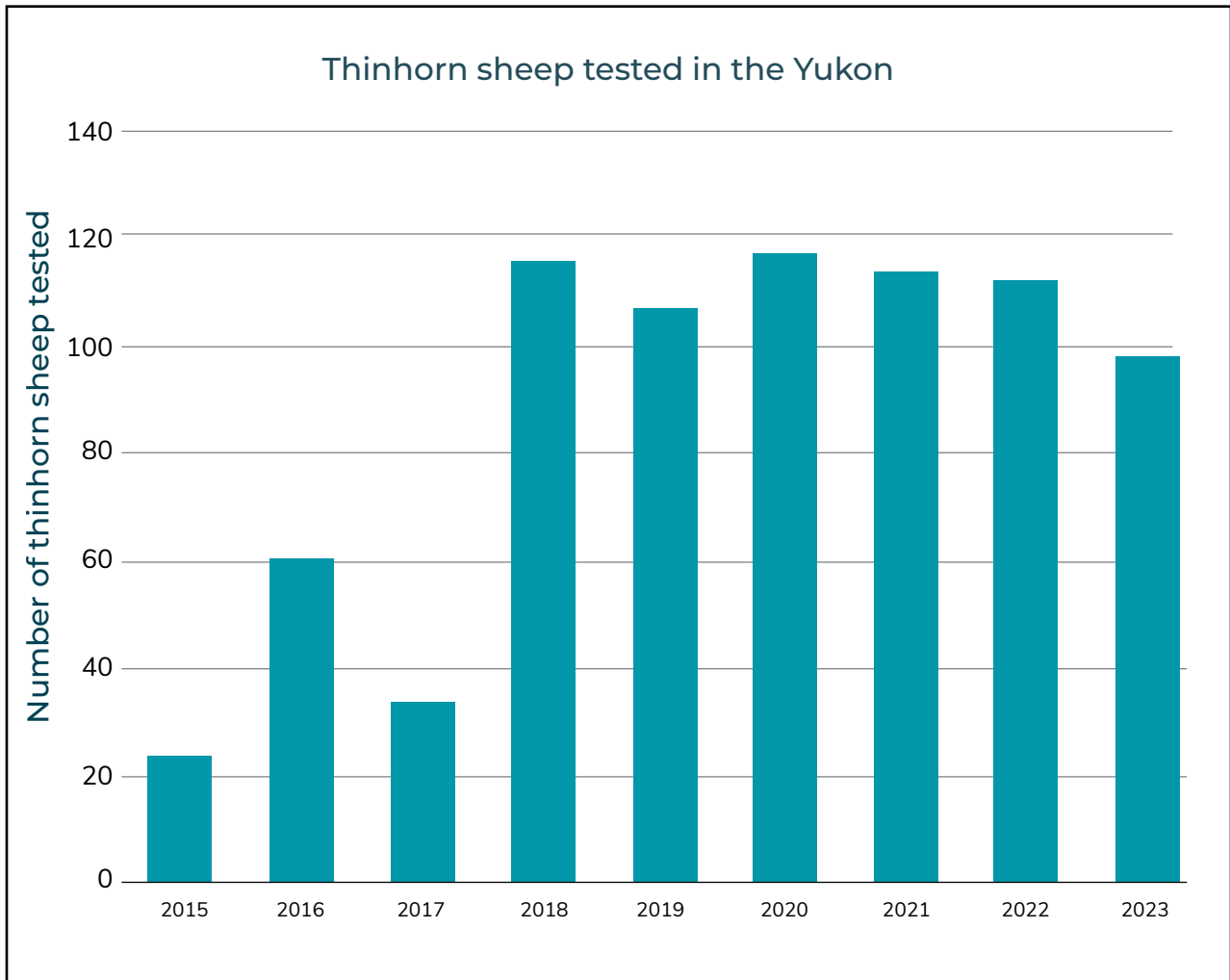


Figure 1: The number of individual thinhorn sheep tested in the Yukon per year since 2015.



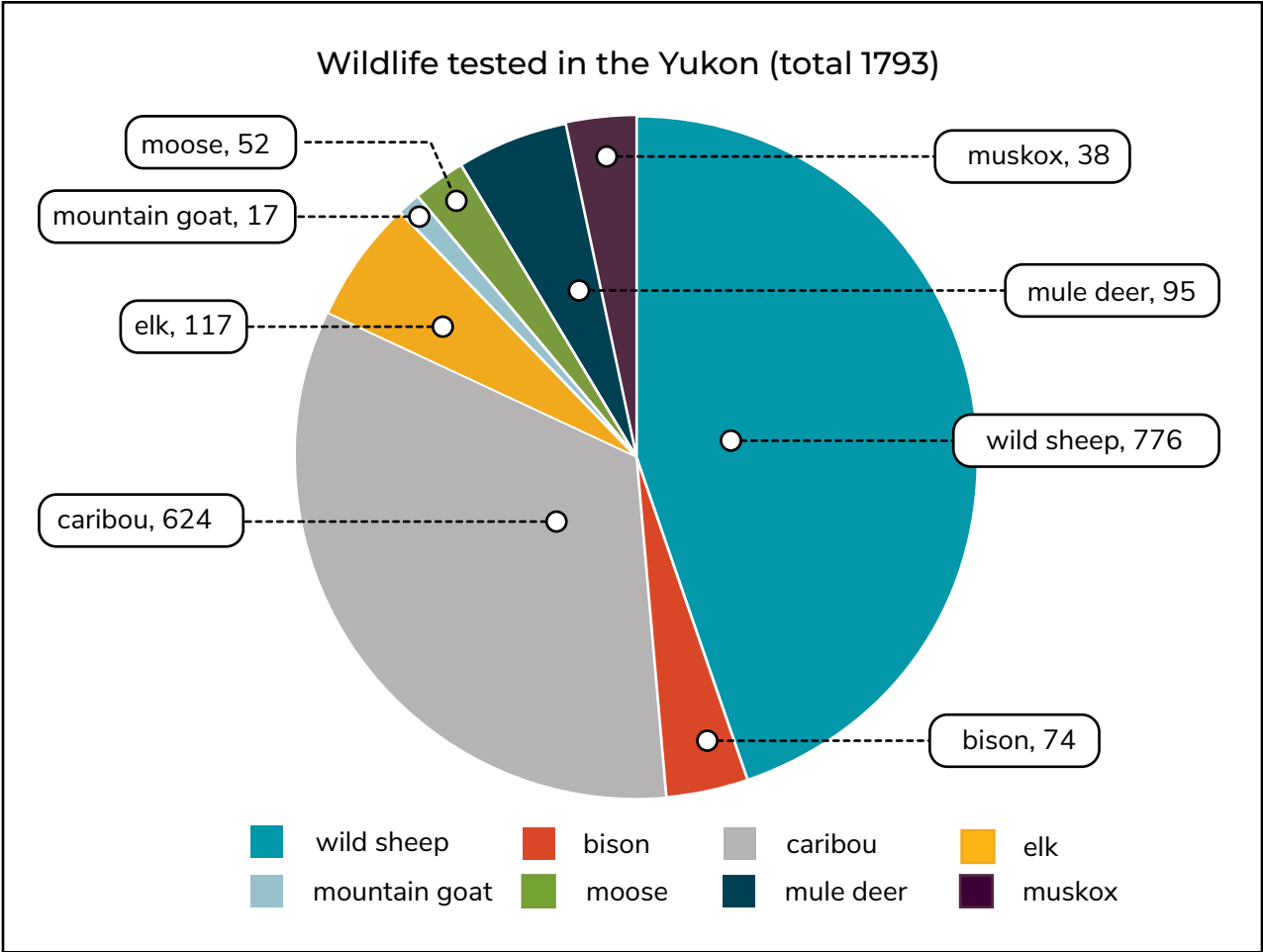


Figure 2: The number and species of individual free-ranging animals tested by the Animal Health Unit for *Mycoplasma ovipneumoniae* between 2015 and 2023. Note: thinhorn sheep and mountain goat testing began in 2015. Testing of other species began in 2018.





Government of Yukon veterinarians performing a nasal swab test on a wild sheep.



31. Biodiversity

In 2023, 283 species were added to the list of species known to occur in the territory. The Yukon is home to 8,419 species known to be wild. There are 81 Yukon species assessed by the Committee on the Status of Endangered Wildlife in Canada, an increase of five species from 2022. Forty-six have been assessed as at-risk, and 29 have been federally listed for further study or assessment.

Of the 8,419 Yukon species, 3,939 are data deficient. These species have been recorded in the Yukon, but there is not enough information to provide a conservation rank. Three hundred and eighty-six are unranked, meaning no efforts have been made to assess their status in the Yukon. One hundred and forty-eight Yukon species are classified as historical. They have not been observed in the territory in over 40 years despite targeted survey efforts.

References:

Committee on the Status of Endangered Wildlife in Canada (COSEWIC). 2023. Available from: <https://cosewic.ca/index.php/en/>

Species conservation and biodiversity research, Yukon Conservation Data Centre. Government of Yukon. 2023. Available from: <https://yukon.ca/en/biodiversity>

NatureServe Explorer 2023. NatureServe, Arlington, Virginia, USA. Available from: <https://explorer.natureserve.org/>

Canadian Endangered Species Conservation Council. 2022. Wild Species 2020: The General Status of Species in Canada. National General Status Working Group: 172 pp. ISBN 978-1-7387673-0-4. Available from: <https://www.wildspecies.ca/reports>





Yukon