

Porcupine Caribou Herd



SUMMARY OF INDICATORS

2021

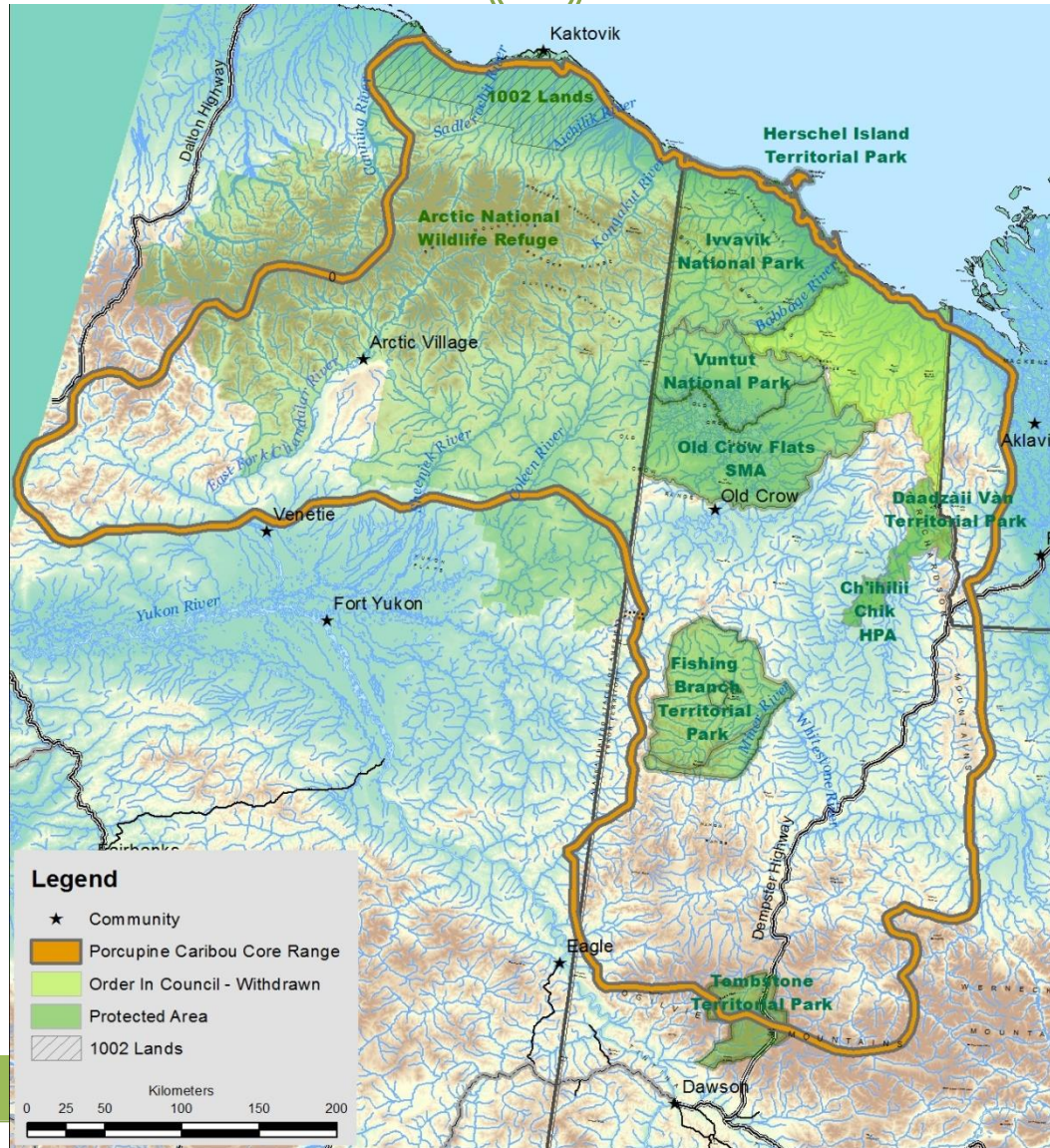
Presentation to:

Annual Harvest Meeting

February 9-10 2021

By: Porcupine Caribou Technical Committee

Range of Porcupine Caribou Herd





Population

Body
Condition

Habitat



Overview

Population Size



Methods

- Count caribou using a photocensus
- Last completed in 2017
- If conditions allow, attempting each year now until we get the next successful one

Results

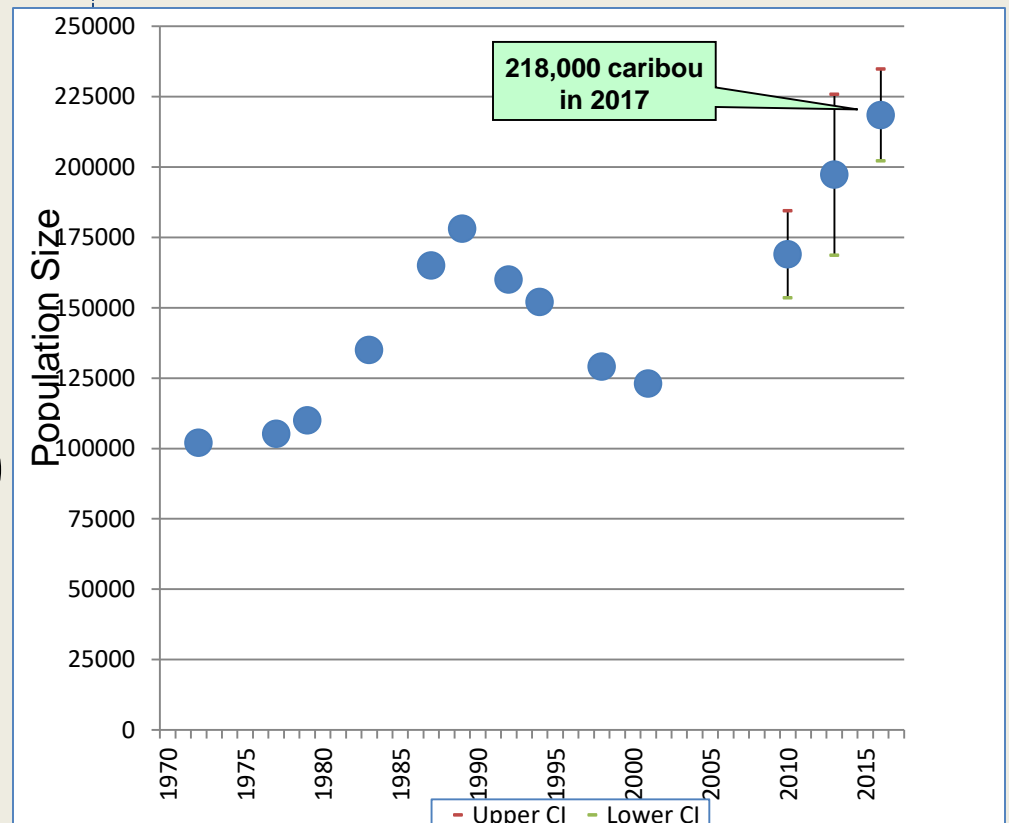


Population Size

Methods

- 218,457 caribou (202,106 - 234,808)
- Minimum count = 197,894 caribou
- Increasing (3.5%/year) similar to growth rate between 1972-1989.

Results



Calf Birth Rate and Survival

Results

- Classify pregnancy on calving grounds (2018)
 - *80% of females pregnant*
 - *Long term average of 82%*
- Check to see how many calves survive after 1 month
 - *93% of those calves survived*
 - *Long term average is 87%*
 - *After 1 month: 57 calves per 100 cows*



Female Yearling & Adult Male Survival



Methods

- Use satellite GPS collars to estimate survival
 - Alerted when collared animals die
 - Cause of death is unknown
 - Different age/sex groups die at different rates

Results

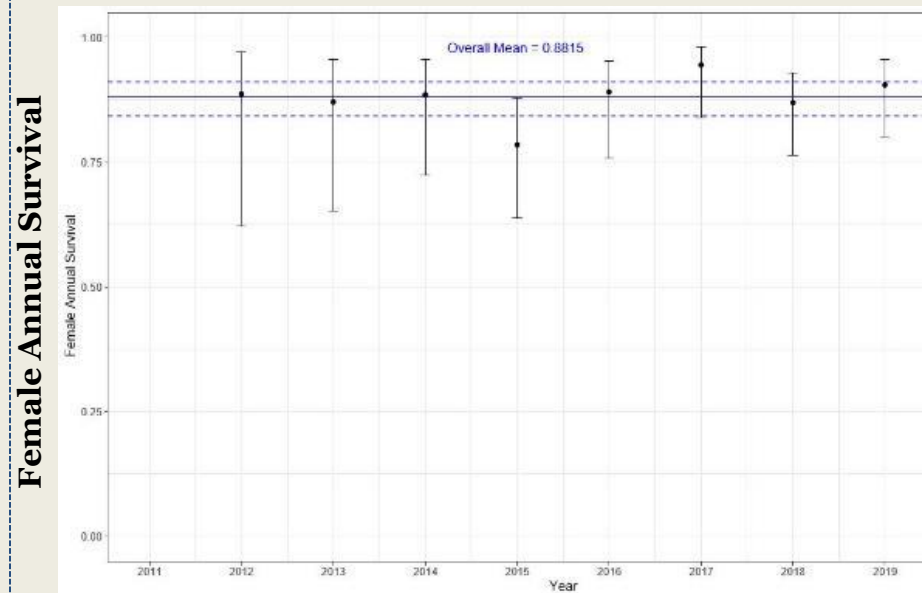
- Percentage of yearling females that survived in 2019-2020
 - *86.3% of yearling females*
- Percentage of adult males that survived in 2019-2020
 - *73.4% of adult males*

Adult Female Survival

Results

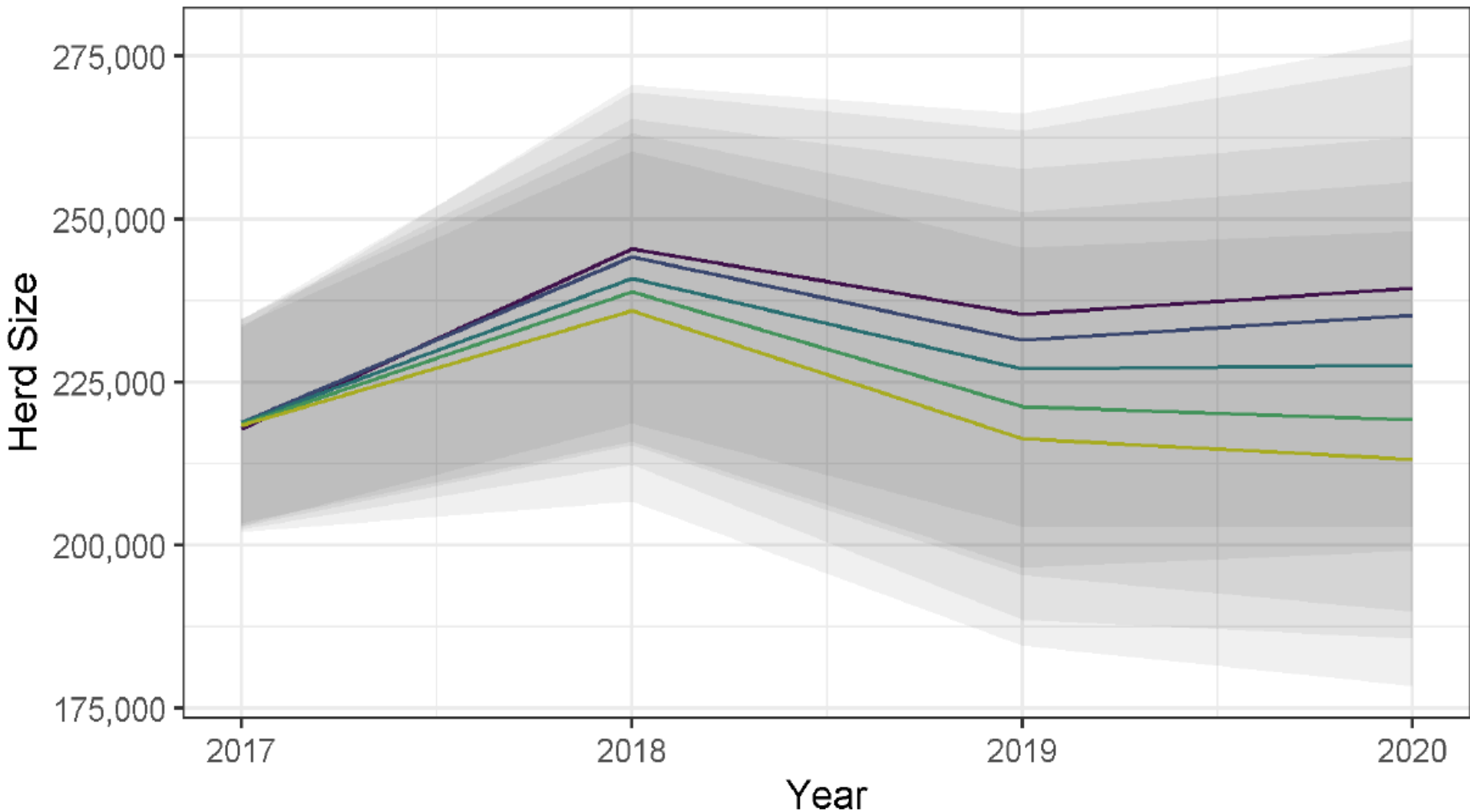
- Percentage of females (>2 years old) that survive each year
 - 90.5% of adult females survived (80.1%-95.6%)
 - From 2012-2019, survival ranged from 78.5%-94.5% but averaged 88%

Annual Survival of Adult Female Porcupine Caribou
(Error bars are 95% confidence limits)



Caribou Year (calving to calving period)

Population Model



Calf Mortality Rate — 0.4 — 0.44 — 0.49 — 0.53 — 0.58

Population Roll Up



- Declining % of pregnant adult females
- Relatively high survival

- Stable or slightly increasing
- Highly likely were in the green zone





Population

Body
Condition

Habitat



Overview

Caribou Body Condition



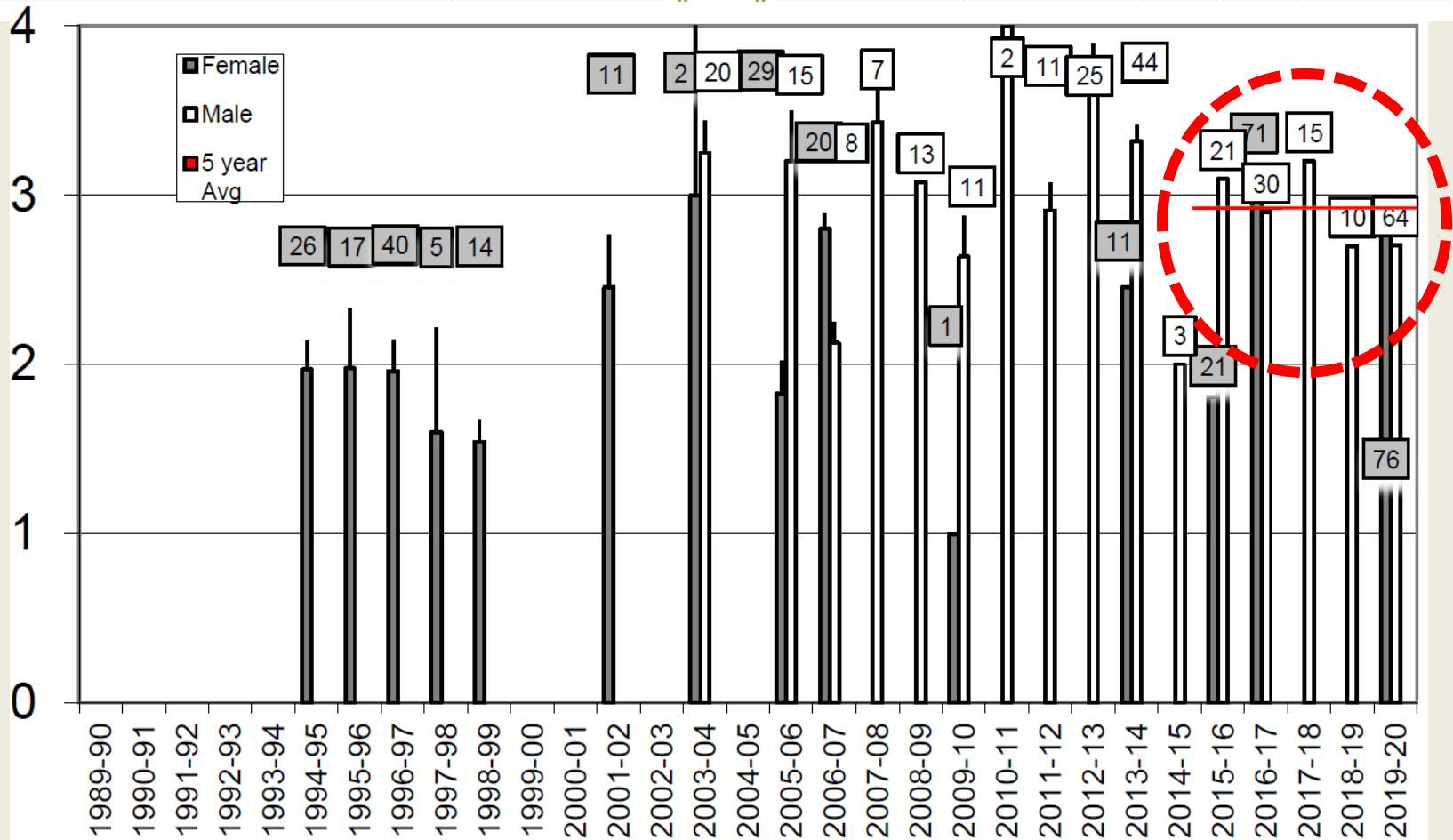
Methods

- How healthy individual caribou are by measuring back fat and rating animals
 - *Most samples from Dempster late October - December*
 - *140 caribou assessed by hunters and 141 sampled for back fat depth*

Results

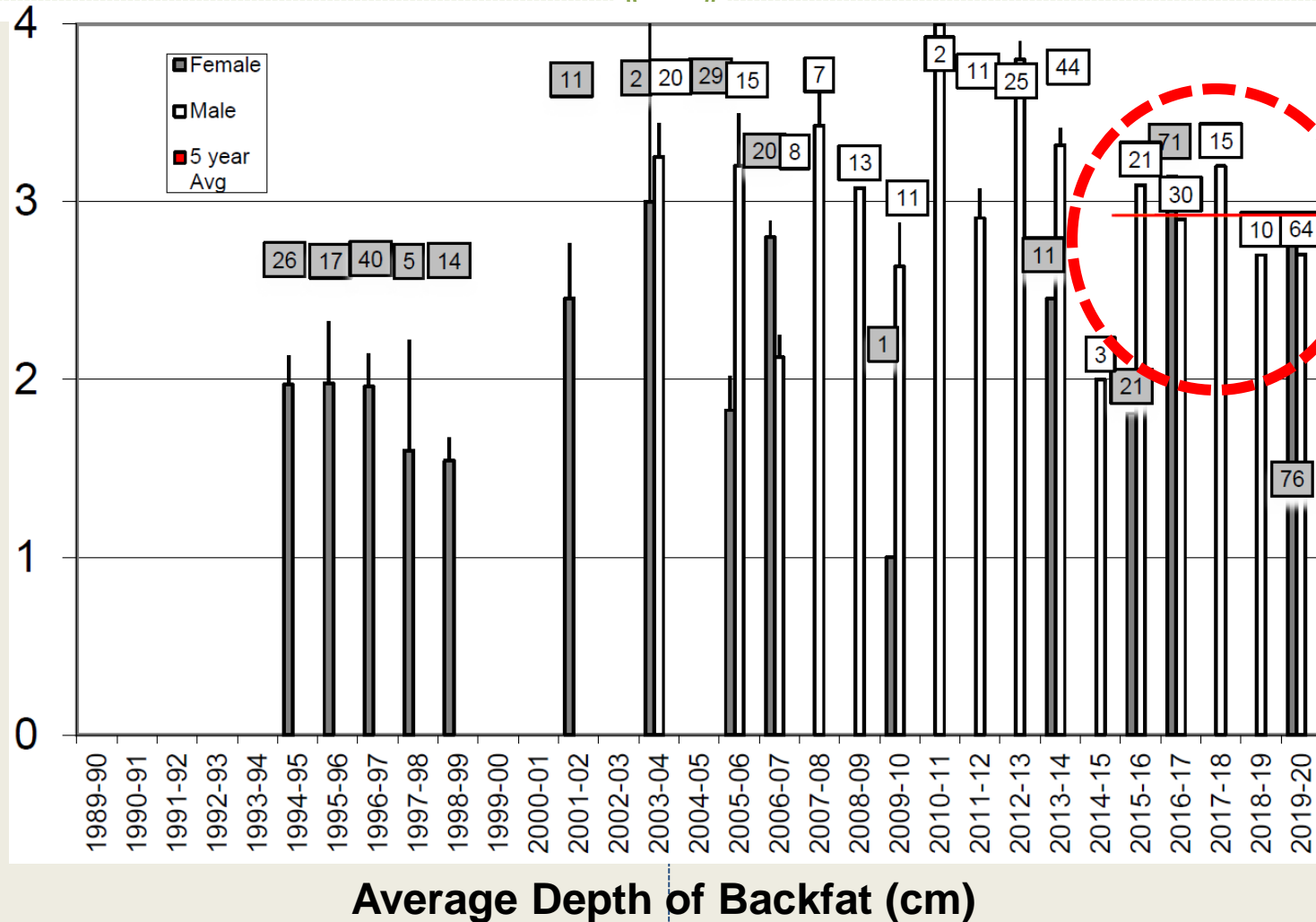
- Just below average for both measures
- Slight decline last 5 years but timing of samples?

Caribou Body Condition



Average condition of harvested caribou
 1=poor, 2=fair, 3=good, 4=very good

Caribou Body Condition





Population

Body

Condition

Habitat



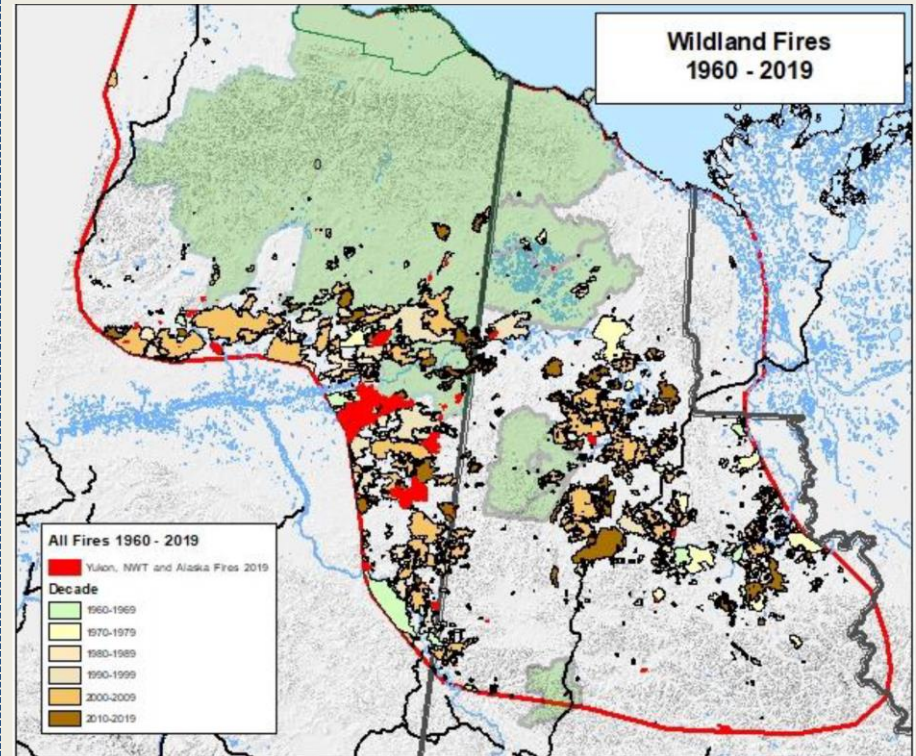
Overview

Wildland Fires

Methods

- Amount of PCH range burned as an index of range condition
- Fires in red are new as of 2019
- 2020 data not yet available however no significant fires noted

Results

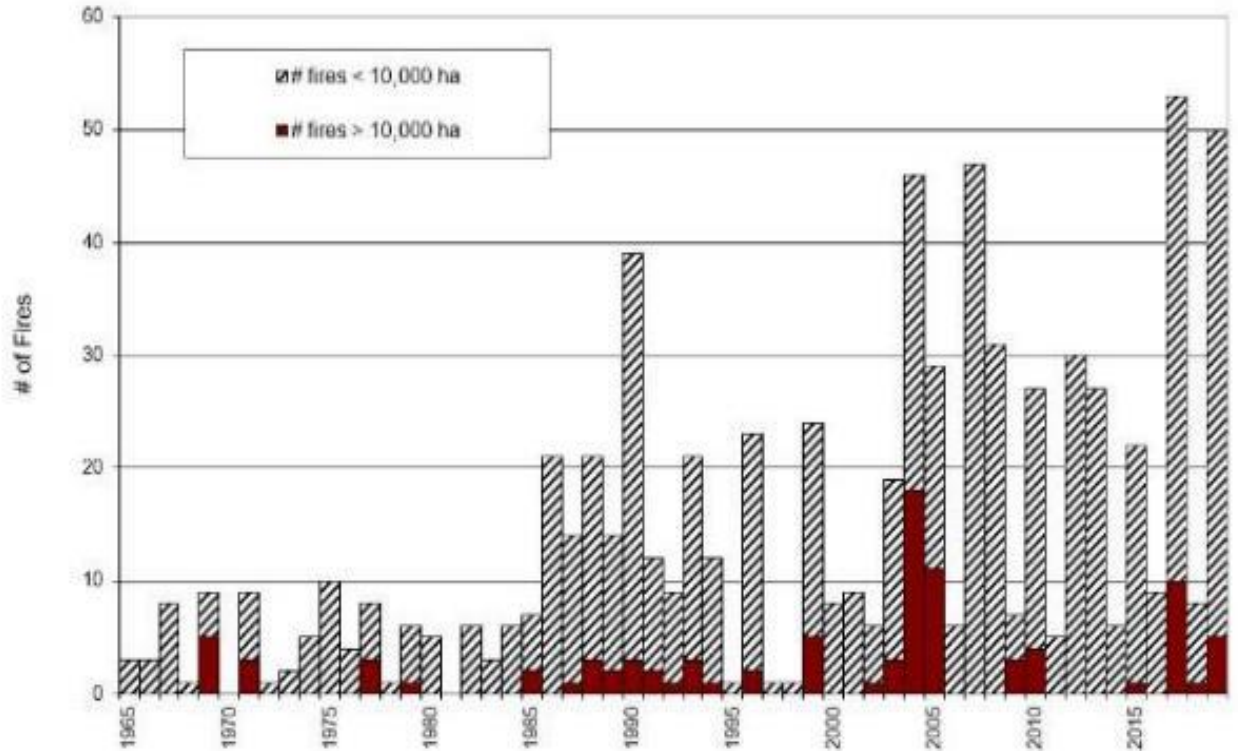




In 2019 there were 41 fires in Alaska, and 9 within the YT of the PCH range

Most on periphery on range

Total number of fires and number of large fires (greater than 10,000 hectares) in PCH range, by year



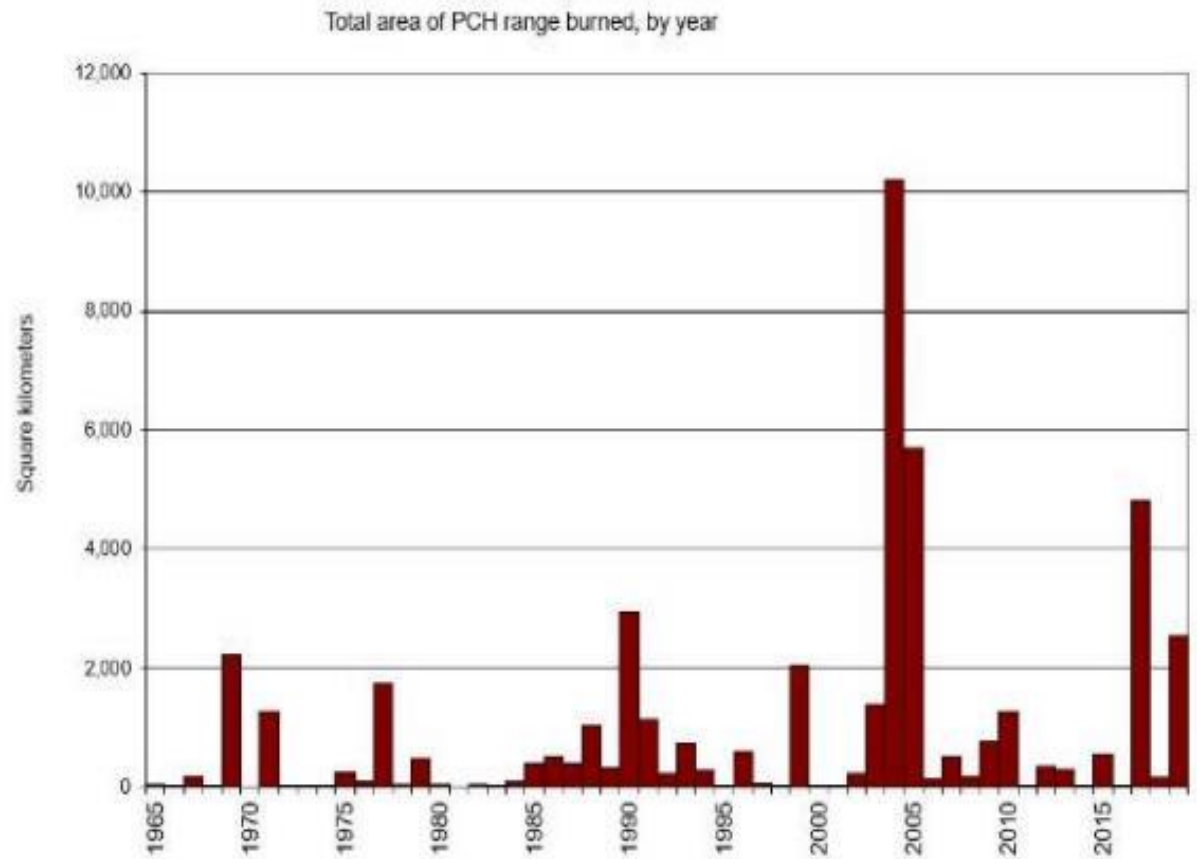
Number/size of fires in PCH Range



Using the area burned on its own not a great metric

Some areas reburn

New lichen maps will show change in habitat from 1984 forward

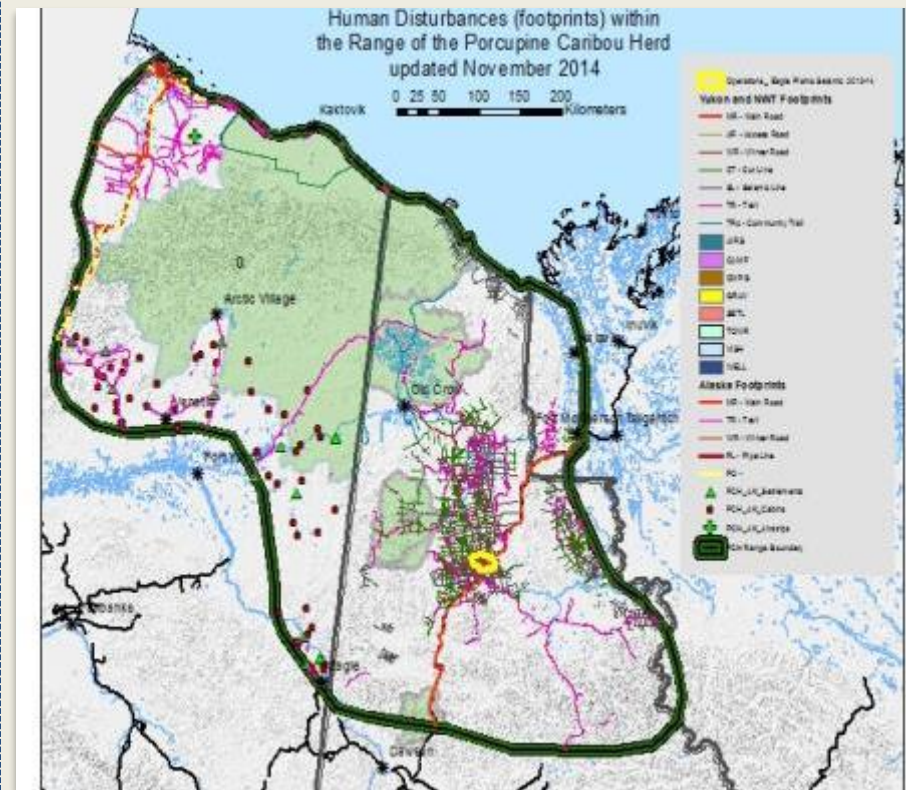


Area burned in PCH Range

Human Disturbance and Footprint

Methods

- Measured total linear footprint for each disturbance type
- No appreciable change in linear footprint in 2019/2020
 - 1002 oil and gas...
 - Chance Oil & Gas
 - Some mineral exploration in south



Snow Conditions

Methods

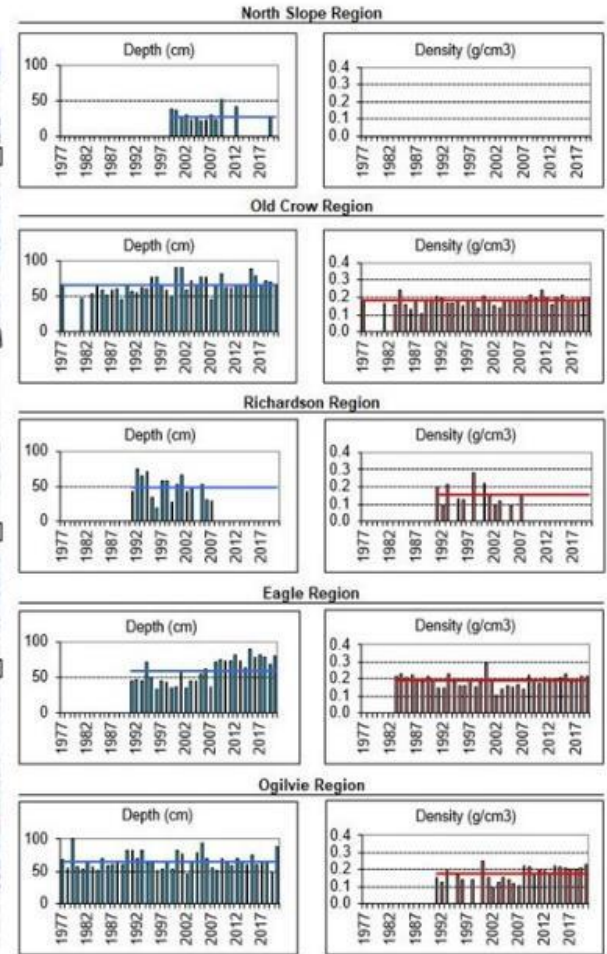
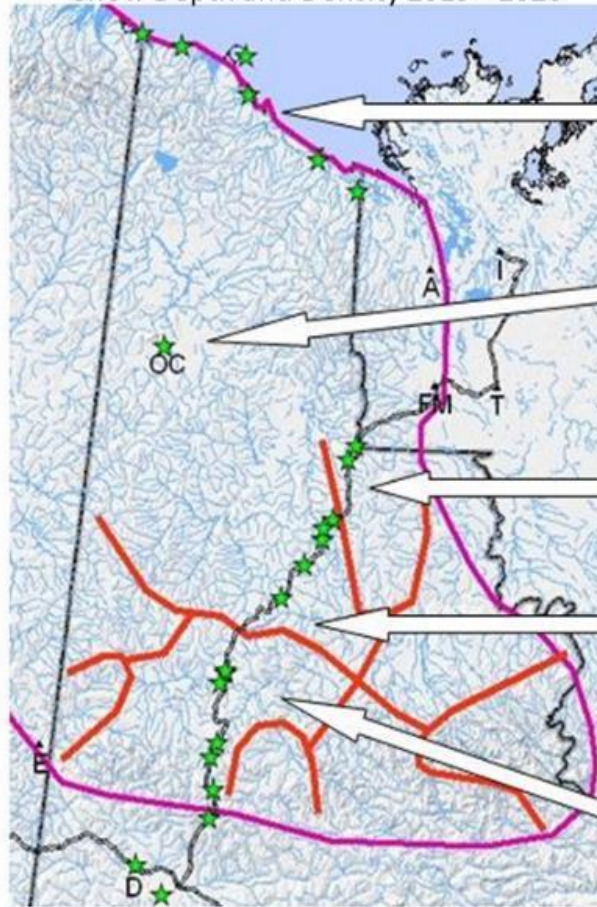
- Index of winter conditions
- Measurements of depth and snow density measured at 17 permanent locations
- 1977-2020



Eagle Plains and Ogilvie = above average snow depth

Increasing trend towards a deeper snowpack over the last decade in areas

Snow Depth and Density 2019 - 2020

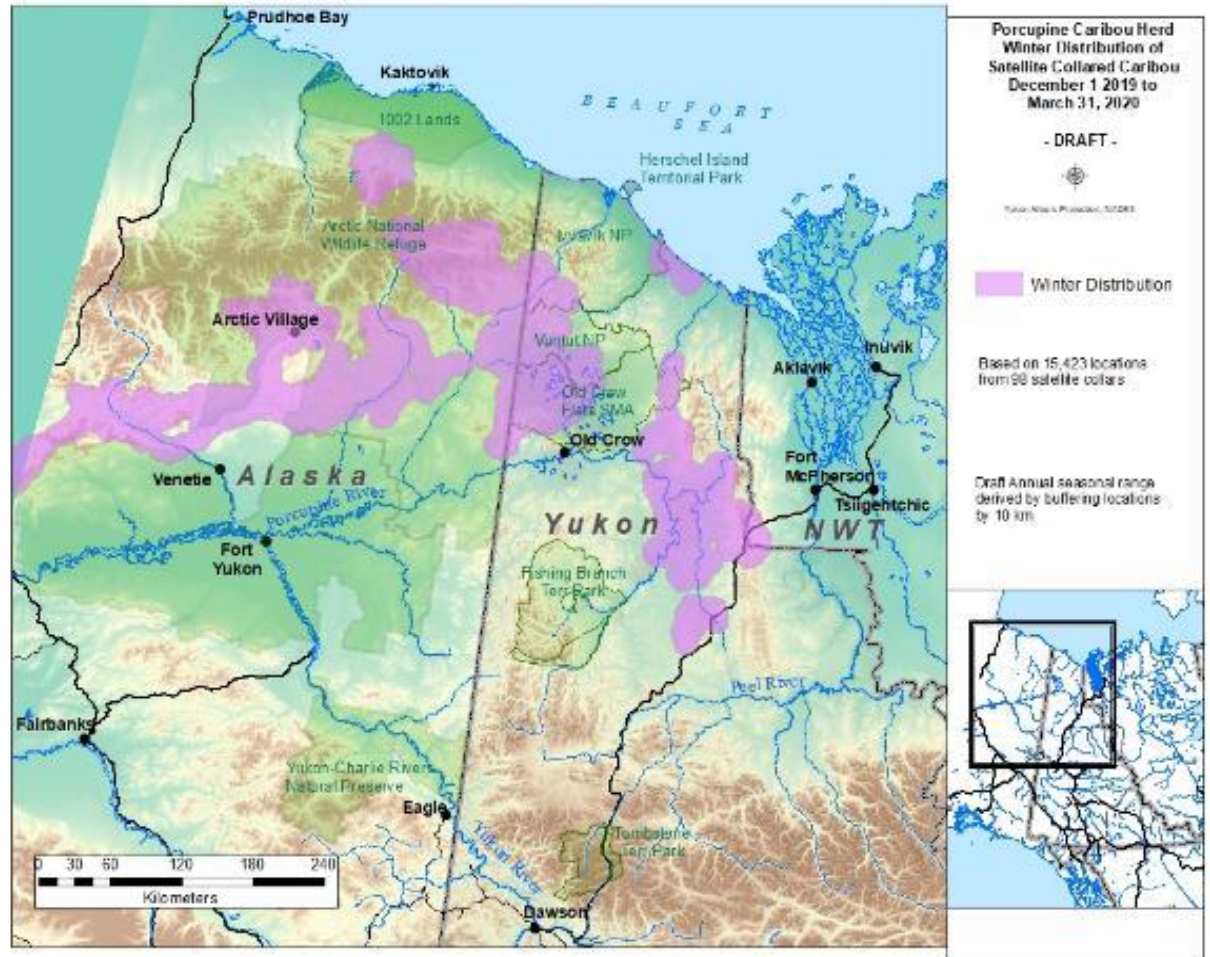


Snow Conditions



Wintered between Dalton and Dempster highways

Exposed to deeper snow packs in places



Snow Conditions

Habitat Roll Up



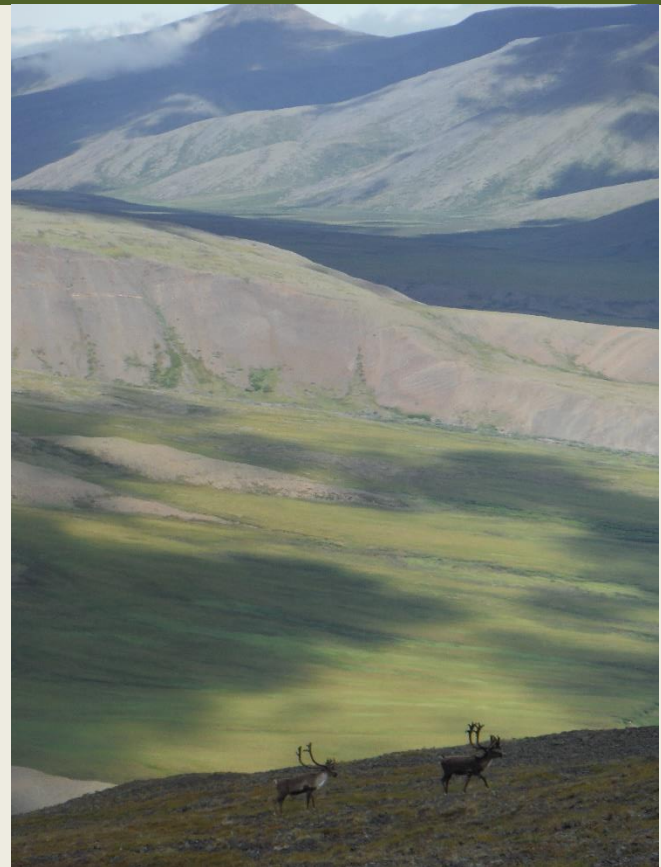
- Significant fires in summer 2019 but on range periphery
- Snow conditions were deeper than average
- New lichen layer will be helpful



Overall Interpretation



- Holding or even increasing in size
- May be seeing some signs of stress:
 - Lower pregnancy
 - Decreasing condition
- Survival remains high
- Habitat conditions haven't changed too much...



Questions?



Indicator Table - 2020



Indicator	Value	Average	Notes
Population size and trend			
Population size	2020 = photocensus not attempted	--	Herd did not aggregate sufficiently for photocensus. Successful photocensus in 2017 found 218,457 (95% CI = 202,106 - 234,808) caribou.
Population trend	2019 = no data	$\Lambda = 1.037$ (2010-2017)	Declined by 55,000 caribou between 1989 and 2001. Recovered to 169,000 by 2010 and continued to increase to 218,457 in 2017. Annual growth rate almost identical to growth phase from 1972-1989.
Adult cow survival	2019 = 90.5 % (95% CI = 80.1 – 95.6%)	88.2 % (2012-2019)	Sampling interval is June 1 2019 – July 30 2020
Adult bull survival	2019 = 73.4 % (95% CI = 44.1 – 89.1%)	70.1 % (2015 – 2019)	Sampling interval is June 1 2019 – July 30 2020
Yearling cow survival	2019 = 86.3 % (95% CI = 55.8 – 96.4%)	86.7 % (2017 – 2019)	Sampling interval is June 1 2019 – July 30 2020
Calf birth rate (Parturition rate)	≥ 4 yr olds = 0.80	0.84 (5-yr average)	35-year average = 0.82
	≥ 3 yr olds = 0.72	0.82 (5-yr average)	12-year average = 0.79
	3 yr olds = 0.47	--	Small sample sizes for each year and limited consecutive years limit the ability to calculate meaningful averages or adequate time-series weighted averages.
Post-calving survival	2019 = 0.94	0.87 (long-term average)	Includes ≥ 3 year old adult cows
Late June calf:cow ratio	2019 = 0.56	0.58 (long-term average)	Includes ≥ 3 year old adult cows
March calf:cow ratio	2020 = no data	--	17-year average = 0.35. Survey in March 2017 = 0.35
Bull Ratio	2020 = no data	--	
Peak of calving	2020 = June 1	1 June	Peak of calving in 2020 was on or slightly before June 1

Indicator Table - 2020



Body condition			
Average backfat	F: 1.6 cm; M: 1.3 cm	F: 2.7 cm; M: 2.0 cm	Caribou generally not available for fall 2019 harvest, majority of samples collected October thru December 2019
Hunter assessment	F: 2.9 M: 2.7	F: 2.2 M: 3.0	Caribou generally not available for fall 2019 harvest, majority of samples collected October thru December 2019
Overall condition of caribou	2019-20 = generally good	Good	Caribou Body Condition generally remained good
Habitat and other considerations			
Snow conditions winter (2019-20)	<u>Snow Depth</u> Eagle = 81.0 cm Ogilvie = 87.7 cm Old Crow = 67.0 cm North Slope = no data Richardson = no data <u>Snow Density</u> Eagle = 0.21 g/cm ³ Ogilvie = 0.21 g/cm ³ Old Crow = 0.20 g/cm ³ Richardson = no data North Slope = no data	<u>5 yr Av. Depth</u> 79.8 cm 66.5 cm 74.3 cm no data no data <u>Density</u> 0.21 g/cm ³ 0.23 g/cm ³ 0.19 g/cm ³ no data no data	Eagle and Ogilvie Regions well above average. Eagle Region appears to have an increasing trend towards a deep snowpack over the last decade. Snow density increasing in Ogilvie Region.
Wildland fires	2020 = data not yet available 2019 = 2,540.7 km ²	5 year average 1622.9 km ²	Most large fires in 2019 on fringe of PCH range. Total of 18% of range affected by fires since 1960. No significant burns in 2020. No fires in NWT portion of range
Linear disturbance and human development	2019-20 = No major increases	N/A	Oil and gas lease sales proposed for 2021 for the 1002 lands in Alaska. Seismic work proposed for a portion of 1002 east of Marsh Creek from January-September 2021.