Appendix (Presentations from the 2017 ENR South Slave Regional Wildlife Workshop)

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South Slave Boreal Caribou Monitoring

Ashley McLaren
Regional Biologist, ENR, South Slave Region
Regional Wildlife Workshop, Nov. 15 – 16, 2017

Boreal Caribou Monitoring

- **Objectives:** long-term monitoring of adult female survival and calf recruitment, monitor habitat selection, collect samples from harvesters (genetics, diet/health)
- Ongoing in Hay River Lowlands and Cameron Hills since 2003/04 (Alberta now actively monitors caribou in Cameron Hills)
- Added Pine Point/West Buffalo Lake, Mackenzie
- Deploy GPS radio-collars on adult cows annually- cow survival, locate caribou for recruitment surveys, document habitat use
- 2016/17: deployed GPS collars on bulls
- Similar program in Dehcho and North Slave regions, collaboration

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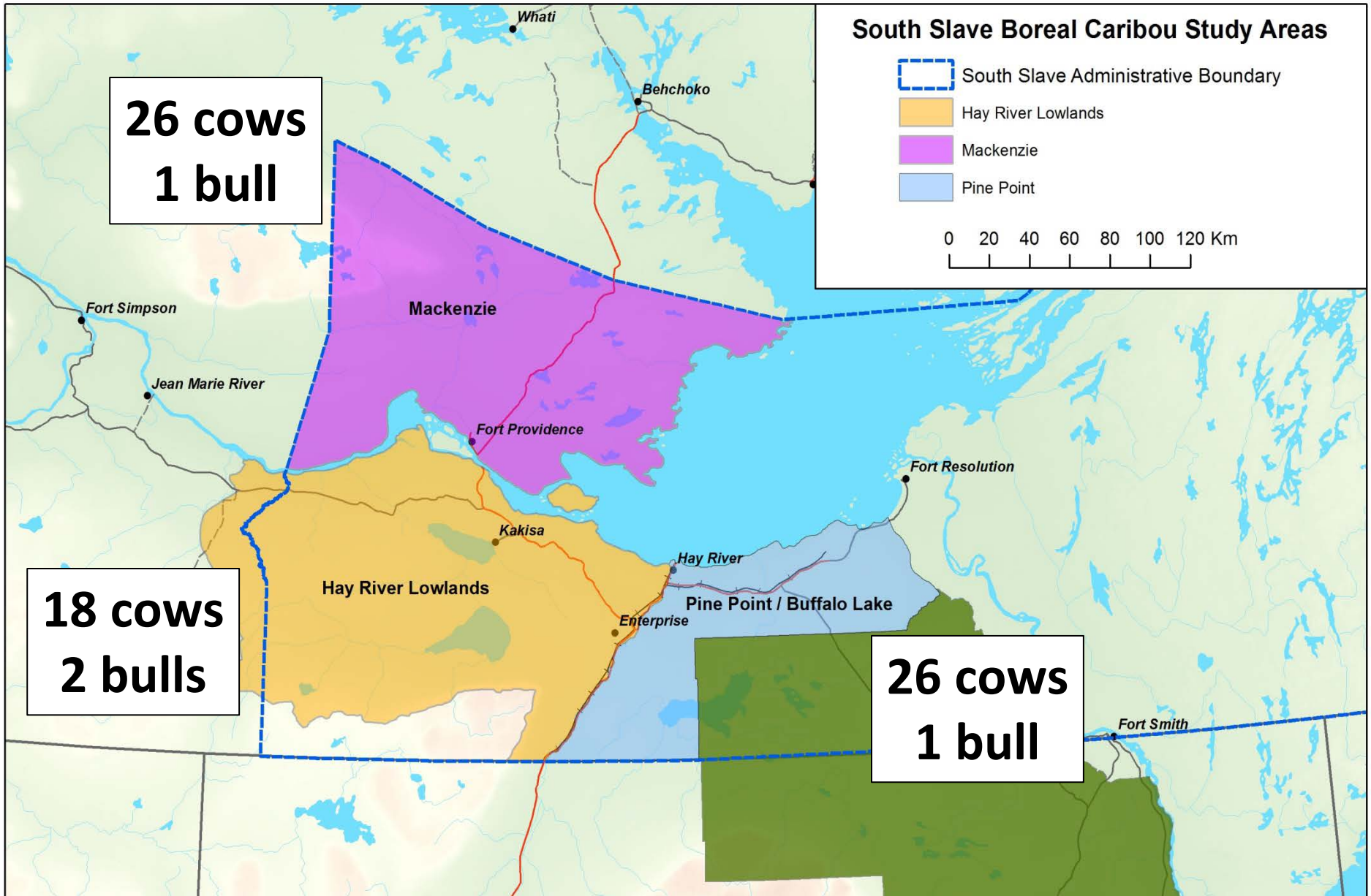
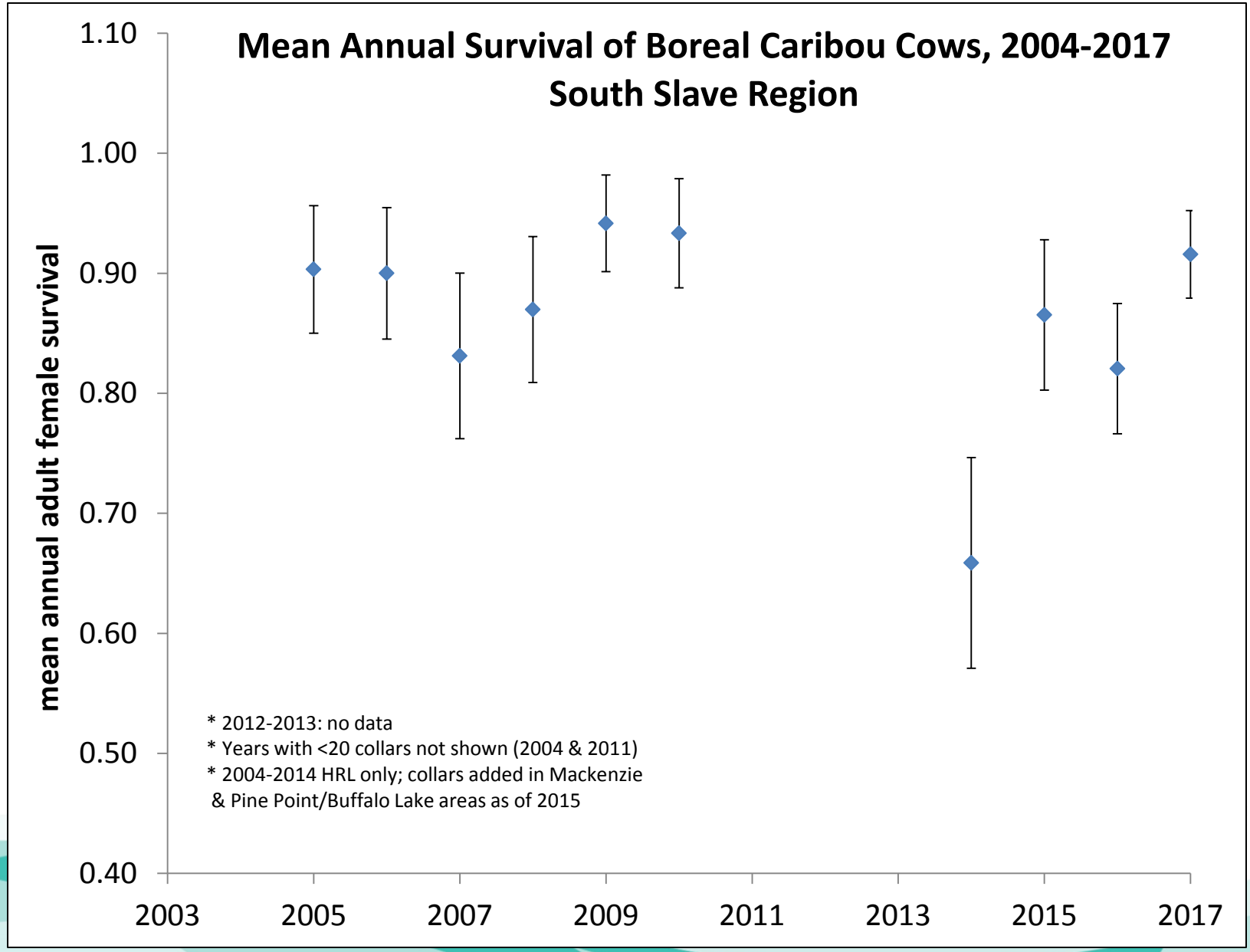
Study Areas


South Slave Boreal Caribou Study Areas
South Slave Administrative Boundary
Hay River Lowlands
Mackenzie
Pine Point
0 20 40 60 80 100 120 Km
26 cows
1 bull
18 cows
2 bulls
26 cows
1 bull
Whati
Behchoko
Fort Simpson
Jean Marie River
Mackenzie
Fort Providence
Fort Resolution
Kakisa
Hay River
Hay River Lowlands
Pine Point / Buffalo Lake
Enterprise
Fort Smith

Results from Monitoring- Survival

- Based on survival of collared cows
- Mortality investigations- cause of death (timing important for accuracy)
- Very few caribou die in the winter (as of 2016: 10 of 112)
- Summer/Fall 2017: 9 mortalities; 4 predation suspected

Results from Monitoring- Survival



Results from Monitoring- Calf Recruitment

- March surveys, 10-month old calves
- Locate all collared cows- determine presence of calves
- Classify all caribou in group with collared cow + uncollared groups
- Collaborate with Dehcho Region and Alberta


Photo: A. McLaren

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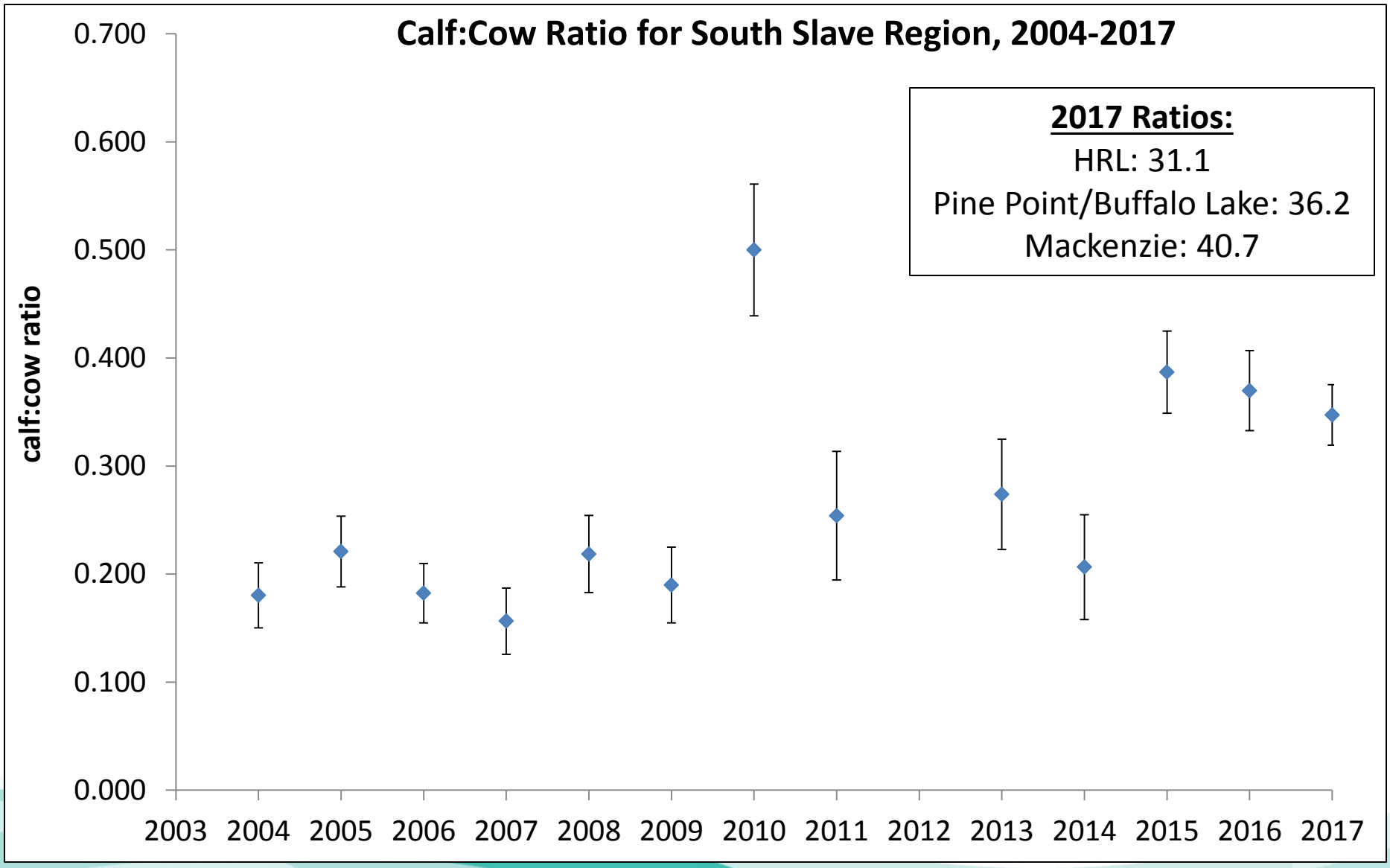
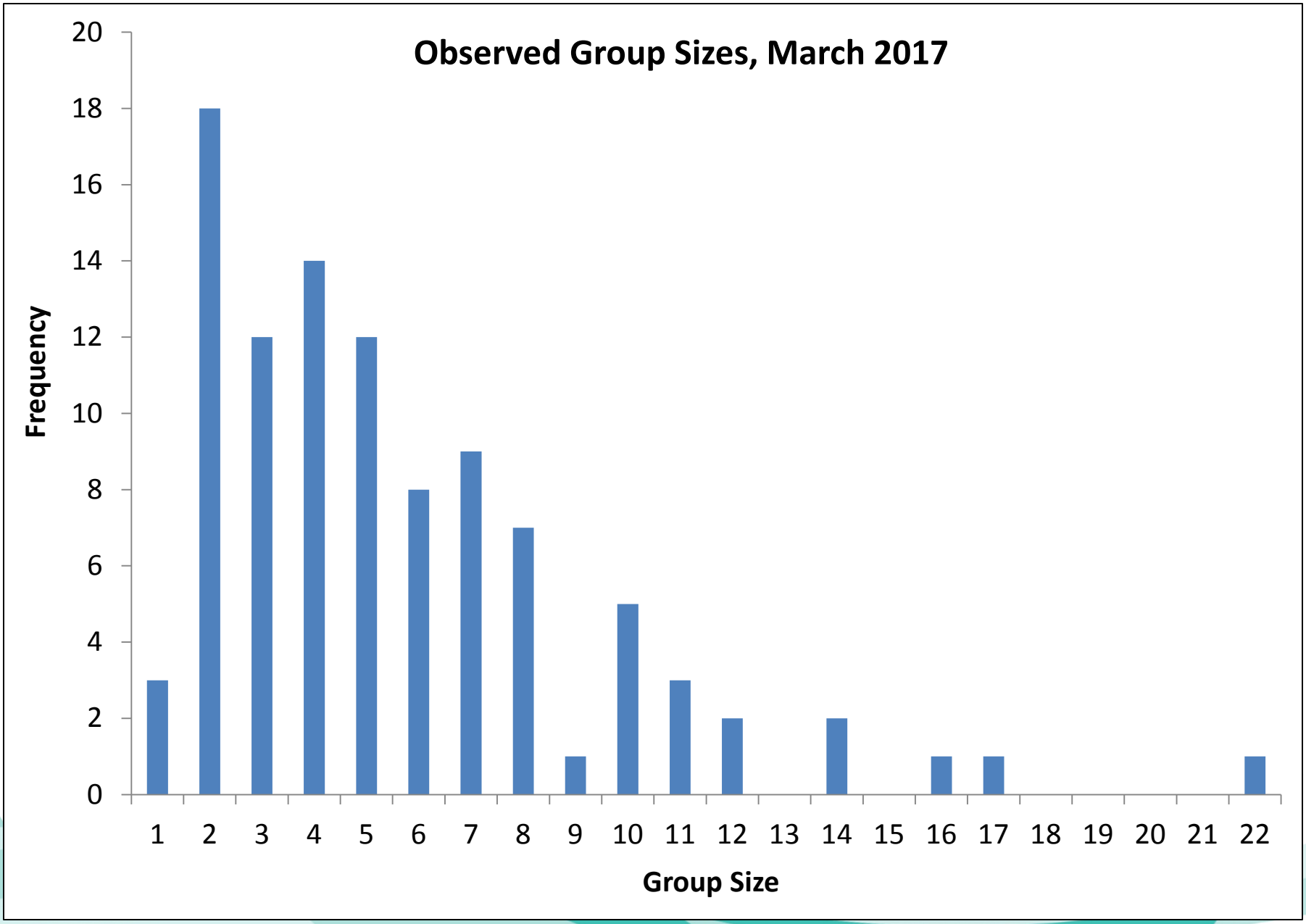
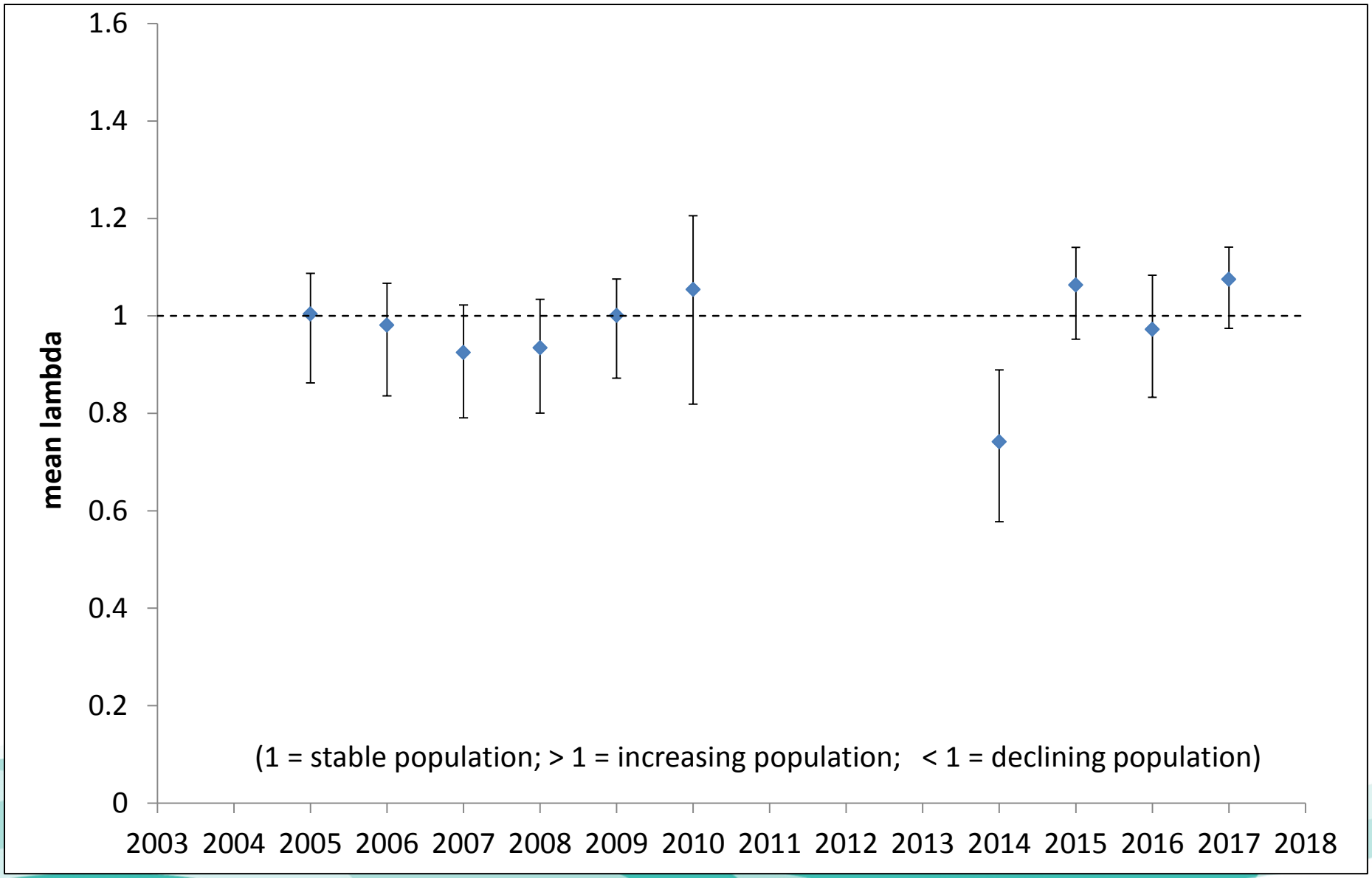
Results from Monitoring- Calf Recruitment



Results from Monitoring- Group Sizes



Results from Monitoring- Annual Population Growth Trend (Lambda) 2004 - 2017



Boreal Caribou Body Condition

- Collaboration with Dr. John Cook (NCASI)
- Ultrasound measurements on caribou- measure body fat
- Compared results to NE BC and Dehcho Region- caribou in SSR among the fattest
- Caribou hold constant body weight and fat over winter = nutrition in summer and early autumn strongly influenced fat levels during winter
- See poster for more details

Photo: A. McLaren

Community Involvement


Photo: A. McLaren

- Pre-collar deployment flights
- Report observations of caribou and/or track networks
- Mortality investigations with ENR staff
- Samples from harvesters
- Vegetation sampling (Dr. Cook)
- NEW- Boreal Caribou Working Group

How Population Trend Results Are Being Used

1. ECCC analysis- influence of different types of disturbance on caribou population trend across Canada
2. Habitat selection: important areas of caribou use, used to support range planning
3. Monitor the impacts of the two FMAs
4. Adaptive management: evaluate whether GNWT's range plans are working, report on population status to ECCC and the Conference of Management authorities under species at risk legislation

Policy Updates

1. NWT Recovery Strategy for boreal caribou was completed by the Conference of Management Authorities (CMA) and published in February 2017.
2. ENR will be consulting on a regulation change in 2018 to the big game hunting regulations: change from “woodland caribou” to “boreal caribou” and “northern mountain caribou” to facilitate any possible future management actions.
3. July 2017: Environment and Climate Change Canada (ECCC) posted a draft Action Plan about their federal actions for boreal caribou recovery; April 2018 will report on critical habitat protection across all ranges.
4. October 31, 2017: ECCC released 5-year report on implementation of the national recovery strategy. **Key message:** Habitat disturbances increased between 2010 and 2015 across Canada and in the NWT. The NT1 range is still above the 65% undisturbed habitat threshold for critical habitat.

Questions?

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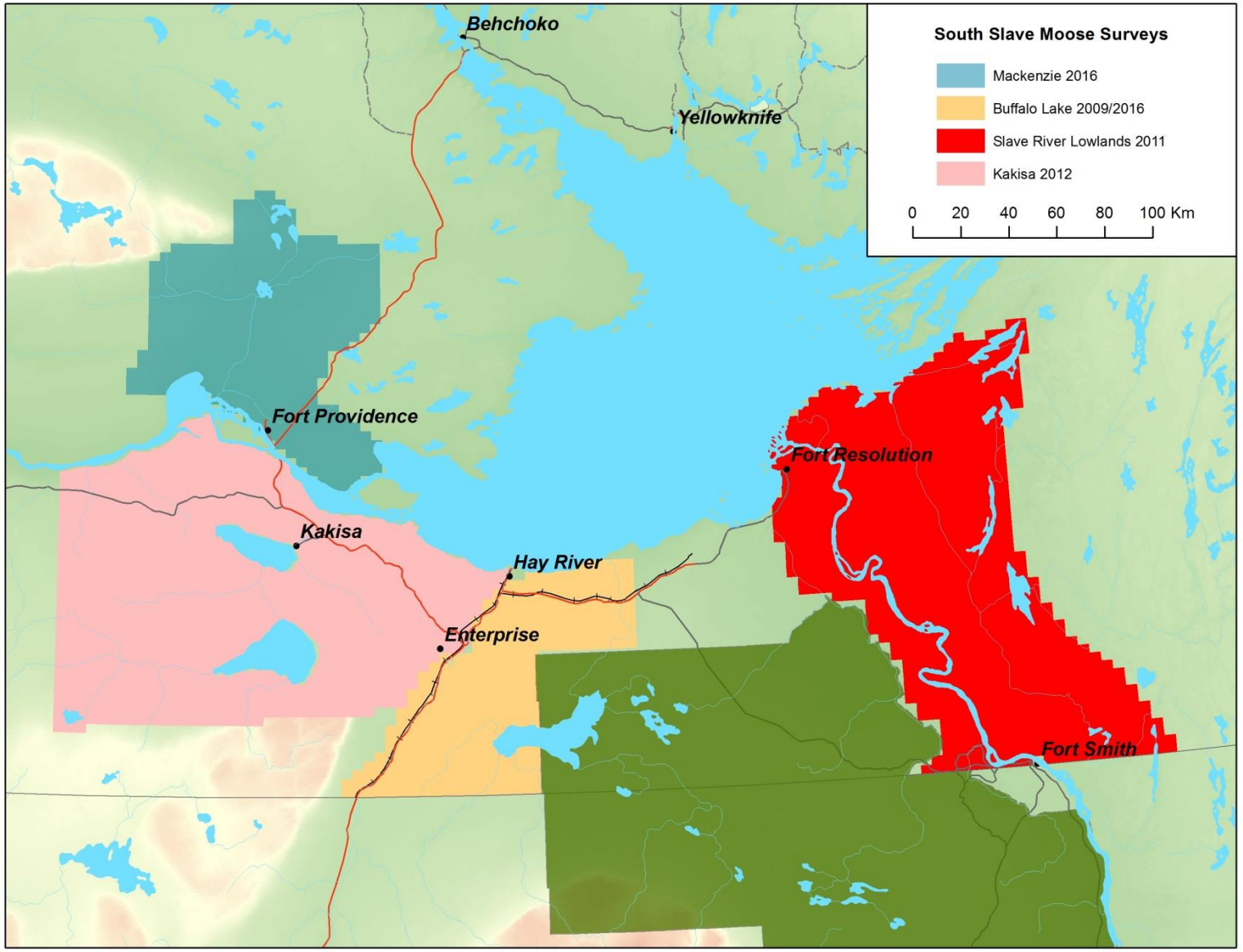
Moose Population Surveys


Photo: A. McLaren

Ashley McLaren
Regional Biologist, ENR, South Slave Region
Regional Wildlife Workshop, Nov. 15 – 16, 2017

Study Areas and Objectives

4 moose survey areas in South Slave Region

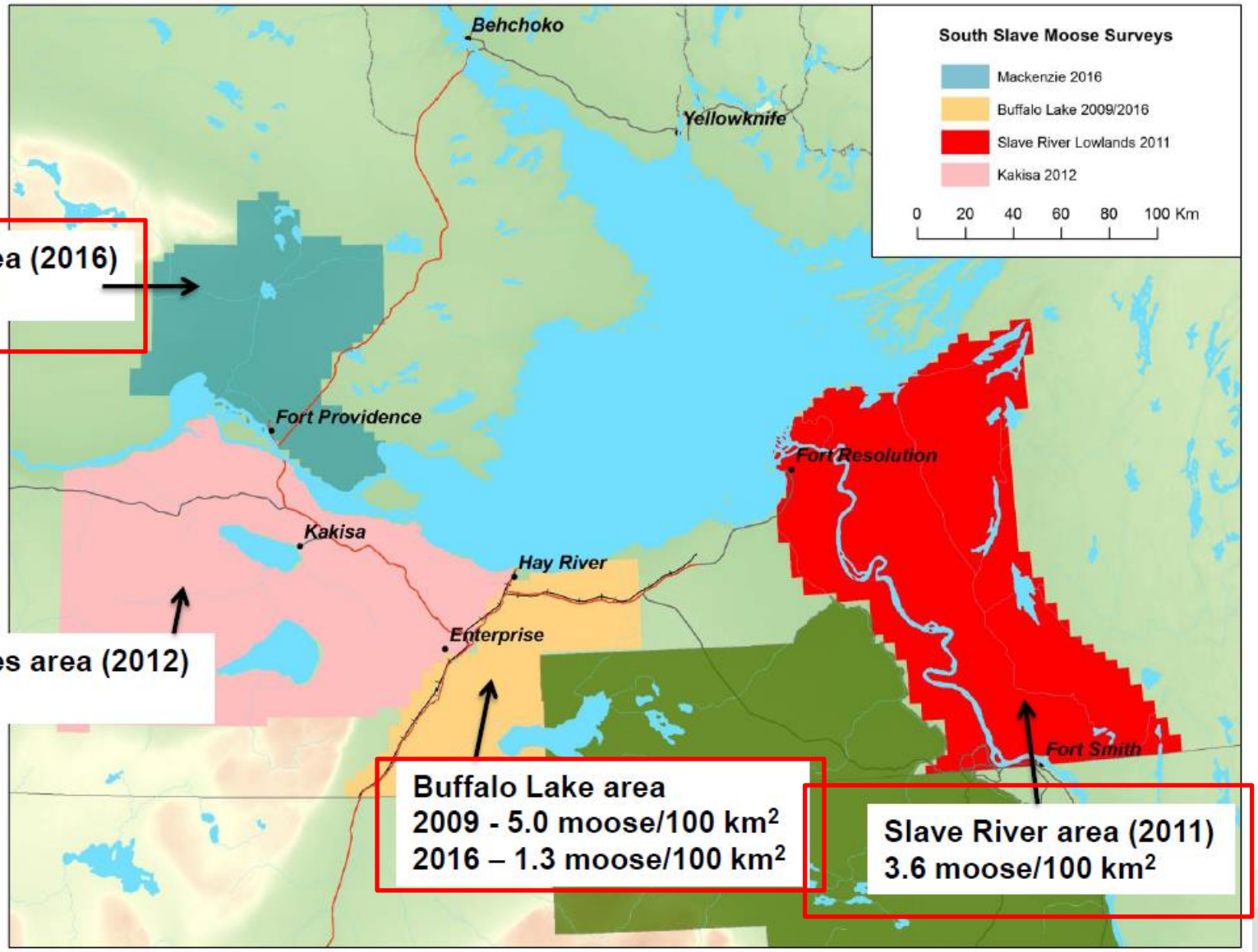


Study Areas and Objectives

- Objectives of survey: determine population estimate and density in survey area
- Survey each area every 6 years
- Key harvested species, concerns ↓ numbers
- Community involvement


Photo: A. McLaren

Results of Moose Surveys



Fort Providence area (2016)
4.8 moose/100 km²

Kakisa/Tathlina Lakes area (2012)
2.9 moose/100 km²

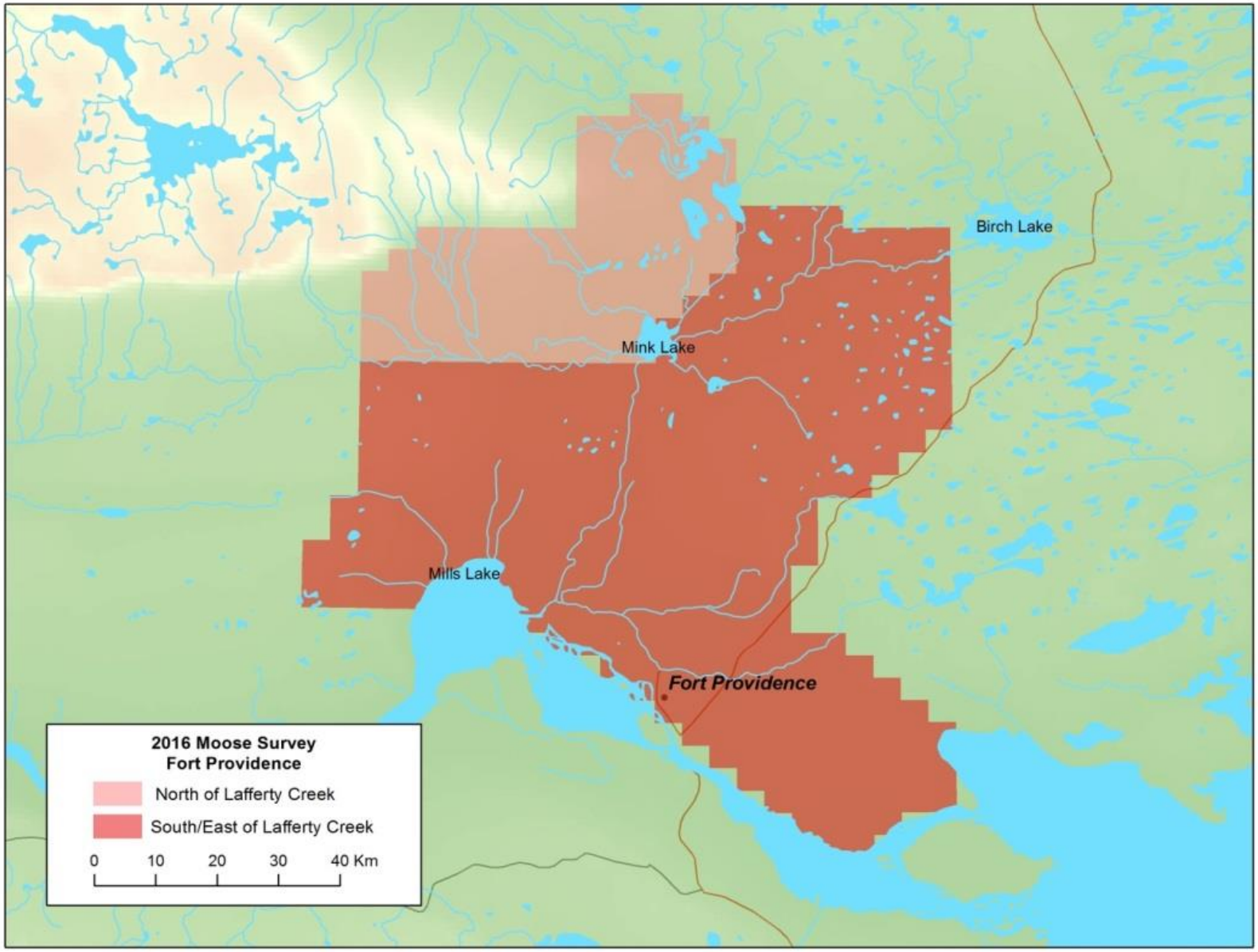
Buffalo Lake area
2009 - 5.0 moose/100 km²
2016 – 1.3 moose/100 km²

Slave River area (2011)
3.6 moose/100 km²

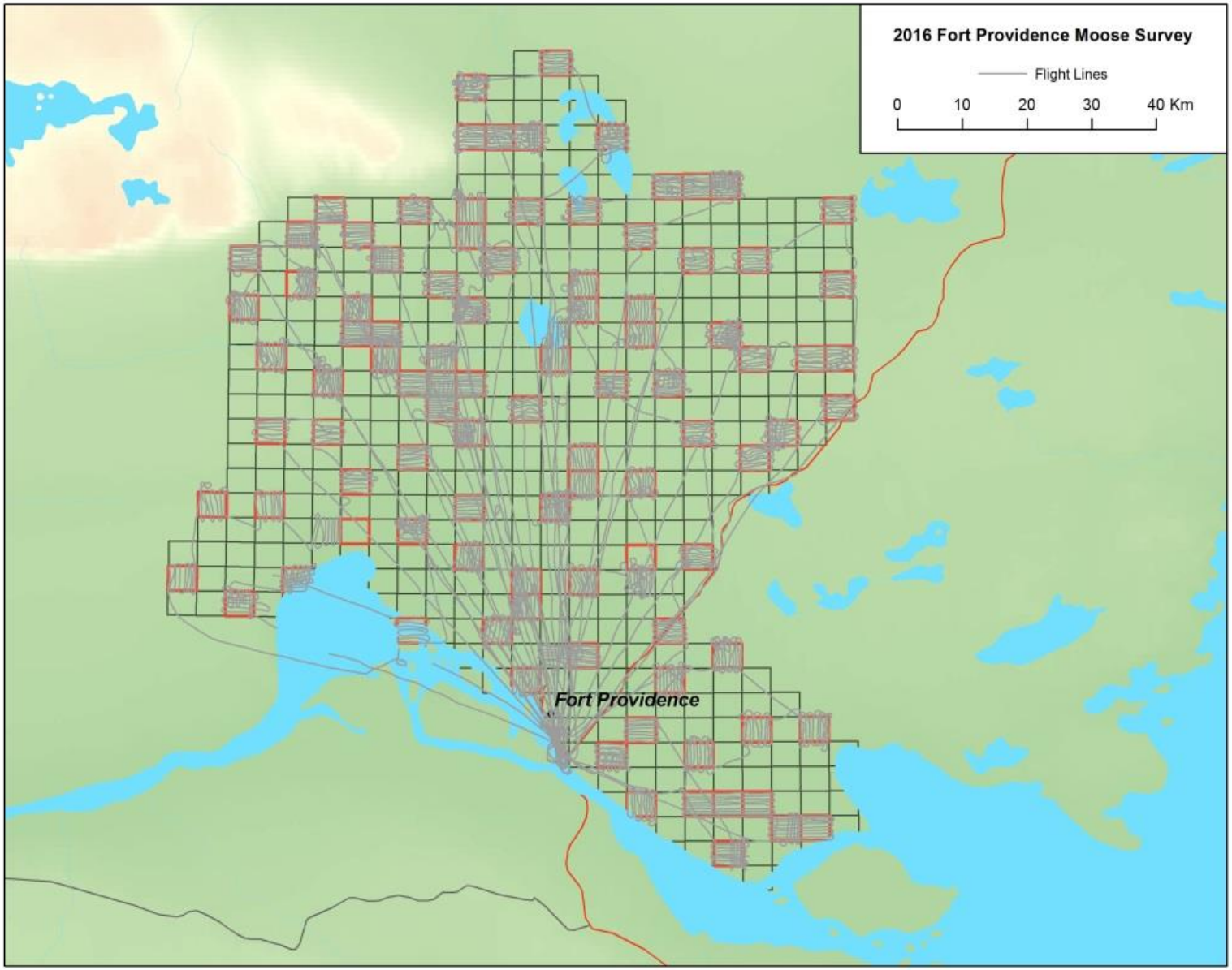
Fort Providence- 2016 Survey

- Prior to 2016, area last surveyed in 1997
- Concerns: low numbers, impact of anthrax outbreak on local moose population
- Method: divide survey into grid cells and sample 20% of survey area (geospatial method)
- February survey, 6 days, 58 hours

Fort Providence Survey Area



Fort Providence Survey- Grids Flown



Fort Providence- 2016 Survey

Results:

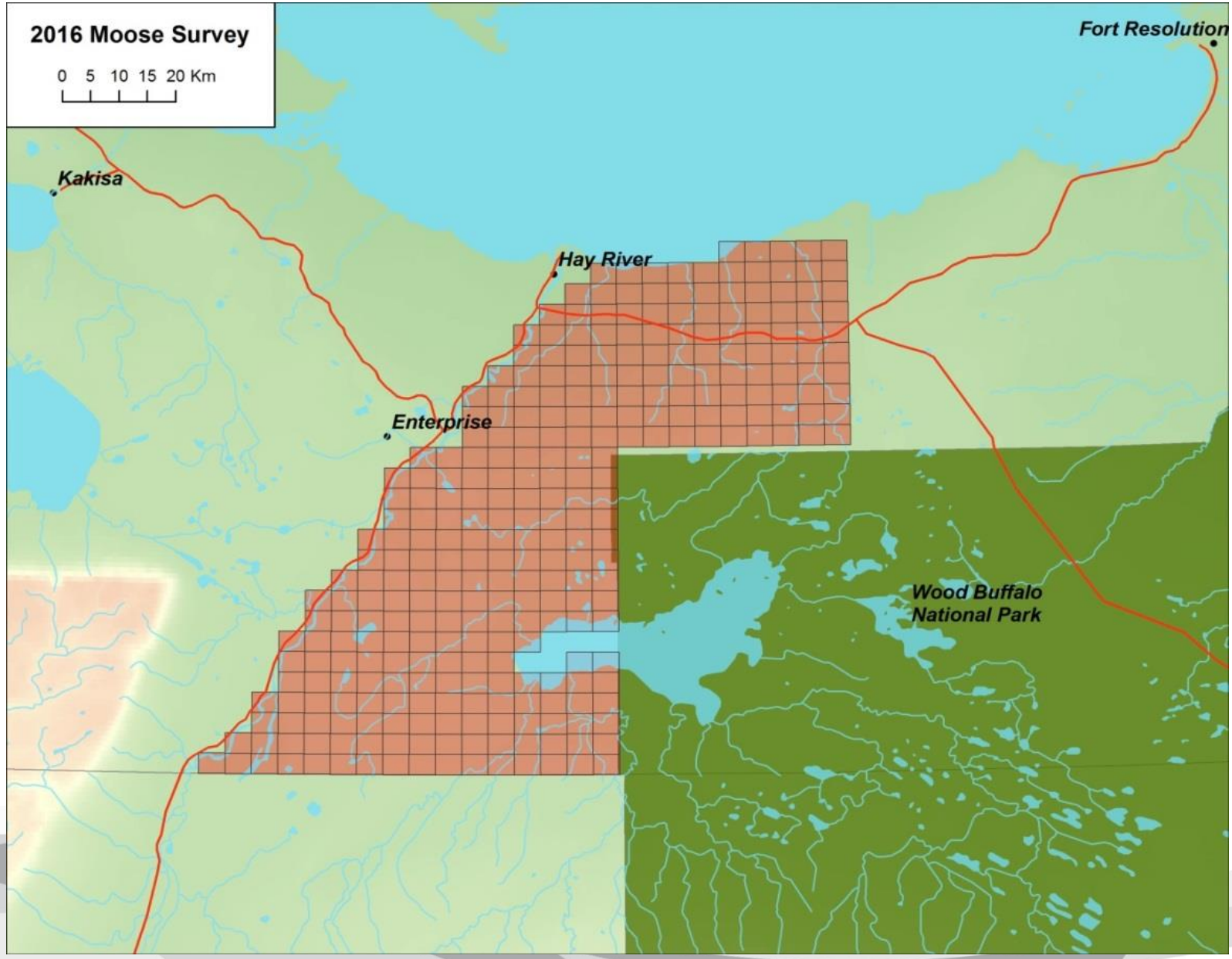
- Population estimate: **360 moose** (80% confidence interval 244 - 475 moose), or a density of **4.8 moose/ 100 km²**
- Comparison to 1997: 116 moose, or density of 3 moose/100 km²

Photo: GNWT

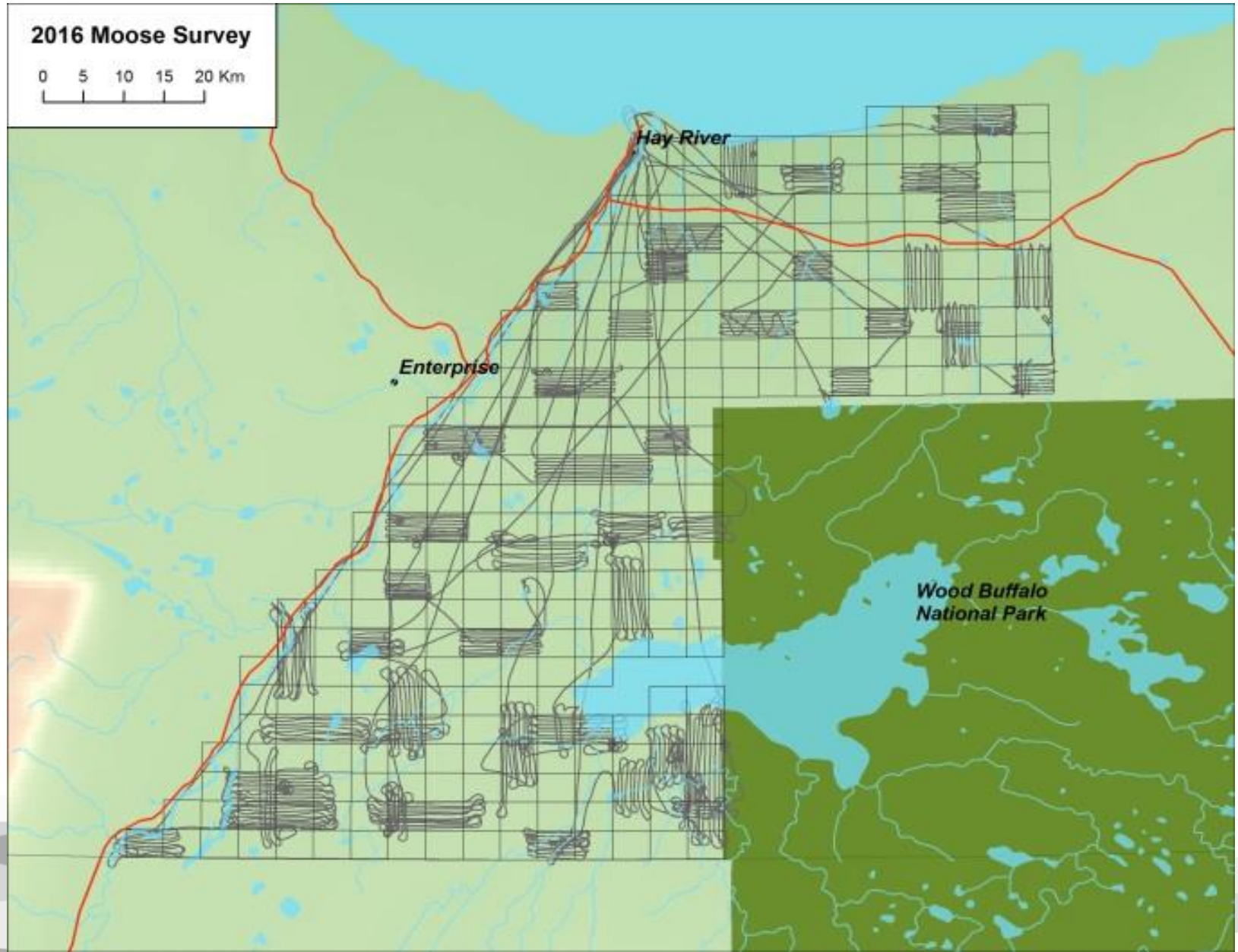
Buffalo Lake Area- 2016 Survey

- Prior to 2016, area last surveyed in 2009
- Interest from communities in updating moose information in the Buffalo Lake area
- Survey methods: grid-cells/geospatial, 20% coverage of survey area
- Nov. 29 – Dec. 10, 2016; 35 hours
- Objectives: estimate local moose abundance and density; age and composition (fall surveys only)

Buffalo Lake Survey Area



Buffalo Lake Survey- Grids Flown



Buffalo Lake Area- 2016 Survey

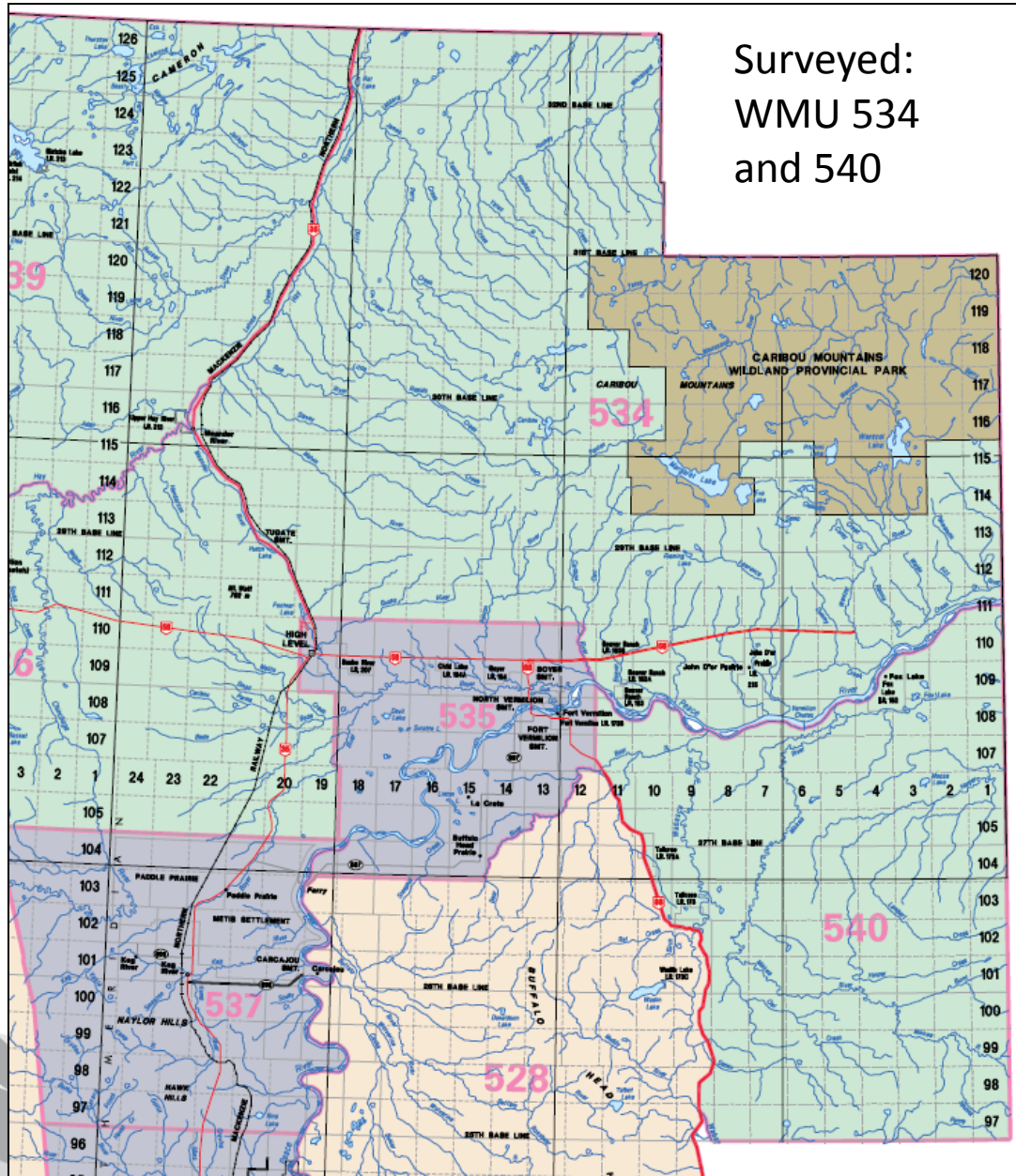
Results:

- Population estimate: **74 moose** (80% confidence interval 45 - 104 moose), or a density of **1.3 moose/ 100 km²**
- 2016: 33 calves/100 cows and 73 bulls/100 cows
- Comparison to 2009: 286 moose (80% confidence interval 204 - 368 moose), or a density of 5.0 moose/ 100 km² (similar methods and survey conditions)
- 2009: 48 calves/100 cows and 133 bulls/100 cows

Take home message: 2016 survey result significantly lower than 2009 estimate

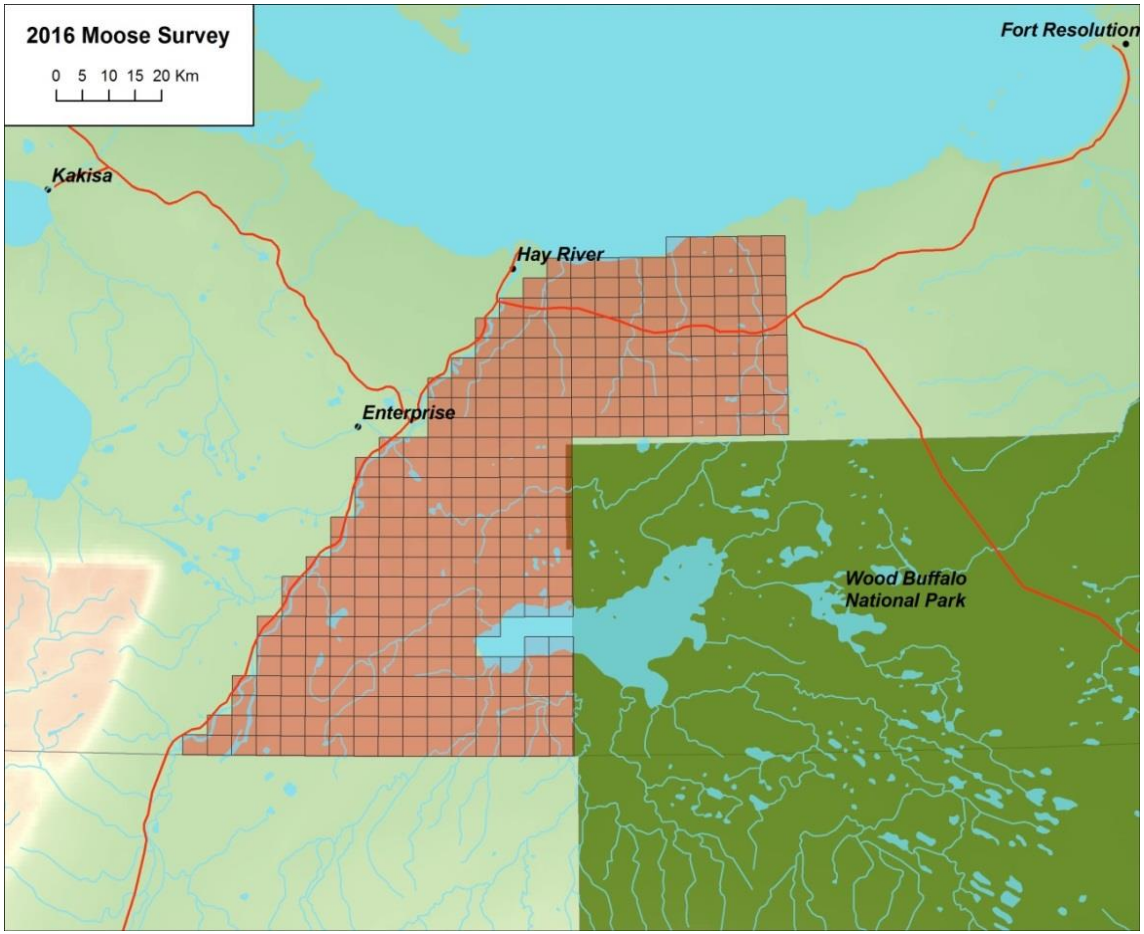
Results from Northern Alberta

- Government of Alberta notified of Buffalo Lake moose survey results
- Information sharing
- Recent moose surveys in northern Alberta (winter 2016/17): lowest on record 3 – 4/100 km^2



Buffalo Lake Area- Next Steps

- Collaborate with WBNP to survey broader area
- Next survey in 3 years
- Gives time to detect change or recovery



Combine with other surveys?

- Design surveys to collect data on more than one species?
- Bison Control Area surveys, Mackenzie Bison Sanctuary surveys- also survey for moose?
- 2016: estimated moose abundance during Mackenzie bison population survey
- 2017: surveyed for moose during BCA transect flights
- Further work and more data needed to draw conclusions about survey methods

Winter 2017/18- Slave River Lowlands Moose Survey

- Previous survey: 2011
- Population estimate: 561 moose (80% confidence interval 443 – 679 moose), or a density of 3.6 moose/100 km^2
- 2017/18 survey to take place in March
- Survey methods: grid-cells/geospatial, 20% coverage of survey area


Photo: GNWT


Photo: GNWT

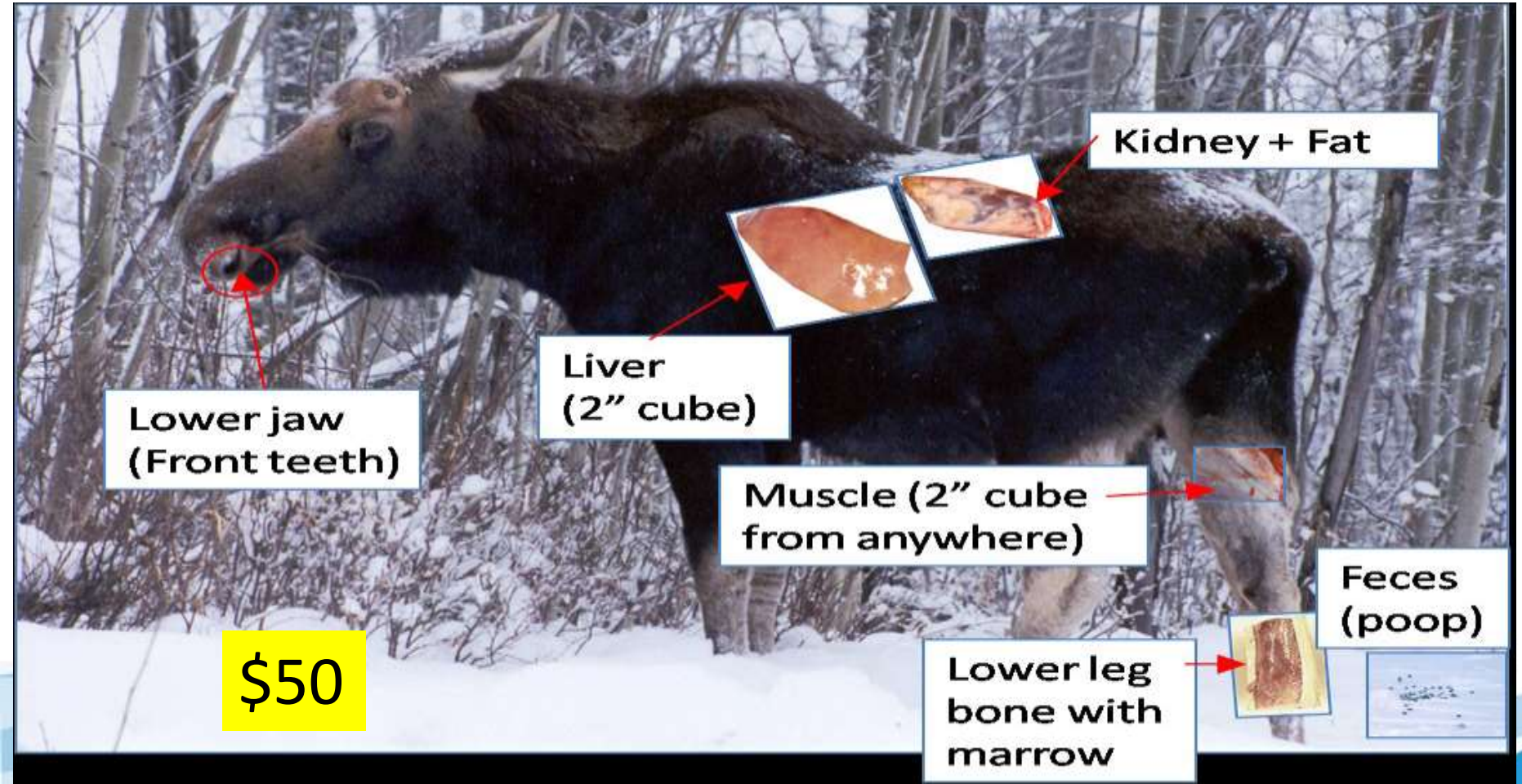
QUESTIONS?

Draft Results:
South Slave Region Moose Health Program Data Review

Government of Northwest Territories

By Madison Hurst
Wildlife Technician ll , Wildlife Research and Monitoring
Department of Environment and Natural Resources, South Slave Region

2009-2017


Kidney + Fat
Liver
(2" cube)
Lower jaw
(Front teeth)
Muscle (2" cube
from anywhere)
Feces
(poop)
Lower leg
bone with
marrow
$50

Northwest Territories Environment and Natural Resources

Moose Winter Tick Survey

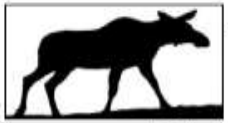
Date:_____ Time:_____ Name of Collector:_____

Location of Observation: _____

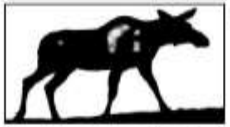
Sex: M or F Age Class: Calf Yrlg Adult Body Condition: Poor Fair Good

Part One: CHECK THE BOX BELOW TO DESCRIBE THE AMOUNT OF HAIR LOSS

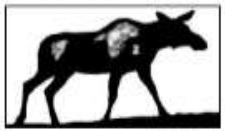
If both sides are viewed, the most severely infested side should be recorded.



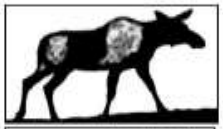
☐ **NO LOSS:** Normal haircoat. No obvious indications of tick infestation.



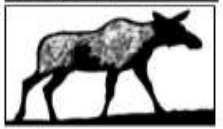
☐ **SLIGHT LOSS:** Few small patches of hairloss. Tick Infestation affecting 5-20% of winter hair (lost or broken at or near skin level)



☐ **MODERATE:** Large patches of hairloss. Tick Infestation affecting 30-40% of winter hair



☐ **SEVERE:** Significant hairloss on shoulders and hind quarters. Tick Infestation affecting 40-80% of winter hair



☐ **GHOST:** Hairloss over most of body (except head). Tick Infestation affecting over 80% of winter hair

Part Two:	☐ Light tick abundance (<100 swollen ticks on head and neck)
CHECK BOX TO DESCRIBE	☐ Moderate tick abundance (100-1000 swollen ticks on head, neck, shoulders)
TICK ABUNDANCE	☐ Heavy tick abundance (1000+ swollen ticks everywhere)

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Sample Regions

1) Taiga Shield-East

2) Slave River Lowlands and Delta

3) Pine Point-Buffalo Lake

4) Hay River Lowlands

Sample Regions

Taiga Shield-East : 21

Slave River Lowlands and Delta: 32

Pine Point-Buffalo Lake 33

Hay River Lowlands 8

- Mainly harvested in the fall

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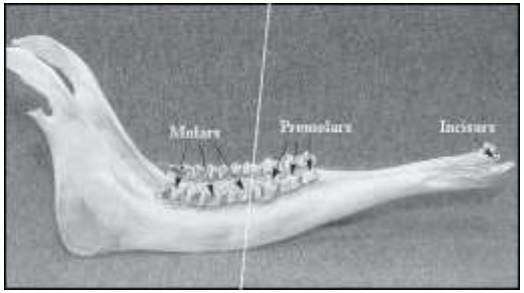
Male vs Female

- 94 moose kits collected
- Moose sex was reported for 86 of the 94 moose (91%)

- 55 male (64%)

- 31 female (36%)

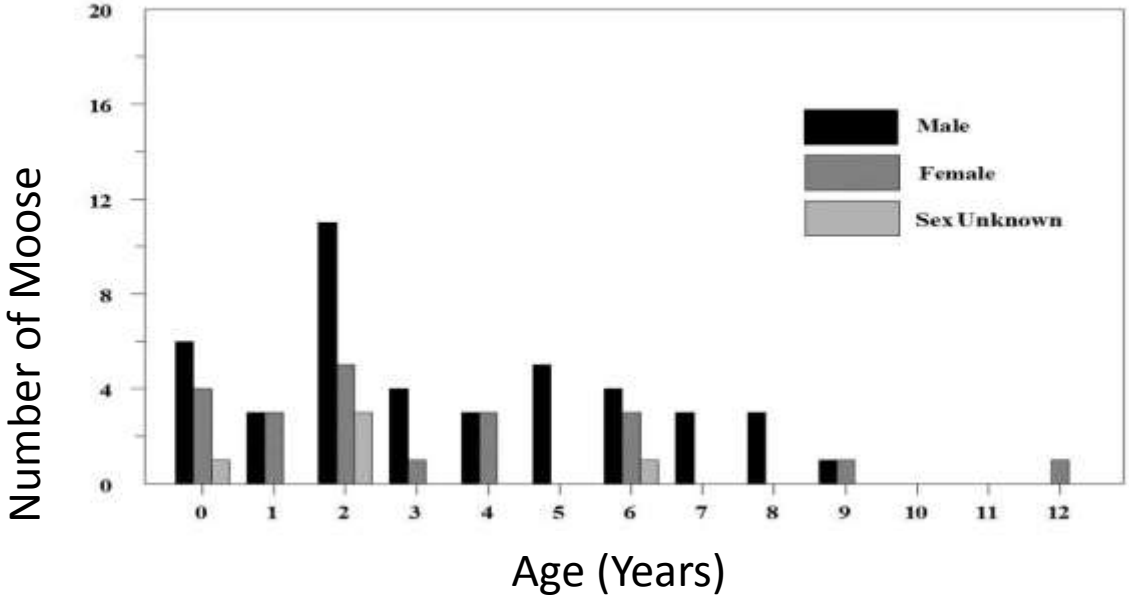
Moose Age



- Moose age was determined by counting treelike rings in teeth
- counts taken from an incisor tooth

- Age Data was collected for **69** of the 94 moose (73%)
- **22** of these 69 moose were **1-2 years** old (34%)
- **23 adult bulls** (males 2 years and older) (36%)
- **10 calves** (less than 1 year old) (16%)
- **9 adult cows** (females 2 years and older) (14%)
- The mean age of the harvested moose was **3.3 years**

Age-Sex distribution chart

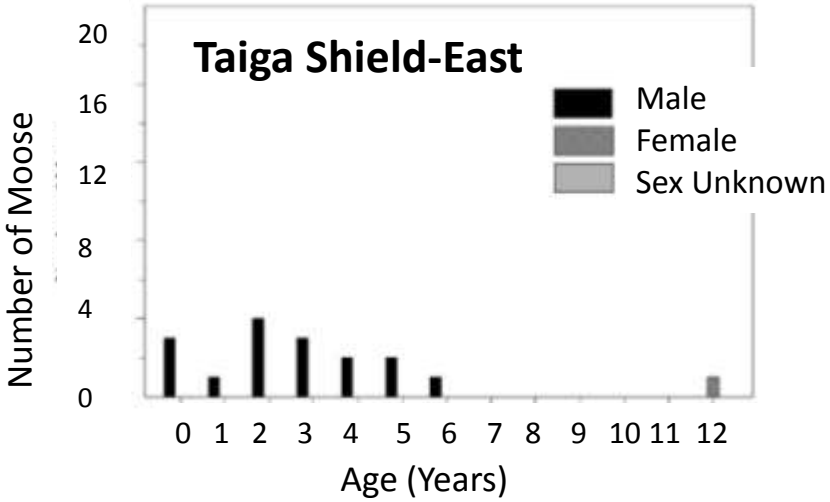


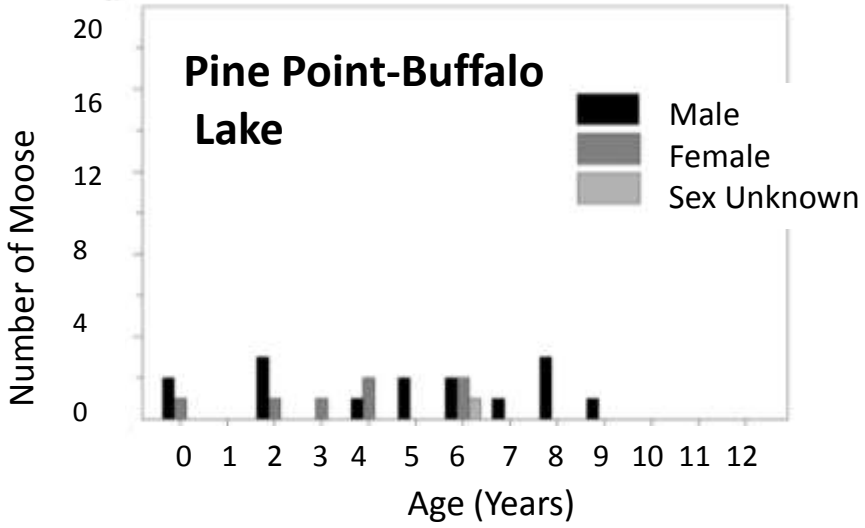
Of 69 aged moose:

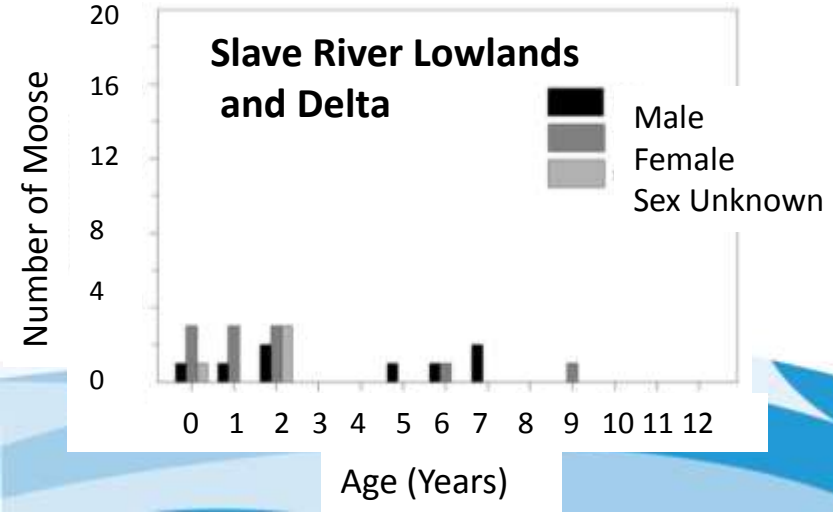
-43 were male

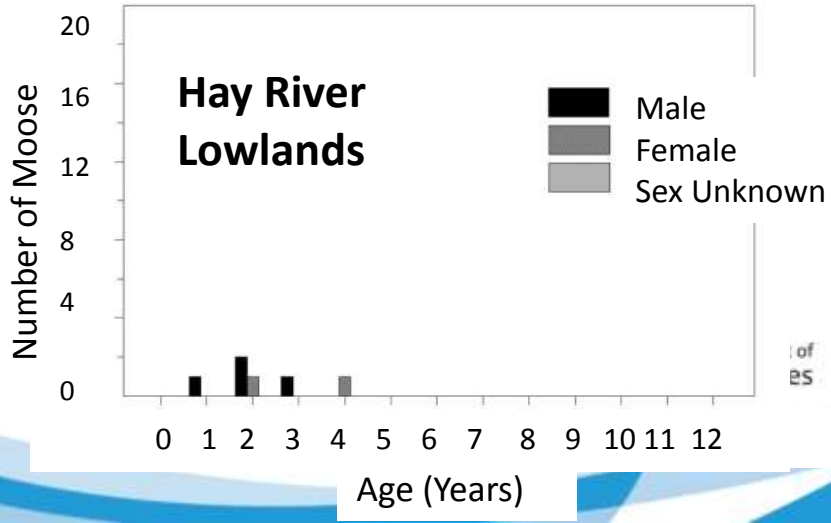
-21 female

-5 unknown sex


Taiga Shield-East
Male
Female
Sex Unknown
Number of Moose
0
4
8
12
16
20
0 1 2 3 4 5 6 7 8 9 10 11 12
Age (Years)


Pine Point-Buffalo Lake
Male
Female
Sex Unknown
Number of Moose
0
4
8
12
16
20
0 1 2 3 4 5 6 7 8 9 10 11 12
Age (Years)

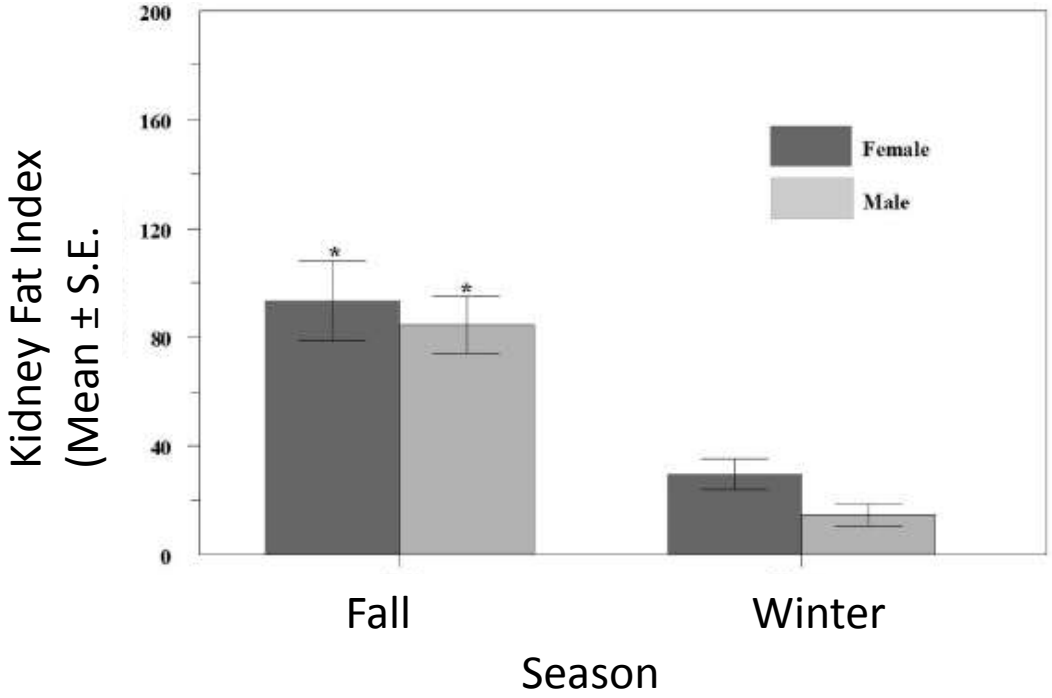

Slave River Lowlands and Delta
Male
Female
Sex Unknown
Number of Moose
0
4
8
12
16
20
0 1 2 3 4 5 6 7 8 9 10 11 12
Age (Years)


Hay River Lowlands
Male
Female
Sex Unknown
Number of Moose
0
4
8
12
16
20
0 1 2 3 4 5 6 7 8 9 10 11 12
Age (Years)

Fall vs. winter, adult moose

Body condition Indices

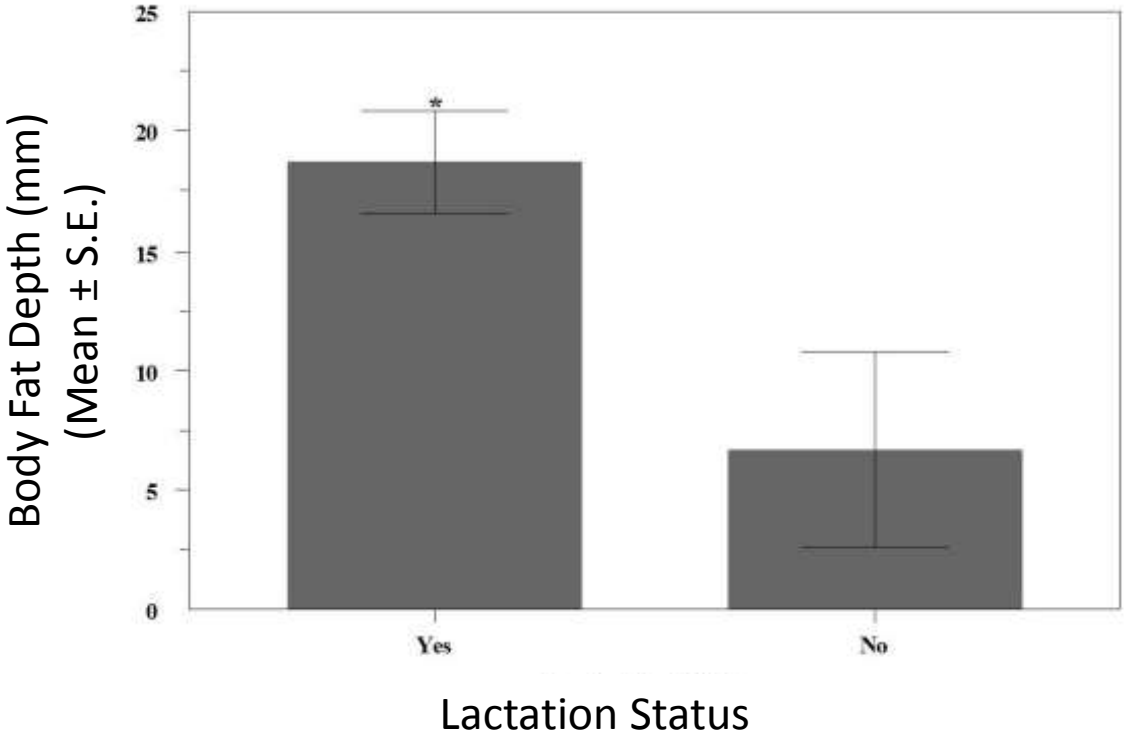
-Body Fat
-Kidney fat
-% Bone marrow fat



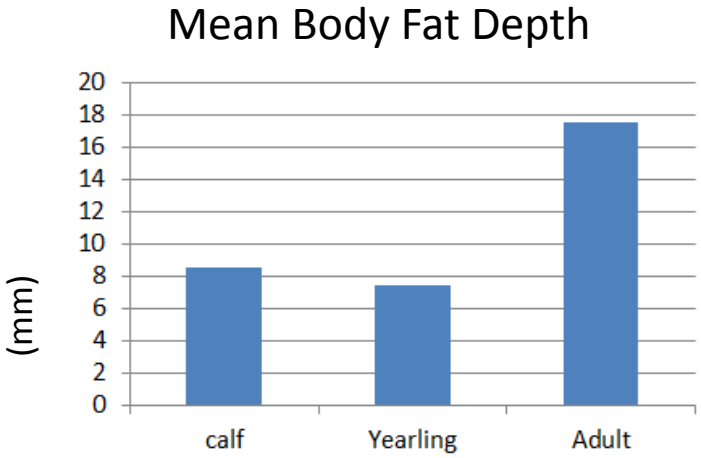
Fall : Sept to December
Winter: January to April

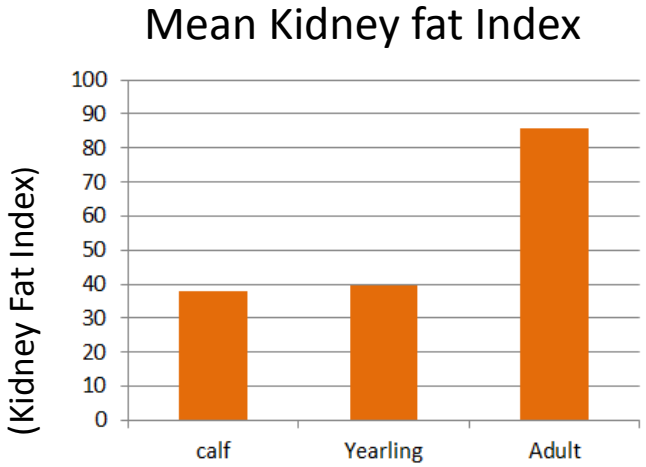
Lactation Status and Body Condition

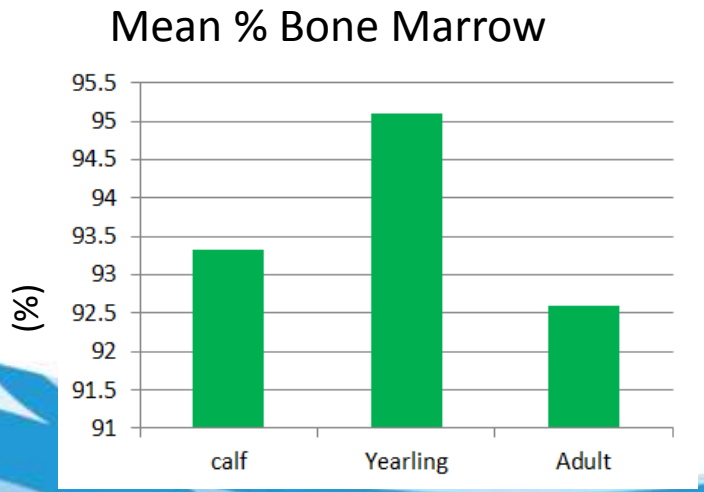
Adult cows harvested in fall : **12**
9 with lactation
3 with no lactation



Summary of Body Condition Indices







-No evidence of widespread starvation in any of the sample regions

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Parasites

-Feces was collected for 33 of the 94 sampled moose

-Males in rut will sometimes have no feces

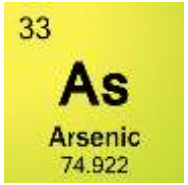
-Gastrointestinal parasites intensity and prevalence in NWT moose appear to be within the range, or lower than other jurisdictions

Toxicology

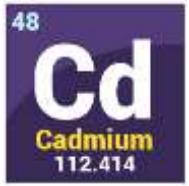
Liver and Kidneys are used to test for metals such as :

-Mercury

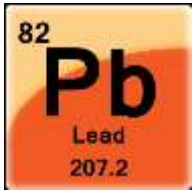
-Arsenic



-Cadmium



-Lead



-Slave River Lowlands and Delta contained the highest Cadmium levels of all the sample regions

-Older animals have higher levels of Cadmium

Interesting health issues

- The pancreas of 1 older male moose was reported to have enlarged to the size of its liver
  -Pine Point -Buffalo Lake
- 1 case of Abnormal hoof development
  -Pine Point -Buffalo Lake
- Ticks (presumed to be Winter Ticks) were found on 3 moose
  -Taiga Shield-East
  -Slave River Lowlands and Delta
- Extra teeth on 2 moose
  -Slave River Lowlands and Delta
  -Pine Point -Buffalo Lake
- Broken Teeth were found on 7 moose
  -Slave River Lowlands and Delta
  -Pine Point -Buffalo Lake
  -Taiga Shield-East

Thank you Harvesters!

Questions

References

Document: Government of the Northwest Territories South Slave Region Moose Health Program Data Review and Assessment Update: September, 2017

Photos:
https://redoubtreporter.files.wordpress.com/2013/05/moose-calves-4.jpg
https://assets.sectionhiker.com/wp-content/uploads/thumbskeep/image2.jpg
https://i.pinimg.com/originals/9d/18/47/9d1847f13bf8d95b05a8ac4400288e75.jpg
https://www.gschneiderphoto.com/gallery3/var/albums/wildlife/moose/young-female-moose-spring_5432.jpg?m=1447813567
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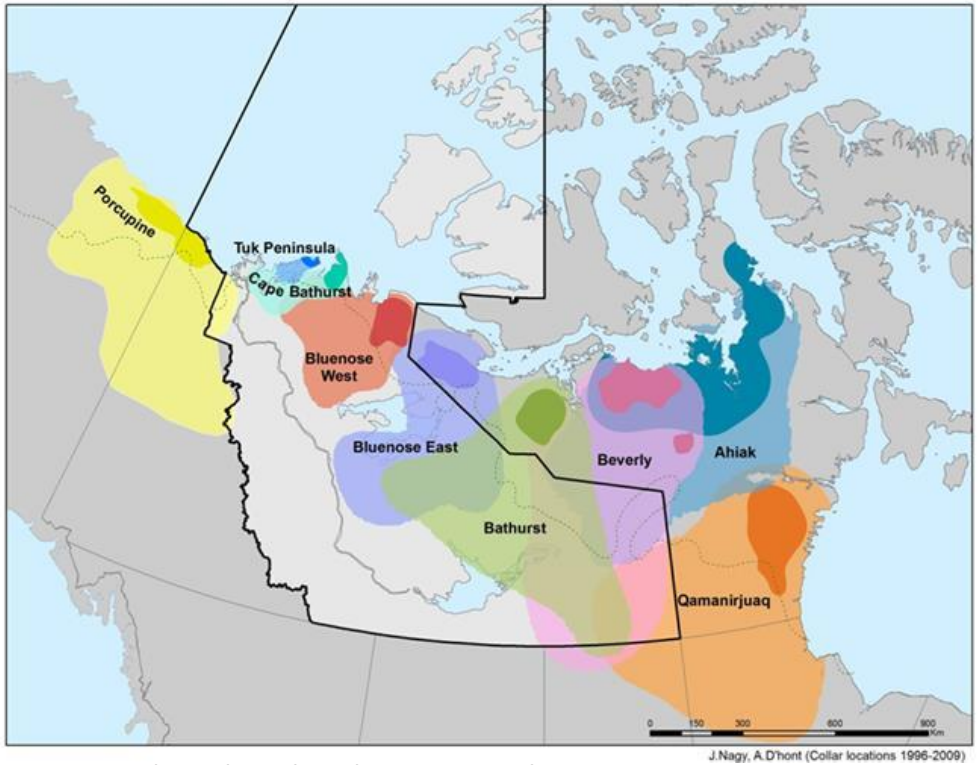
http://library.iti.gov.nt.ca/cataloging/servlet/presenttitledetailform.do?siteTypeID=-2&siteID=&includeLibrary=false&includeMedia=true&mediaSiteID=103&bibID=20115&walkerID=1510164449584
http://s3-ap-southeast-1.amazonaws.com/subscriber.images/chemistry/2017/05/22073844/Cadmium_Tile-300x300.png
https://sciencenotes.org/wp-content/uploads/2015/04/33-Arsenic-Tile.png
https://sciencenotes.org/wp-content/uploads/2015/04/Mercury_Tile.png
http://granitegeek.concordmonitor.com/wp-content/uploads/2016/01/moose-in-waterjpg.jpg

Barren-Ground Caribou Update

November 15, 2017

Government of
Northwest Territories

Government of
Northwest Territories



Barren-ground caribou herd ranges in the NWT.

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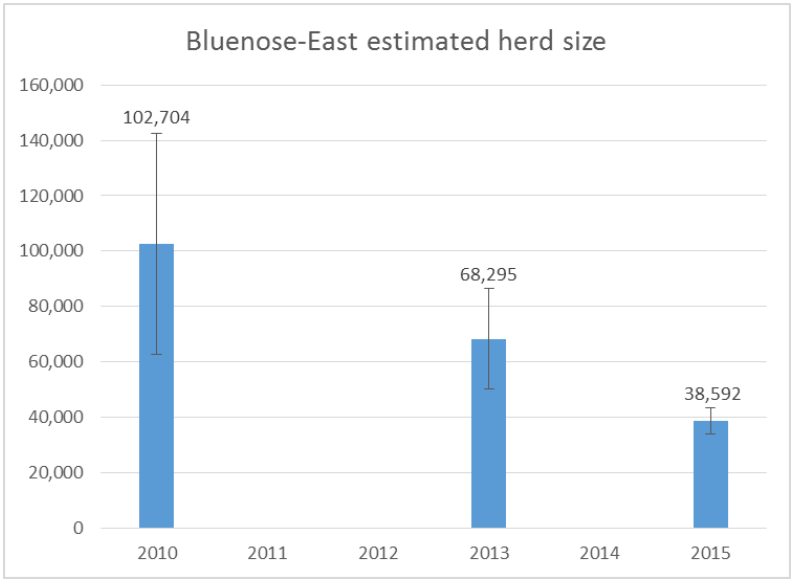
Bluenose-East



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Bluenose-East Management

- 2006: All resident, outfitted and commercial harvest ended
- 2014: Taking Care of Caribou Management Plan finalized
- 2015: Interim harvest limit = 1800 caribou
  Proposals submitted to WRRB and SRRB including TAH of 950 bulls
  Letters sent to Aboriginal Governments
- 2016: GN submitted proposal to NWMB included TAH of 340 bulls
  SRRB, WRRB and NWMB held public hearings
  WRRB – TAH of 750 bulls only within Wek'èezhìı
  SRRB – Community regulated harvest of 150 with 80% bulls
  NWMB – TAH of 340 caribou

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Northwest Territories

BNE Next Steps

- ACCWM 2nd Annual Status Meeting
  - November 21-22
- Calving Ground Photo Survey
  - June 2018
  - Population Estimate expected November 2018

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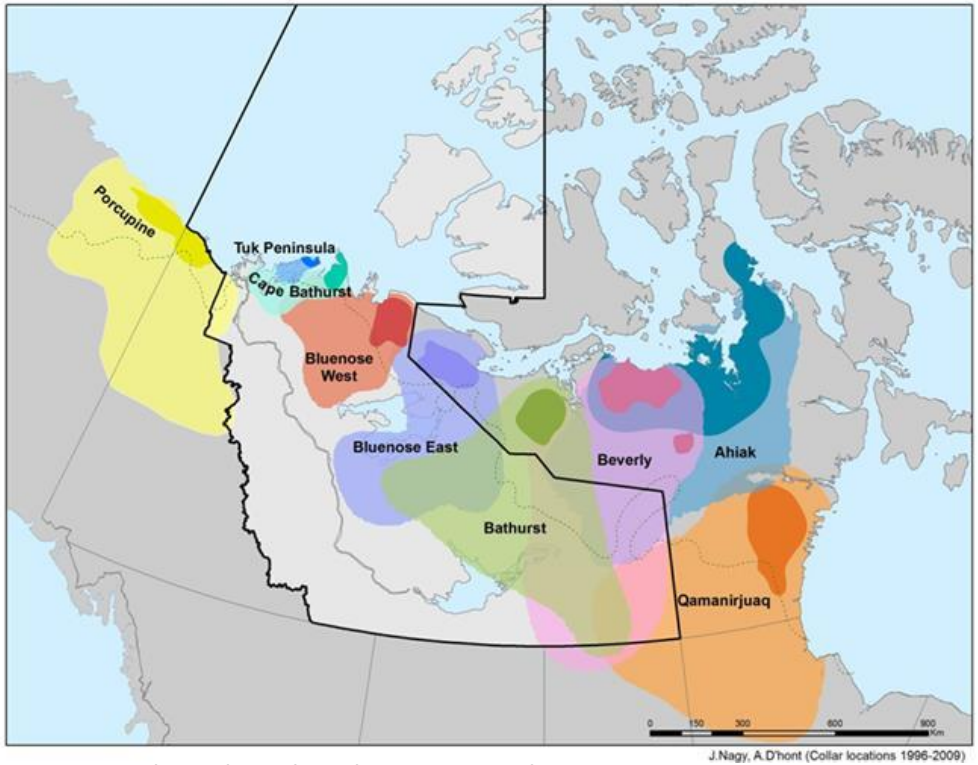
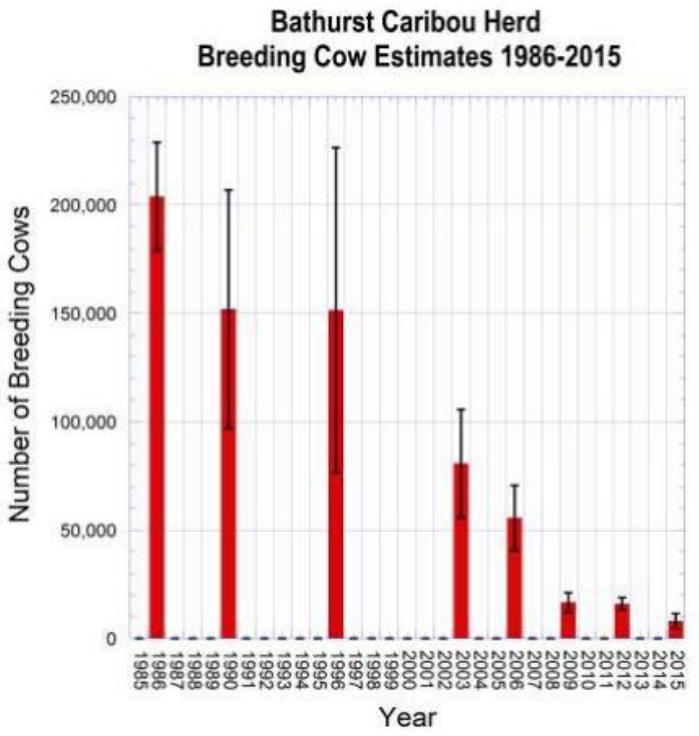
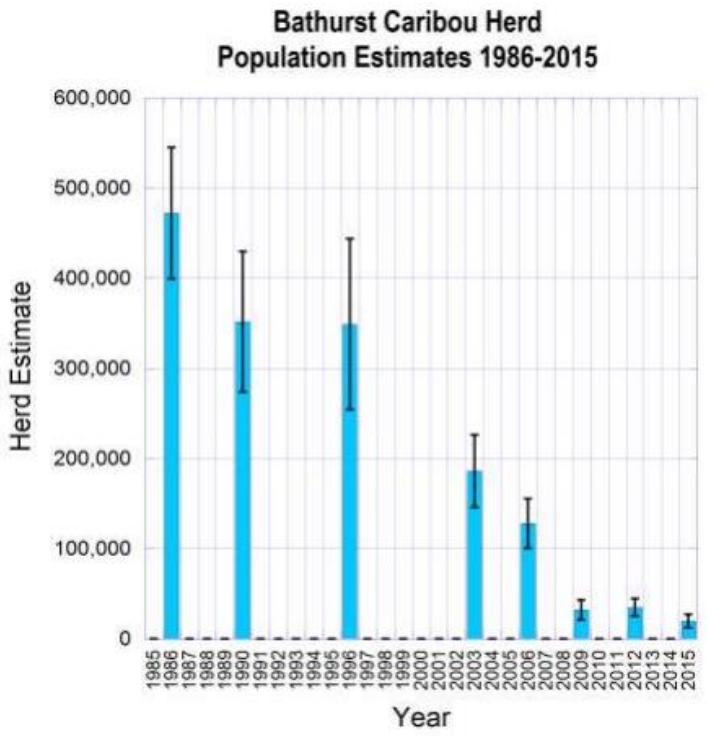


Barren-ground caribou herd ranges in the NWT.

Bathurst


Bathurst Caribou Herd
Breeding Cow Estimates 1986-2015
Number of Breeding Cows
250,000
200,000
150,000
100,000
50,000
0
1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015
Year


Bathurst Caribou Herd
Population Estimates 1986-2015
Herd Estimate
600,000
500,000
400,000
300,000
200,000
100,000
0
1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015
Year

Government of
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Bathurst Management

- 2009: All resident, outfitted and commercial harvest ended
- 2010: Aboriginal harvest restricted to 300 animals/year
- 2015: Mobile conservation zone – zero harvest of Bathurst herd
  - Proposals submitted to WRRB including zero NWT harvest
  - Letters sent to Aboriginal Governments
- 2016: GN submitted proposal to NWMB included TAH of 30 bulls
  - WRRB and NWMB held public hearings
  - WRRB – zero harvest of Bathurst using Mobile zone
  - NWMB – TAH of 30 bulls

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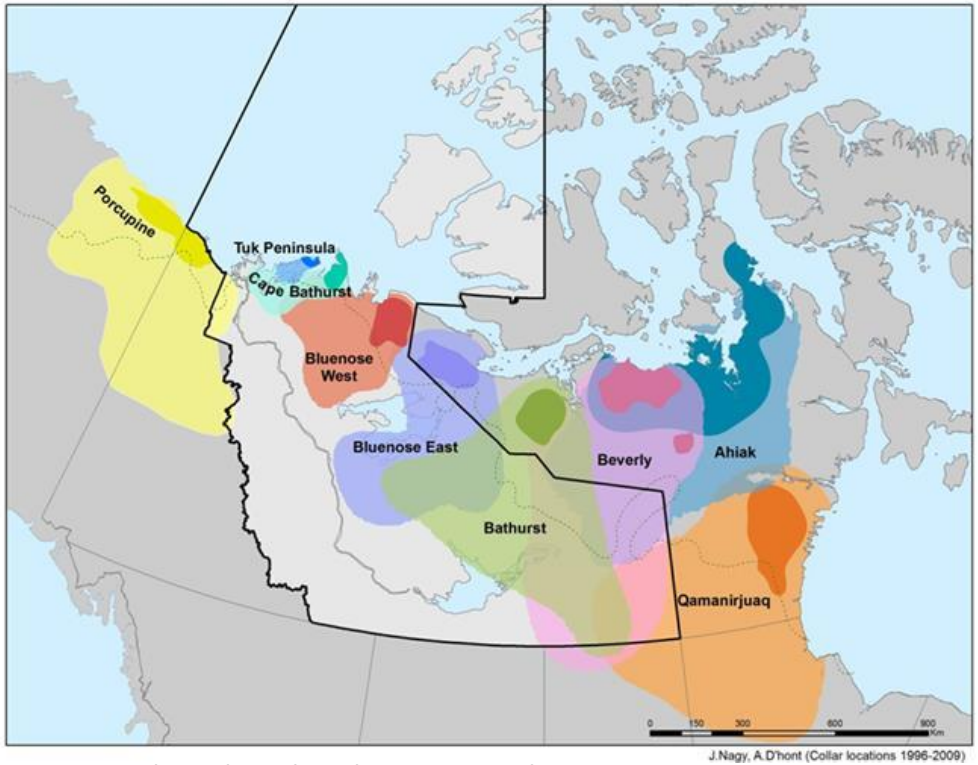
Bathurst Next Steps

- Bathurst Caribou Range Plan expected 2018
- Bathurst Caribou Advisory Committee
  - Work on updating 2004 Bathurst Management Plan
- Calving Ground Photo Survey
  - June 2018
  - Population Estimate expected November 2018



Barren-ground caribou herd ranges in the NWT.

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Beverly/Qamanirjuaq/Ahiak

- Beverly
  - 2011 = 124,000
- Qamanirjuaq
  - 2014 = 264,000 2008 = 345,000
- Ahiak
  - 2011 = 71,000

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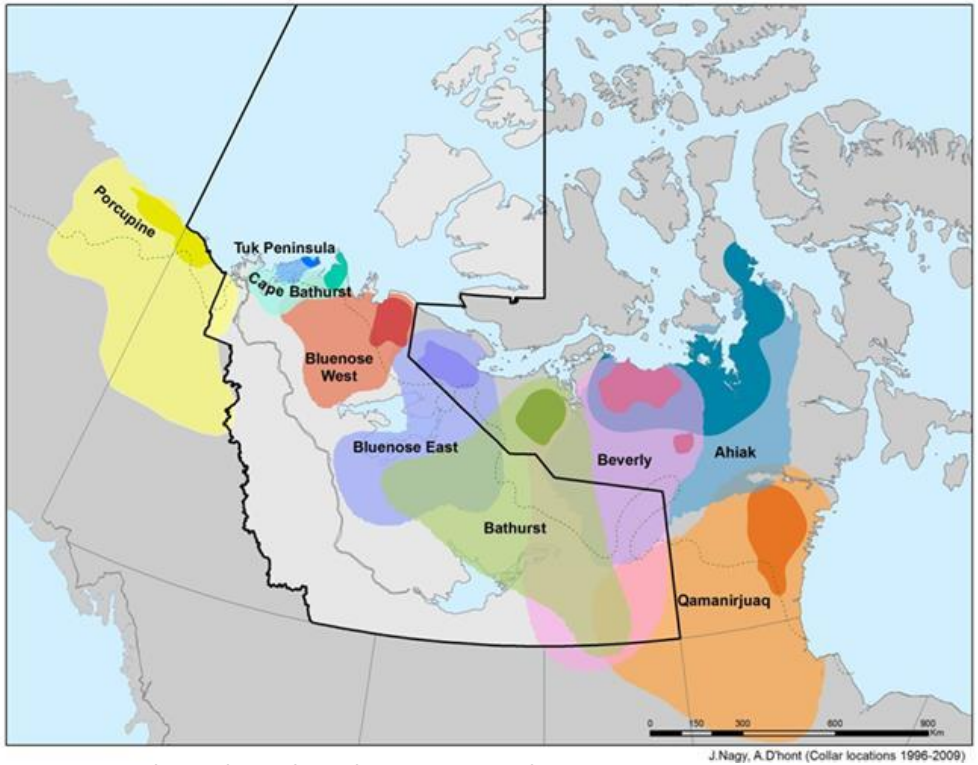
Management

- Beverly and Qamanirjuaq Caribou Management Board
  - Management Plan 2013-2022
- NWT residents limited to 1 bull/year
- No restrictions on Aboriginal harvest

Government of
Northwest Territories

Next Steps

- Beverly and Ahiak Calving Ground Surveys
  - June 2018
- Qamanirjuaq Calving Ground Survey
  - June 2017
  - Expect results soon



Barren-ground caribou herd ranges in the NWT.

Government of
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Species At Risk Assessments

- Federal
  - COSEWIC
  - All herds
  - November 2016: Threatened
- Territorial
  - SARC
  - 2 Assessments: Porcupine & Other 8 NWT herds
  - April 2017: Porcupine = Not at Risk, Other 8 NWT herds = Threatened

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What's Next?

- Federal
  - Decision on listing made by Government of Canada in consultation with GNWT and co-management partners
- Territorial
  - Decision on listing made by Conference of Management Authorities, required by April 12, 2018

Coordinated Federal and Territorial consultation and engagement

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Questions?

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Wolf Monitoring in South Slave Region


Photo: A. McLaren

Ashley McLaren
Regional Biologist, ENR, South Slave Region
Regional Wildlife Workshop, Nov. 15 – 16, 2017

Background and Objectives

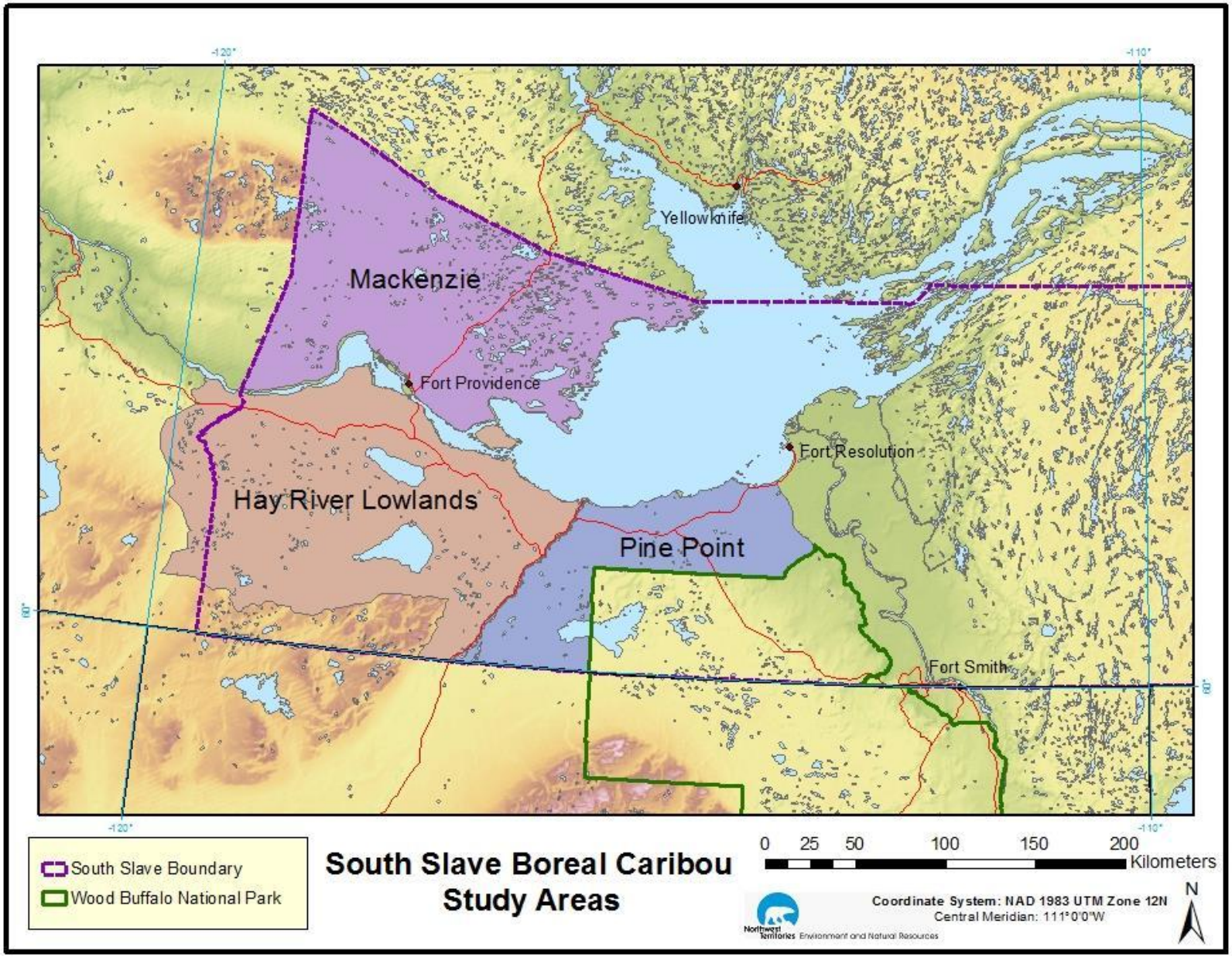
- Interest in learning more about wolves and impacts on other species (e.g. boreal caribou)
- Community concerns raised at 2013 and 2015 wildlife workshops
- Initiated wolf monitoring program in 2015
- **Objectives:** gather baseline information on wolf density, home range size, movements, diet, predation rates in boreal caribou range
- **Current work:** collar deployments, aerial census (in boreal caribou habitat); diet analyses (graduate work)
- Community involvement- information sharing, collar retrievals, samples from harvesters for diet study

Collar Deployments

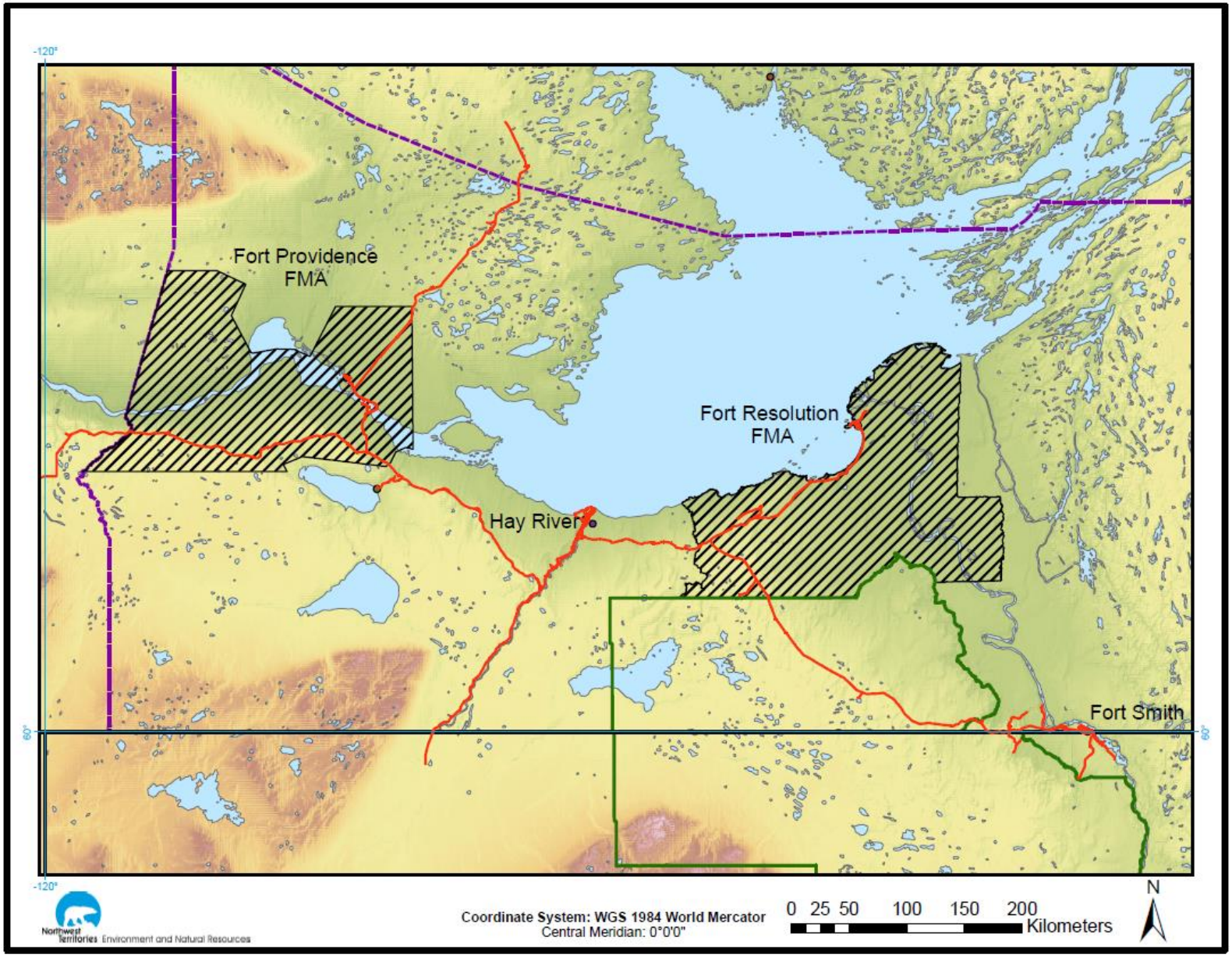
- Methods: Aerial net-gunning/darting
- Target alpha male or female
- GPS collars collect location data every 2 hours for 2 years
- VHF collars: allow for tracking/relocating packs


Photo: A. McLaren

Collar Deployments- 3 study areas



Collar Deployments- FMAs

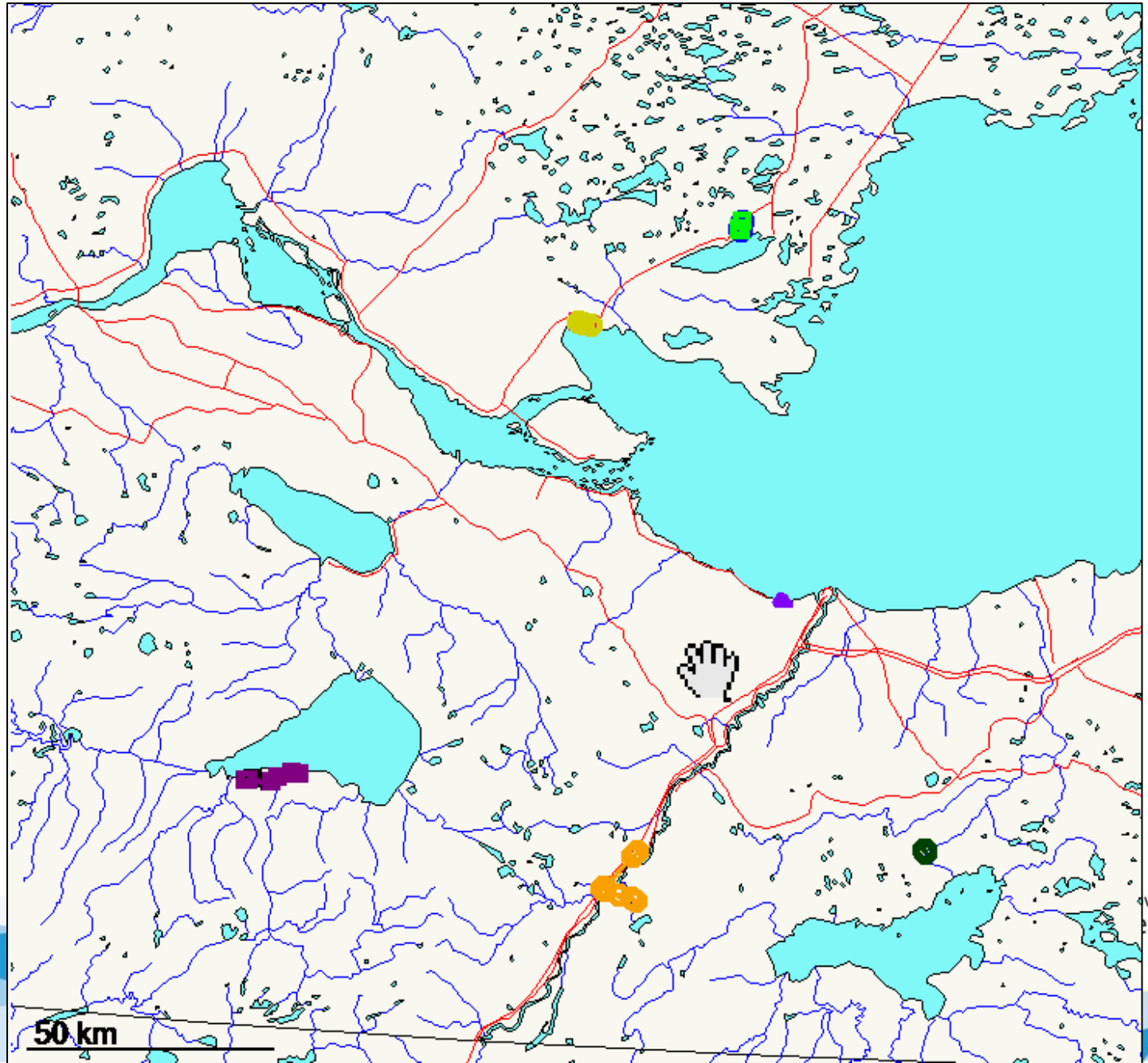


Preliminary Data

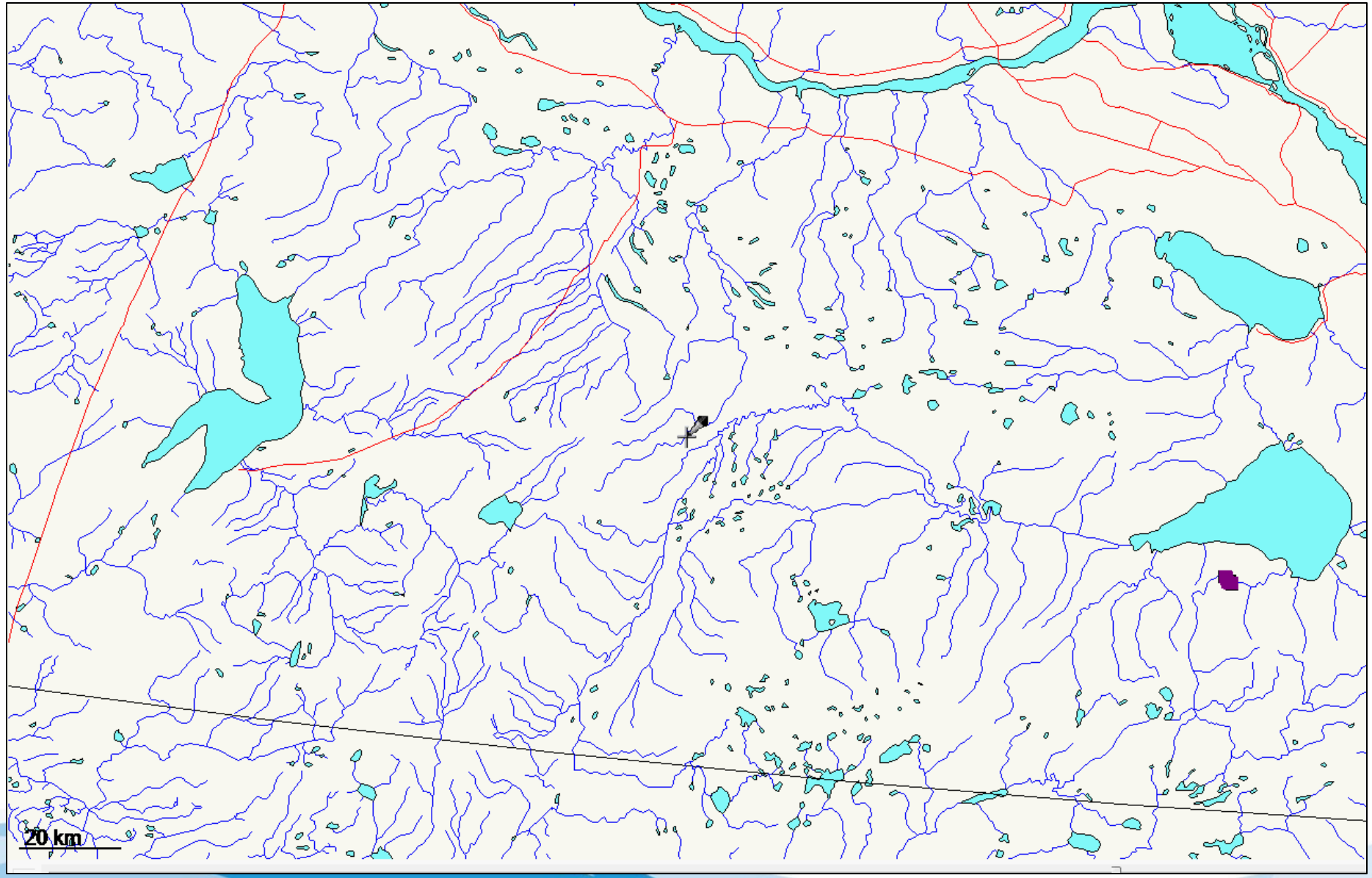
- Since winter 2015/16, have deployed 12 GPS collars and 2 VHF collars on wolves in boreal caribou range
- 8 adult females, 6 adult males collared
- Age of collared wolves: yearlings – 8 years old

Photos: B. and D. Culling

Preliminary Data- Movements



Preliminary Data- Dispersal Movements



Wolf Density- Aerial Census

- Collaboration between ENR (South Slave and Dehcho regions) and researchers in Alberta
- Survey areas ~ 5,000 km^2
- Fly transects using plane
- 3 km spacing, at least 2 days after fresh snowfall
- Any encountered wolf tracks are followed to determine pack size

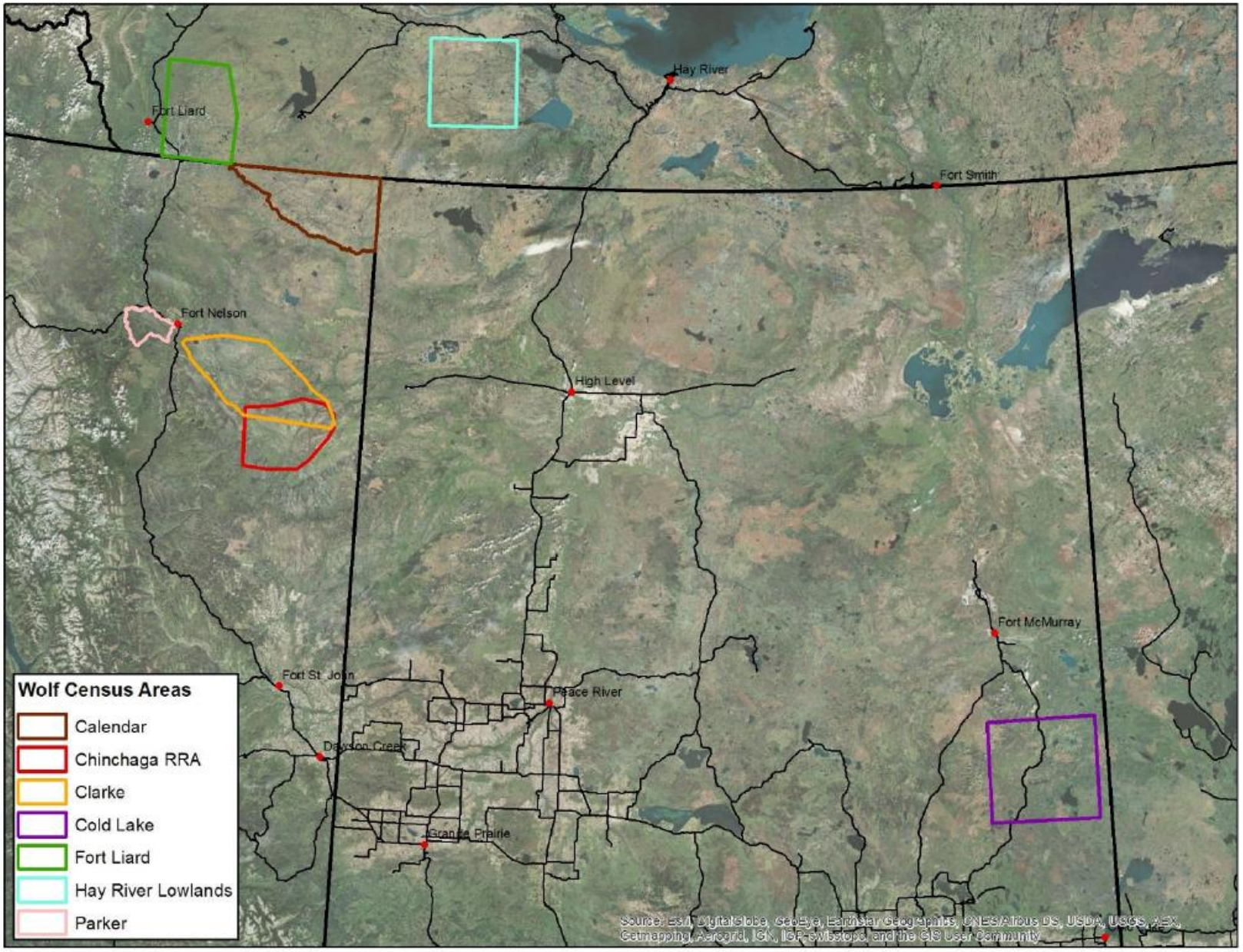

Photo: A. McLaren

Wolf Density- Aerial Census

Results:

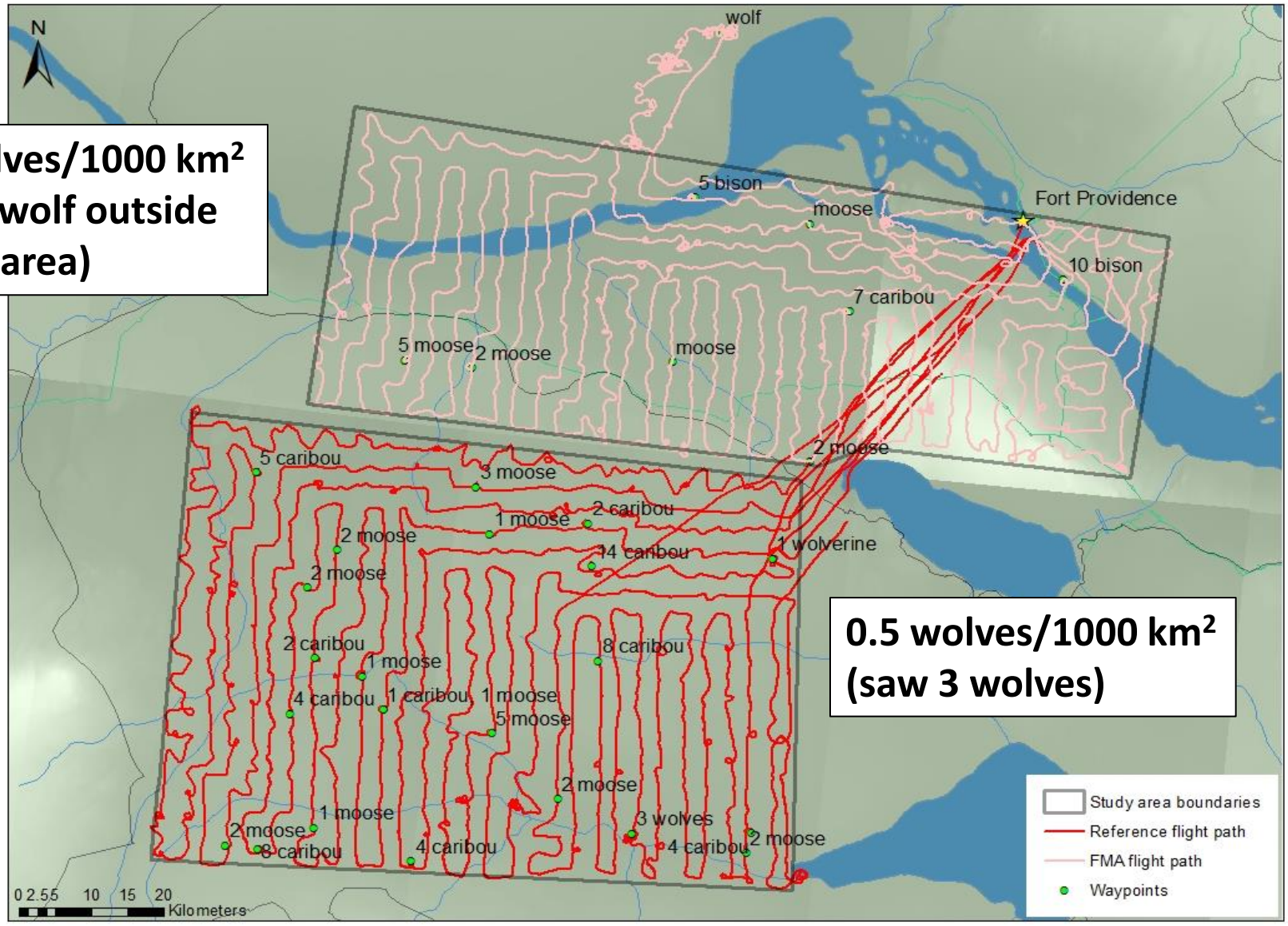
- Tathlina Lake (Jan. 2016): 1.4 – 1.6 wolves per 1000 km^2
- Fort Liard wolf census (Jan. 2016): 4.8 – 5.3 wolves per 1000 km^2
- LOW wolf densities in southern NWT
- Comparison: NE BC boreal caribou ranges have 7.0 – 15.6 wolves per 1000 km^2

Wolf Surveys 2015-2016



Winter 2016/17 Wolf Census (FMA)

0.4 wolves/1000 km^2 (saw 1 wolf outside survey area)



0.5 wolves/1000 km^2 (saw 3 wolves)

Winter 2017/18

- Continue collar deployments: collar new packs, replace faulty collars; up to 11 GPS collars and 5 VHF collars
- Conduct aerial wolf census near Pine Point area (FMA)

Photo: B. and D. Culling

QUESTIONS?

Wolf Diet Study Results

Sean A. O'Donovan[1], Suzanne M. Budge[2], Keith A. Hobson[3], Allicia P. Kelly[4], Andrew E. Derocher[1]

[1]University of Alberta, Dept. of Biological Sciences, [2]Dalhousie University, Dept. of Process Engineering and Applied Science, [3]University of Western Ontario, Dept. of Biology, [4]Government of Northwest Territories, Environment and Natural Resources

UNIVERSITY OF ALBERTA

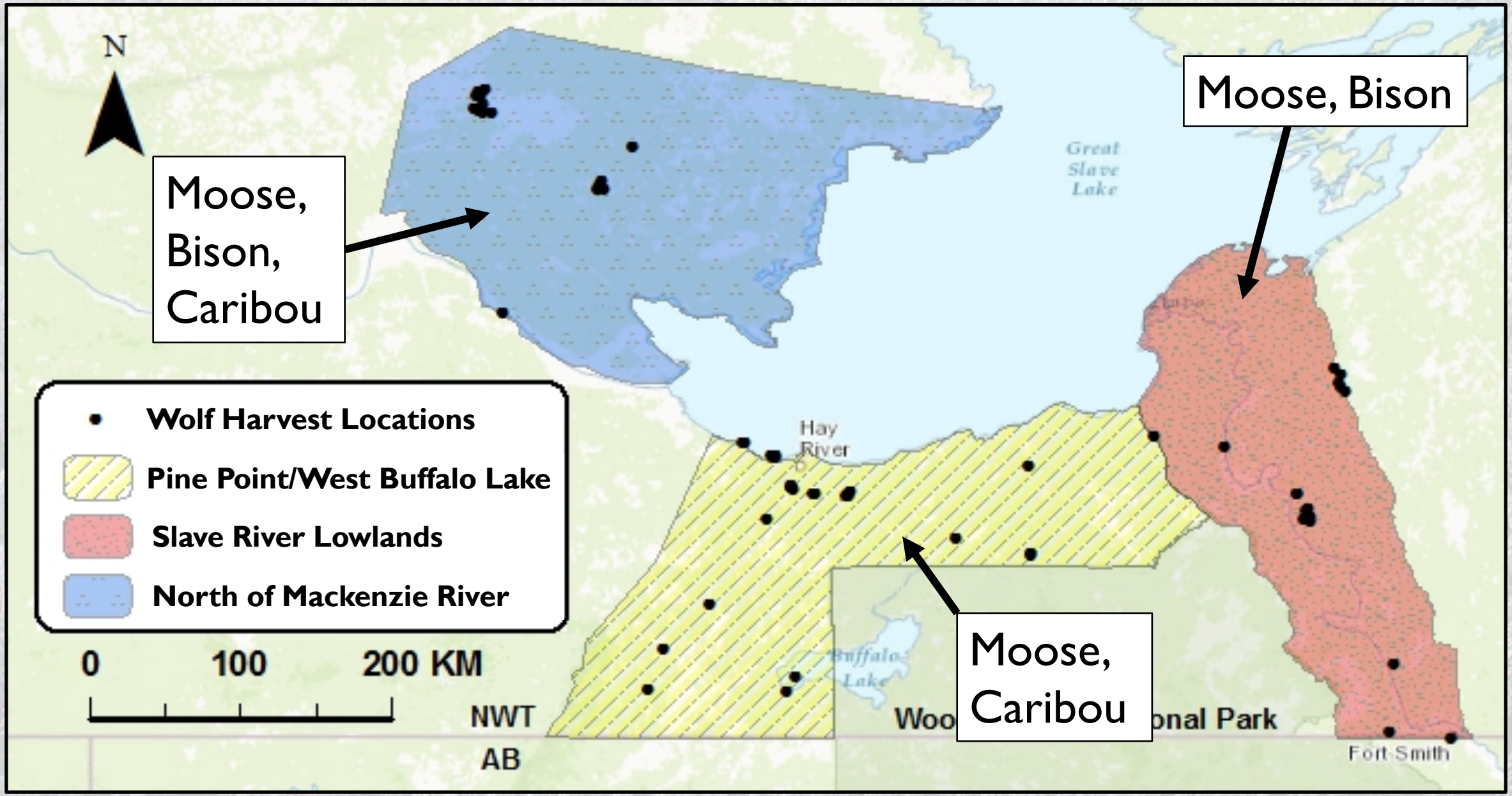
Government of Northwest Territories

Background

Objective

- Generate quantitative estimates of wolf diet during winter in the South Slave Region

Study Area


N
Moose, Bison, Caribou
Moose, Bison
Moose, Caribou
Great Slave Lake
Hay River
Buffalo Lake
Wood Buffalo National Park
Fort Smith
NWT
AB
Wolf Harvest Locations
Pine Point/West Buffalo Lake
Slave River Lowlands
North of Mackenzie River
0
100
200 KM

Methods: Sample Collection

Sample Collection

- Provided by local wildlife harvesters
- ENR Wolf Carcass Collection Program 2012/13
- Archived muscle samples from potential prey species

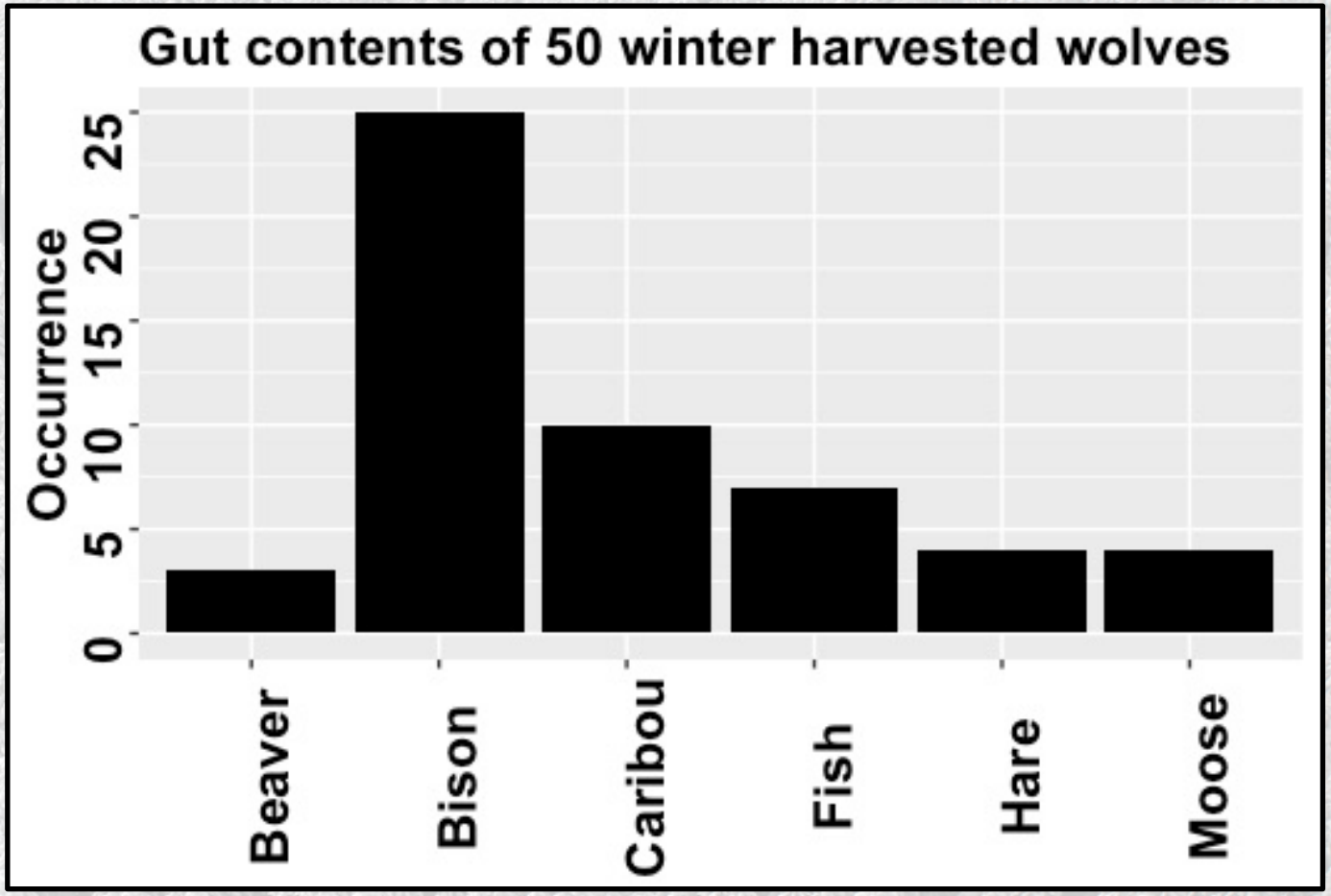
- Additional samples in 2015 and 2016:
  - Wolves ($100/samples)
  - Prey ($50/sample)

Methods: Statistical Approach

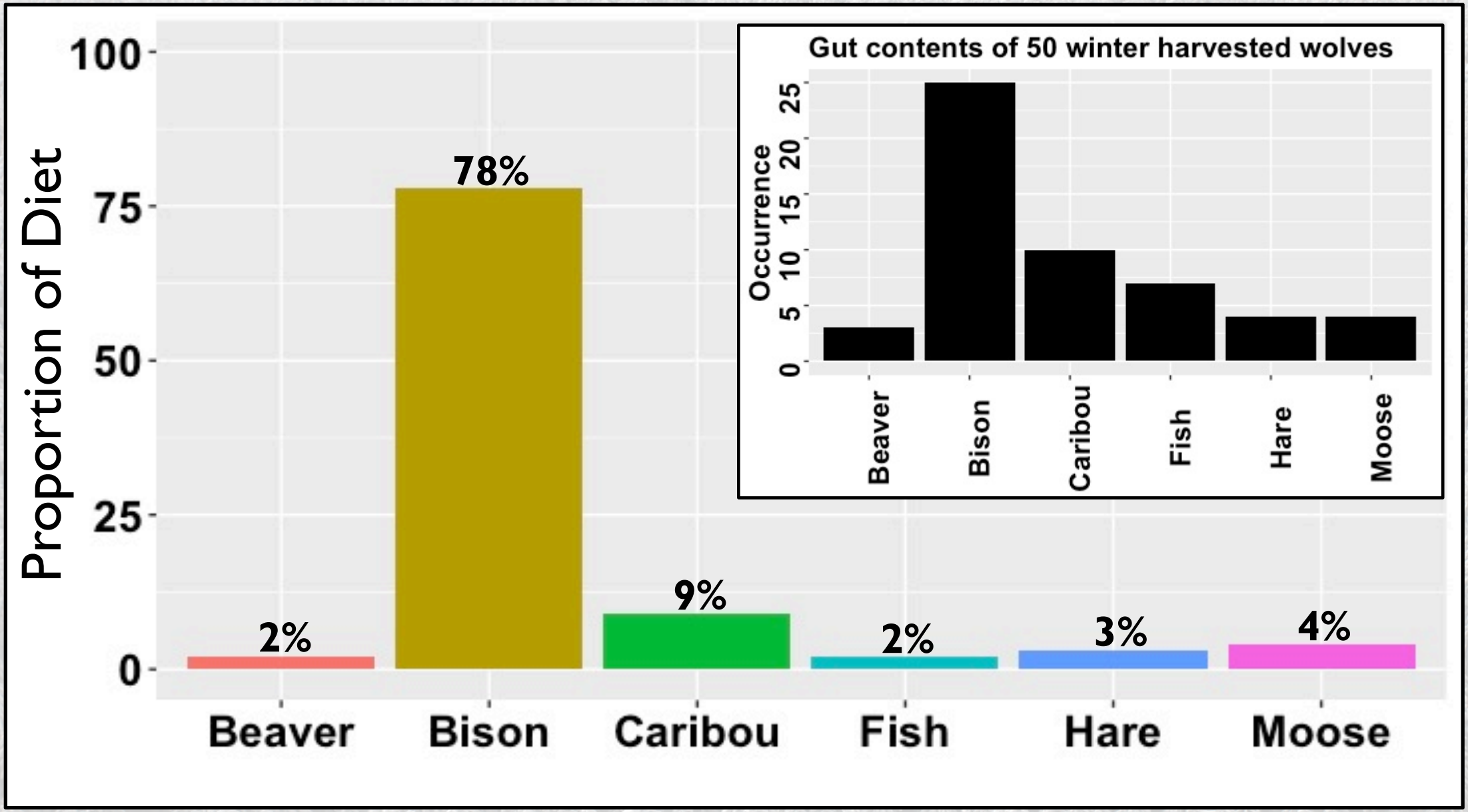
Diet Estimate

- Wolf muscle & fat = winter diet
- Stable isotopes and fatty acids
- Wolf tissues are a combination of prey species
- Bayesian mixing models

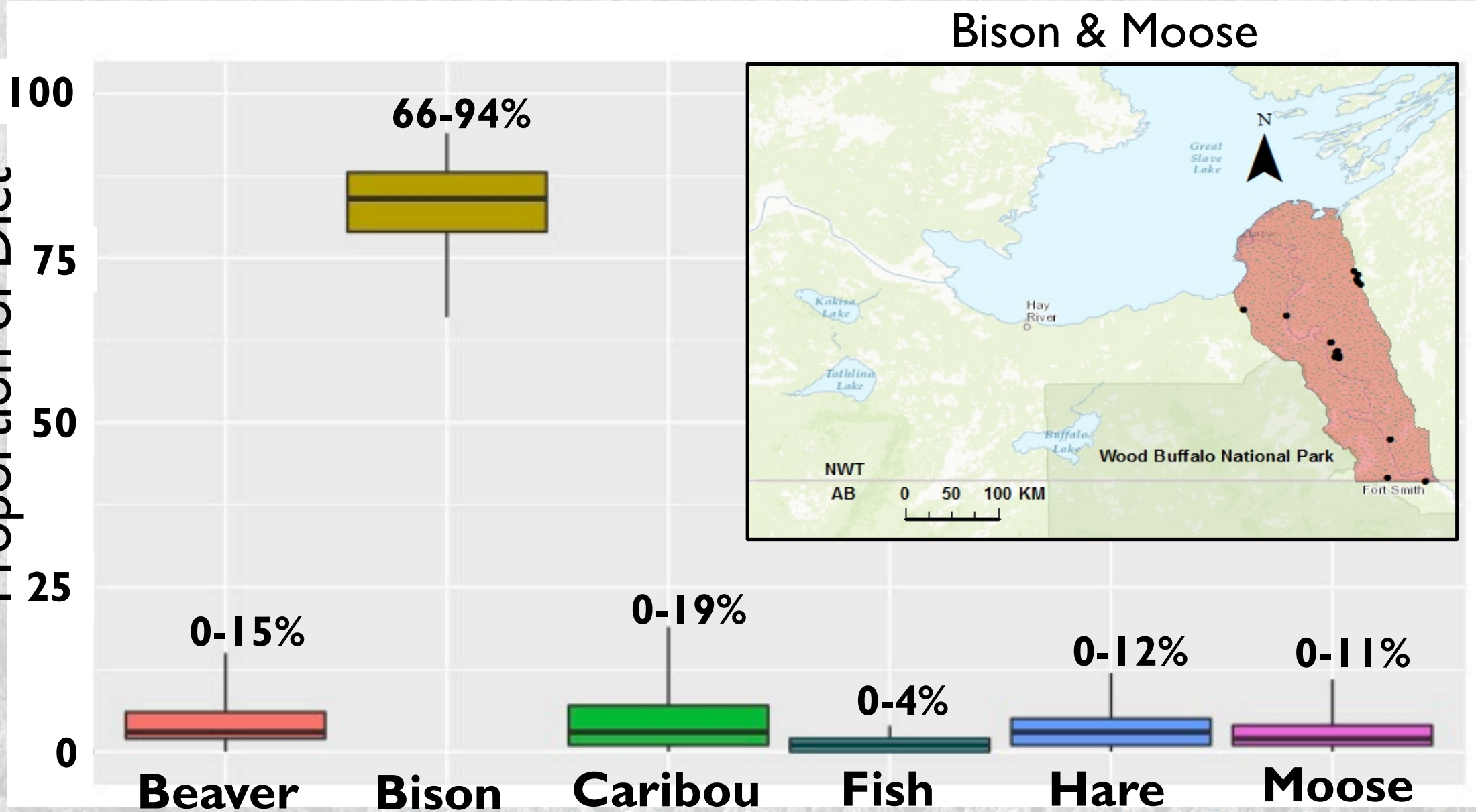
Results: Prey Species Selection



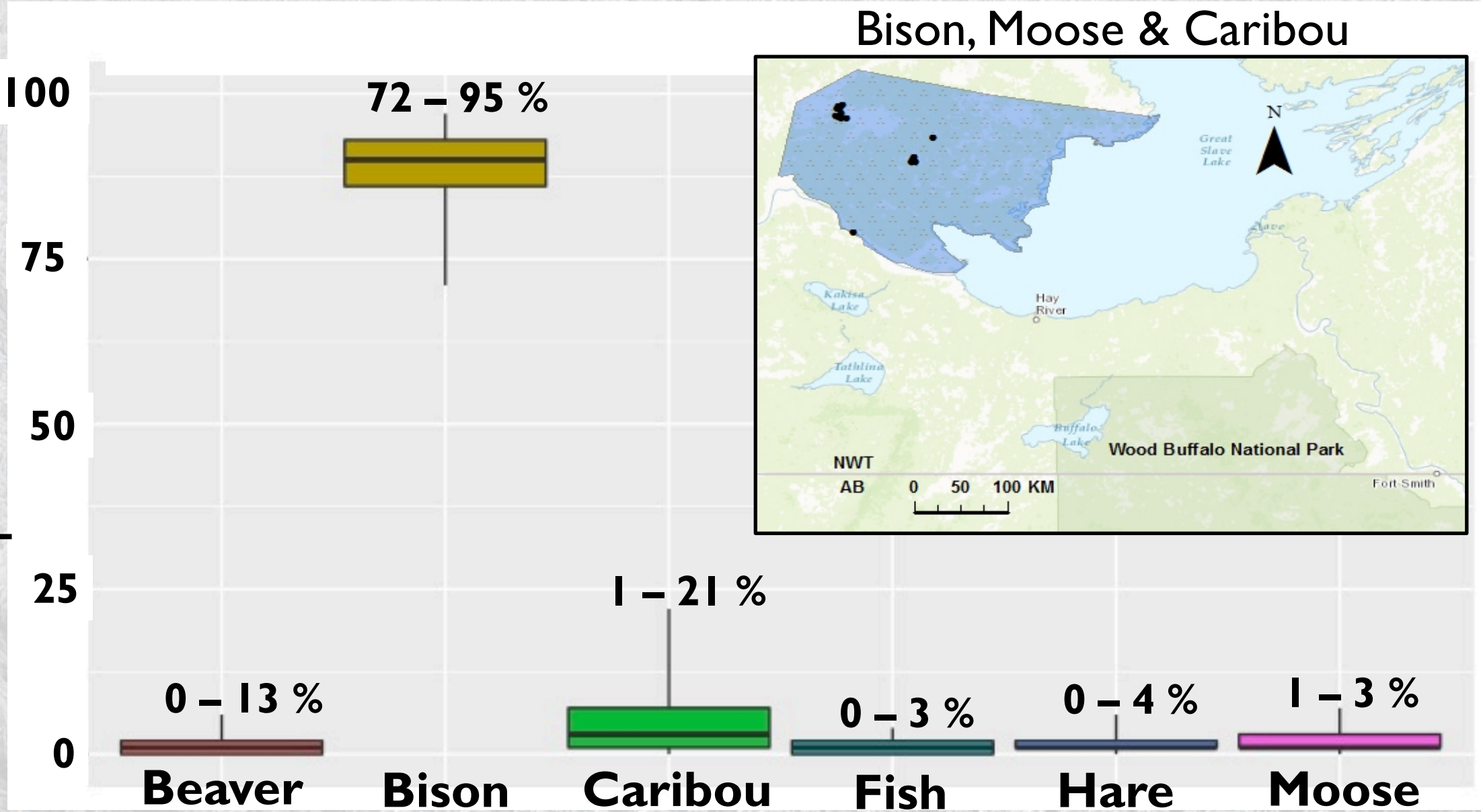
Results: All wolves (n=79)



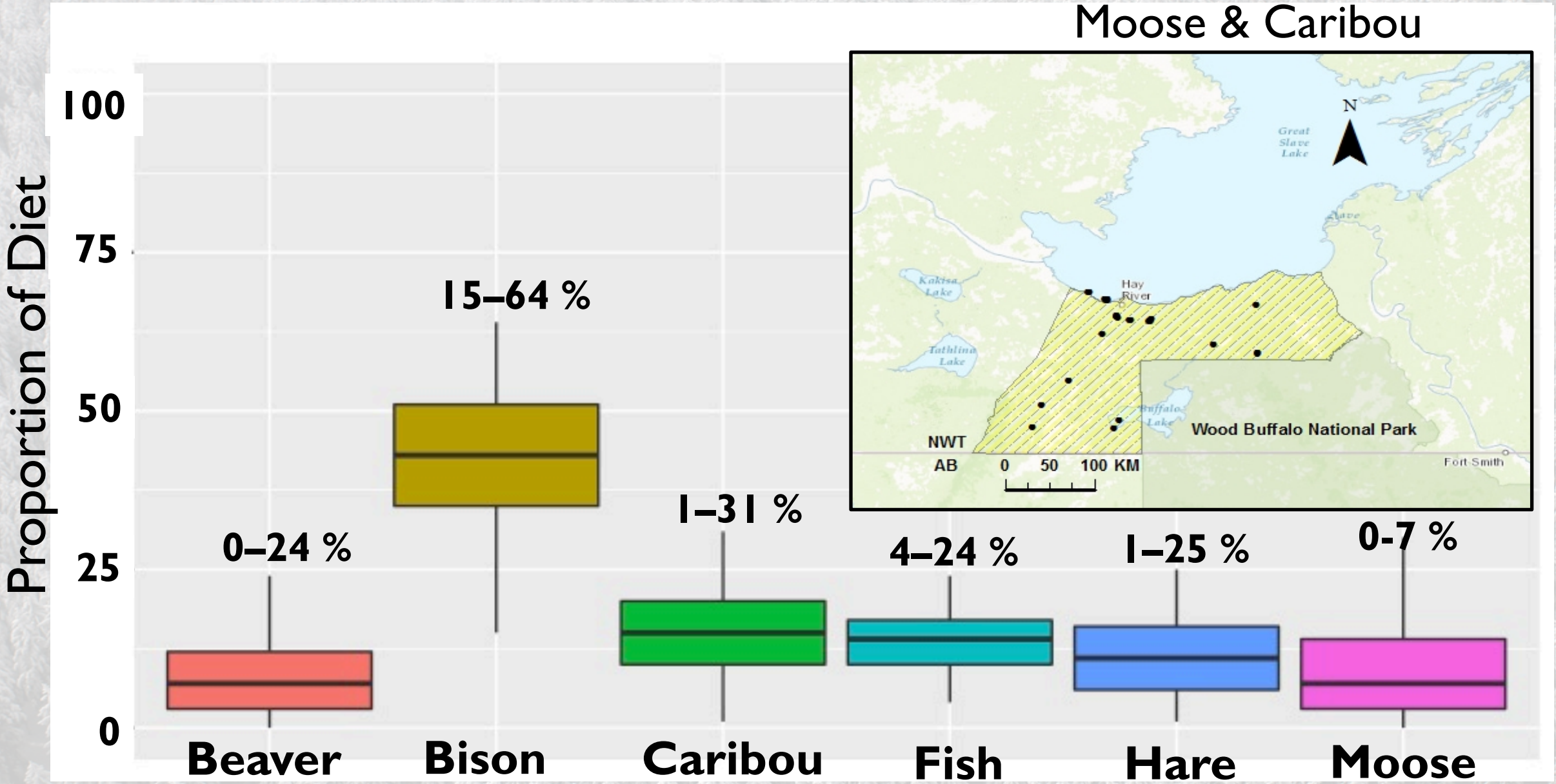
Results: Slave River Lowlands wolves (n=17)



Results: North of Mackenzie River wolves (n=16)



Results: Pine Point/West Buffalo Lake wolves (n=31)



Summary

Wolf diet

- Results suggest bison is the preferred prey across region
- Wolf diet more variable in PP/WBL
- When bison available, wolves will eat bison during winter
- When bison is not available wolves diversify their diet and target other prey species

Acknowledgements

- K'atlodeeche First Nation
- Deninu K'ue First Nation
- Smith Landing First Nation
- NWT Metis Nation
- Forth Smith Metis Council
- Hay River Metis Council
- Fort Resolution Metis Council
- Ka'a'gee Tu First Nation
- Deh Gah Got'ie First Nation
- Fort Providence Metis

Benthic Macroinvertebrate Monitoring on the Slave and Hay Rivers – Year 1

Annie Levasseur & Chris Cunada – ENR-Water Resources

Government of
Northwest Territories

AB-NWT Bilateral Water Management Agreement

- Includes commitments to monitor **biological indicators**:

  > "The Parties will establish and monitor biological Indicators of the Ecological Integrity of the Aquatic Ecosystem..."

- Four interim biological indicators were selected: Large-bodied fish, small-bodied fish, invertebrates and aquatic mammals.
- Preliminary work required to explore methodologies for monitoring benthic invertebrates in large northern rivers.
- Pilot monitoring plan initiated to test methodology and collect baseline.

What are Benthic Macroinvertebrates (BMI)?

BMI are organisms that:

- Have no backbones
- Are visible to the naked eyes
- Live at the bottom of lakes, streams and rivers

Examples of BMI:

- Immature stages of many flies
- **Mayflies**
- **Caddisflies**
- **Stoneflies**
- Dragonflies
- Aquatic worms
- Snails
- Leeches

Midge


Snails


Caddisfly


Stonefly

David Buchwalter

Government of
Northwest Territories

Why monitor Benthic Macroinvertebrates?

- Sensitive to stresses in the environment and can reflect impact more rapidly than fish
- They live and feed in sediments where metals and toxic substances can accumulate
- Have low mobility so good site-specific indicators
- Key part of the food web

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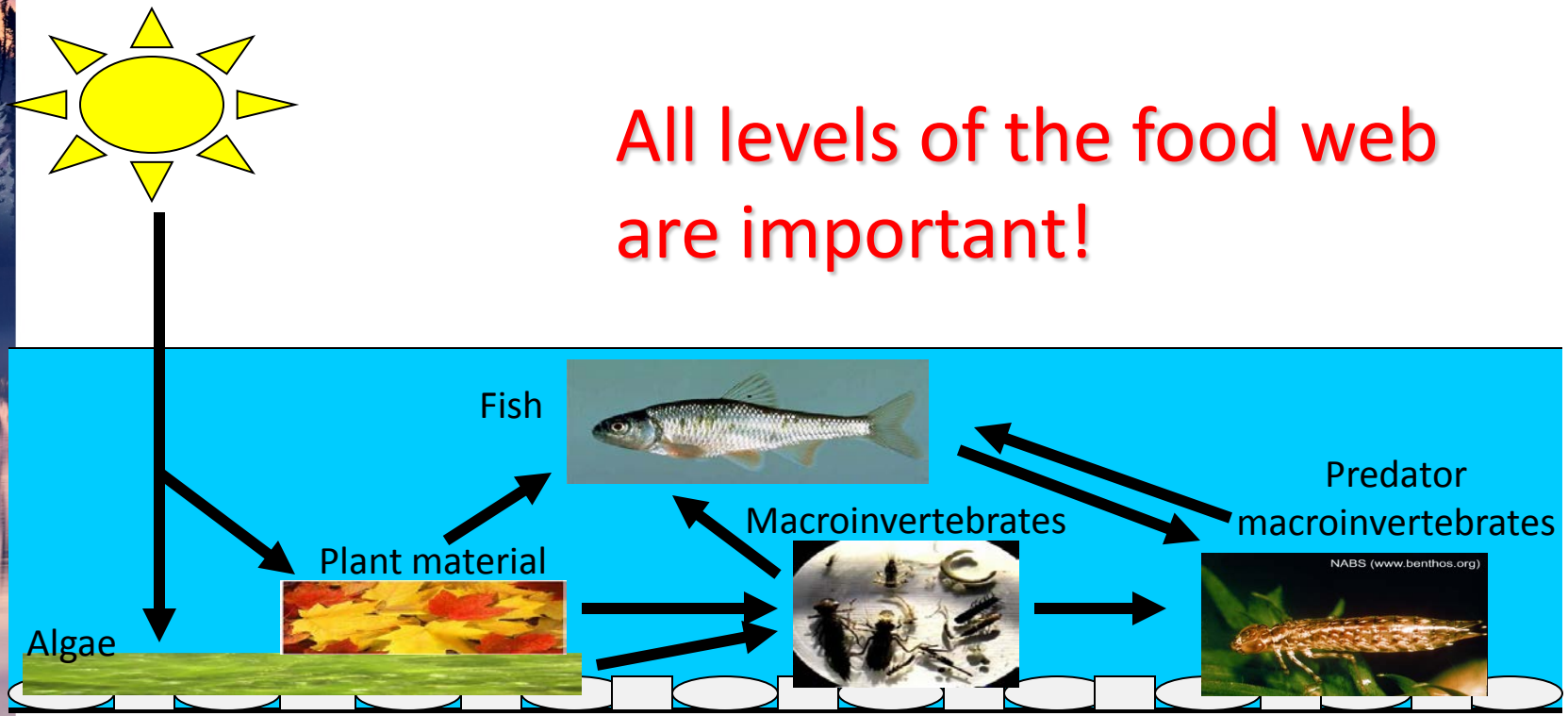
Typical RiverFood Web

All levels of the food web are important!



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Overview of the monitoring program

Follows US EPA/JOSM protocols for large rivers (modified CABIN).

Objective: characterize community structure and composition and establish strong baseline

Phase 1 (Year 1): Reconnaissance

Phase 2 (Year 2-4): Pilot monitoring

Phase 3: (Year 5 +): Routine monitoring

Artificial substrate samplers (Hester-Dendy) also deployed

Stonefly

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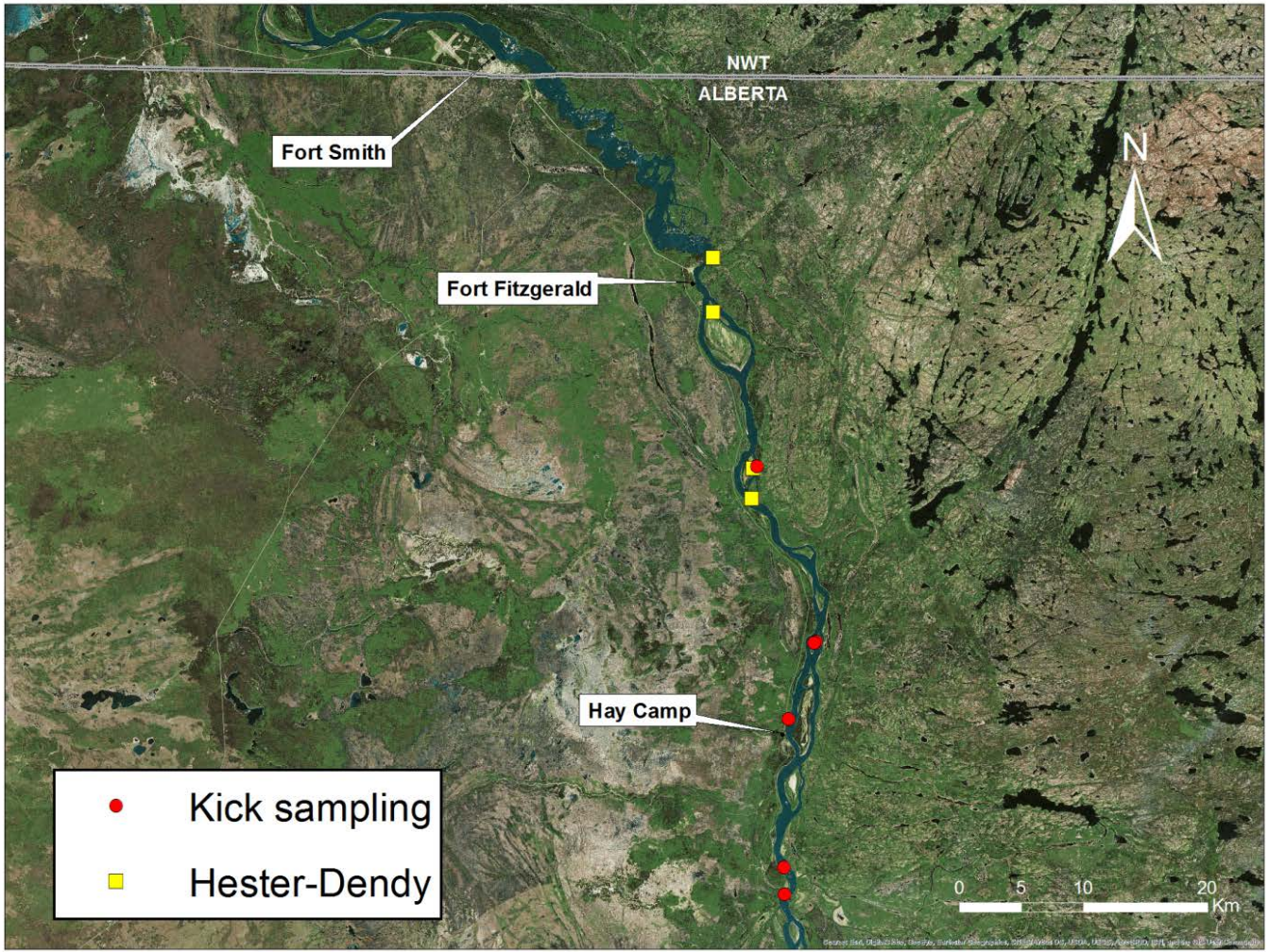
Slave River sites



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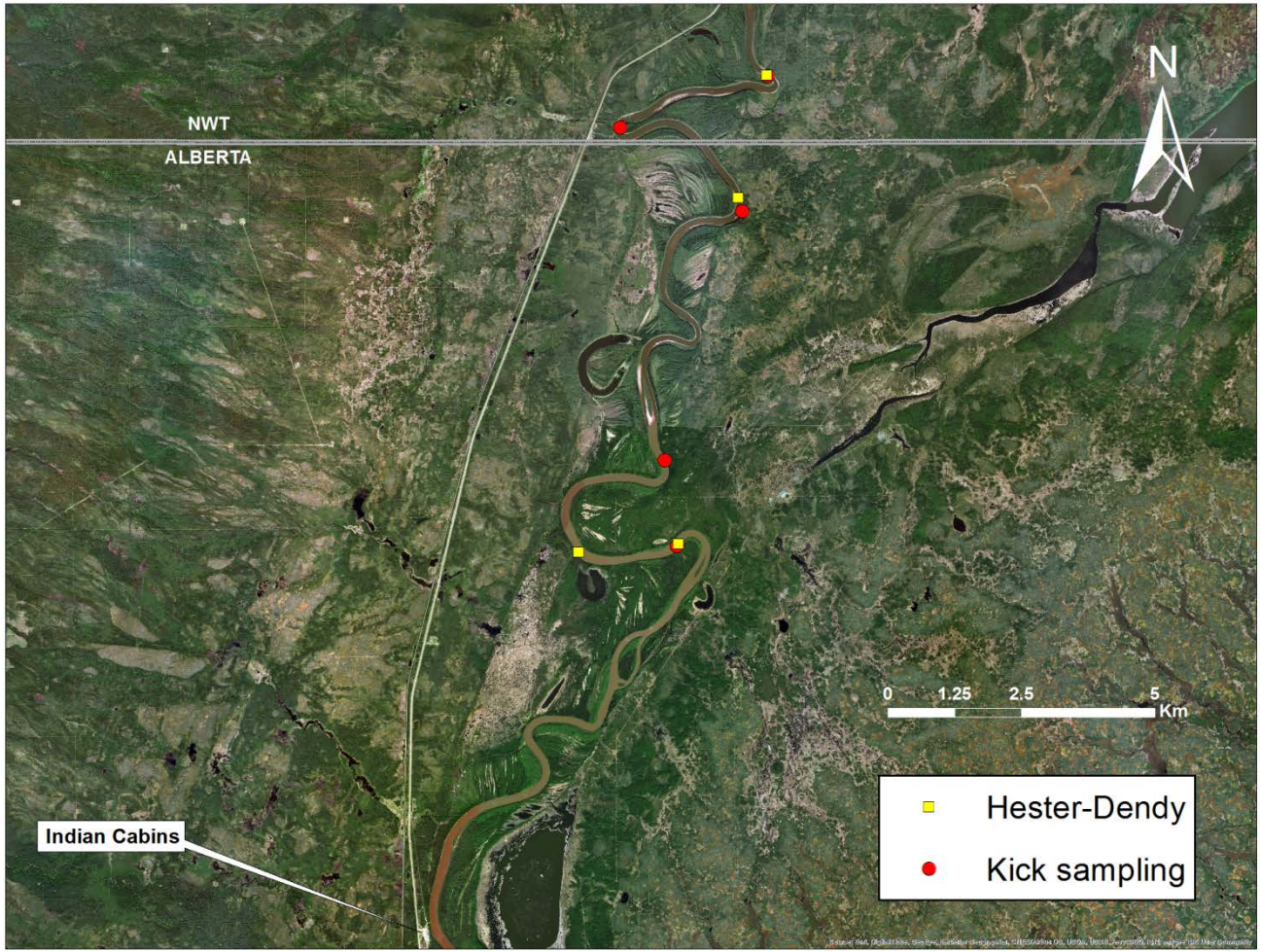
Hay River sites

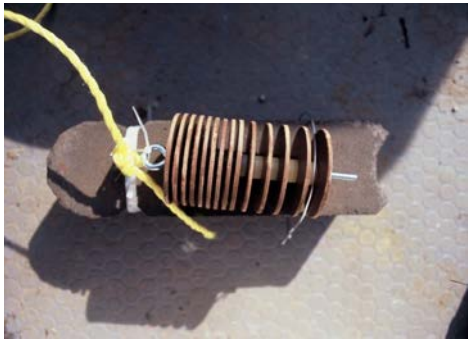


Kick sampling

- Modified from CABIN (Canadian Aquatic Biomonitoring Network) protocols
- 3-minute travelling kick
- Slave: 6 sites
- Hay: 5 sites

Hester-Dendy Samplers

- Previously used on Slave River (SWEEP) in 2013-2014
- Long-term deployment method
- Useful if sites cannot be sampled using an active sampling method (e.g., steep bank or no shallow areas)
- Great option for a community-based monitoring program.



Additional information collected during the kick sampling program:

- Water quality
- Sediment quality
- Habitat

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Community outreach

- Smith's Landing First Nation and K'atl'odeeche First Nations participated in the sampling program.
- Public presentations made at the libraries in Fort Smith and Hay River (Jen Lento).
- Educational activities in schools in Fort Smith, Hay River and KFN (Lorne Doig).

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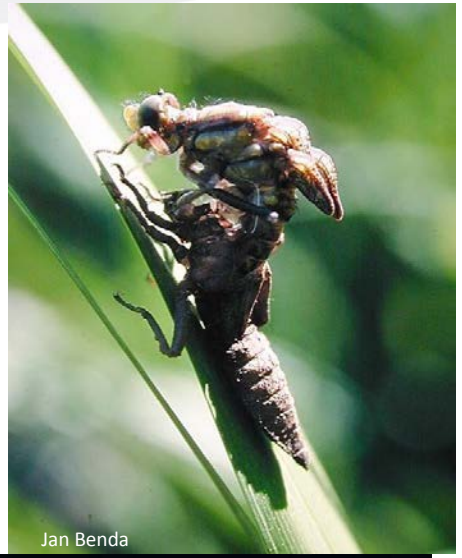
Next steps

- Refine monitoring plan based on results from year 1.
- Continue benthic monitoring on Slave and Hay Rivers.
- Results and report by fall 2018.
- Continue discussions with BC regarding monitoring BMI on the Liard River.



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Thank you!

Parks Canada Parcs Canada

Canada

Ecology & Recovery of Whooping Cranes

Breeding Season Monitoring 2017

Parks Canada / Canadian Wildlife Service

Parks Canada/Courtesy of Klaus Nigge

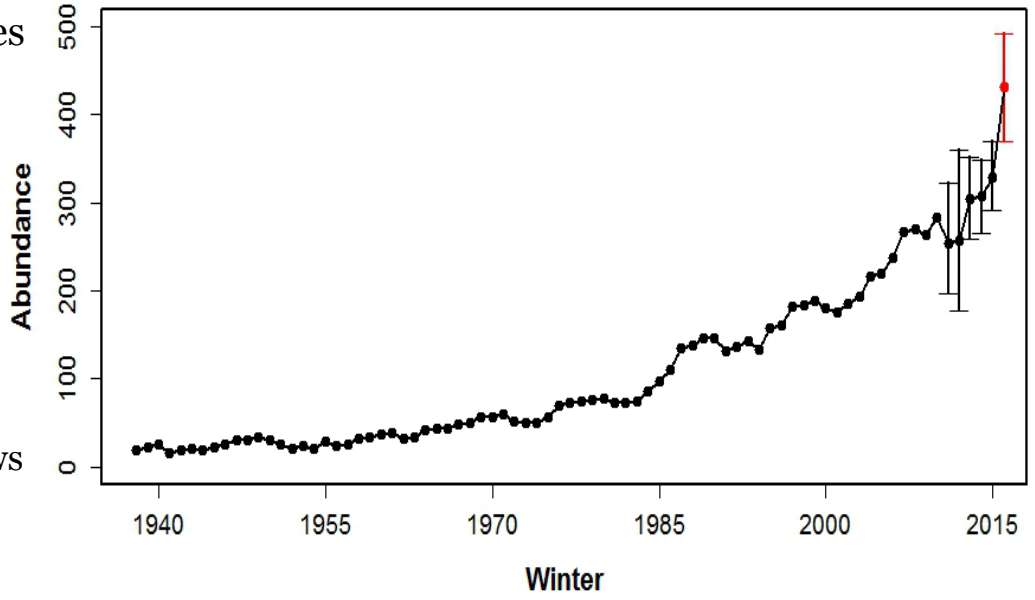
Wood Buffalo Aransas Flock
Total Population – Winter 2016-17

431 Whooping Cranes Includes:

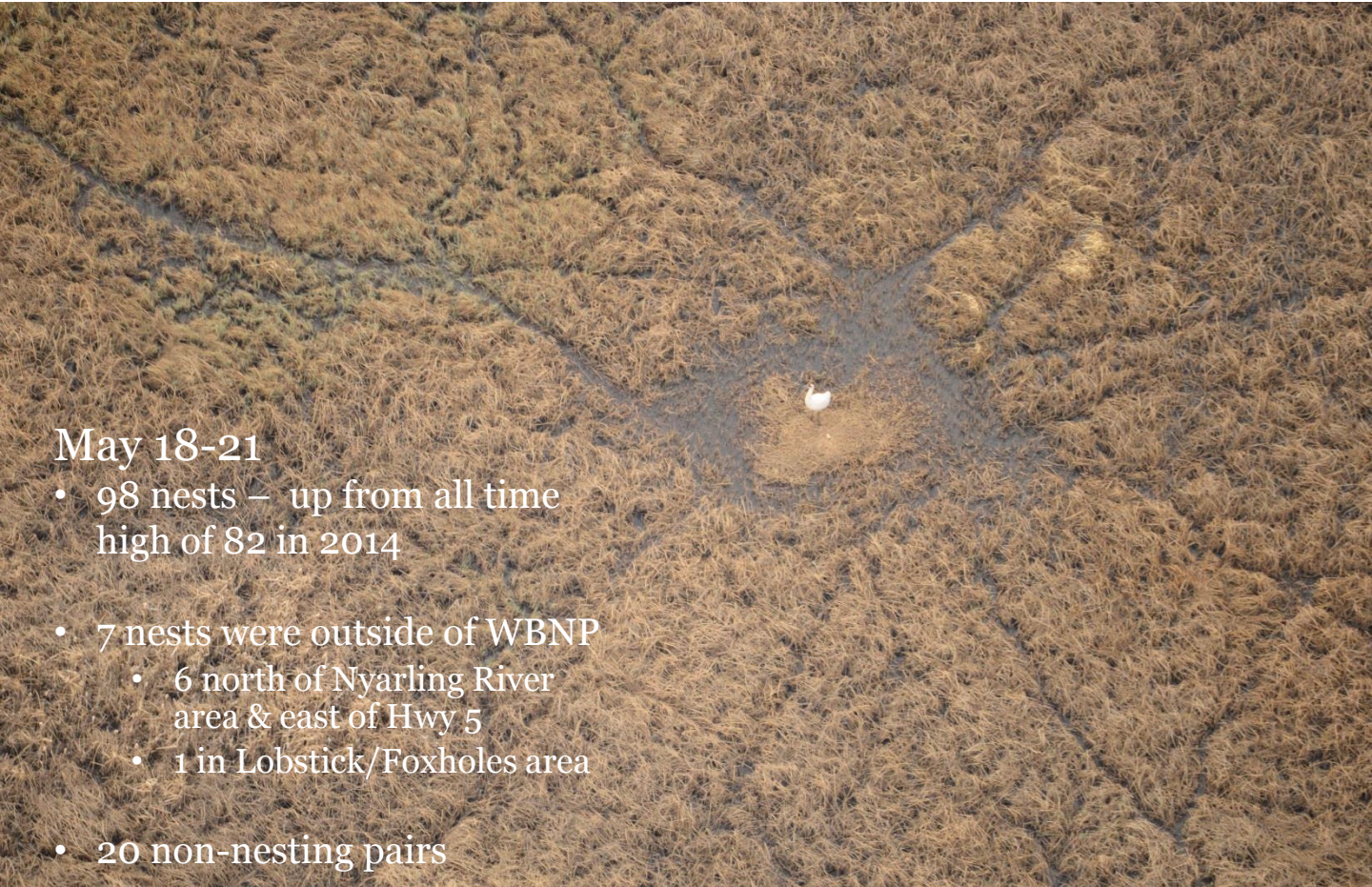
- 162 adult pairs
- 50 juveniles

(Surveyors used a plane with better visibility in 2016-17, which may partially account for the 31% increase from the previous year.)

The 79 year trend shows an increase with occasional declines occurring on an approximate 10 year cycle.



Nesting Survey 2017



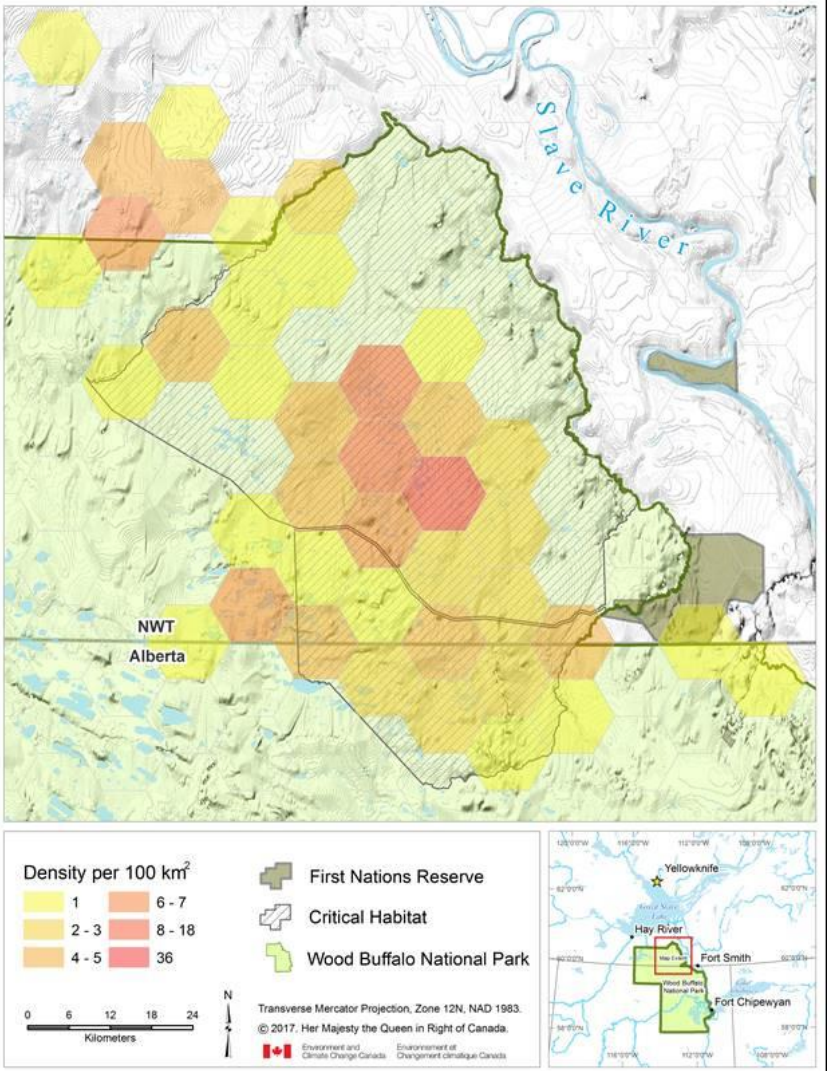
May 18-21

- 98 nests – up from all time high of 82 in 2014
- 7 nests were outside of WBNP
  - 6 north of Nyarling River area & east of Hwy 5
  - 1 in Lobstick/Foxholes area
- 20 non-nesting pairs

May 2017

Density of whooping crane pairs, with and without nests

- Per 100 km^2



Fledgling Survey 2017

July 28 – Aug. 1

- 63 fledglings
  - singles - 55
  - twins - 4

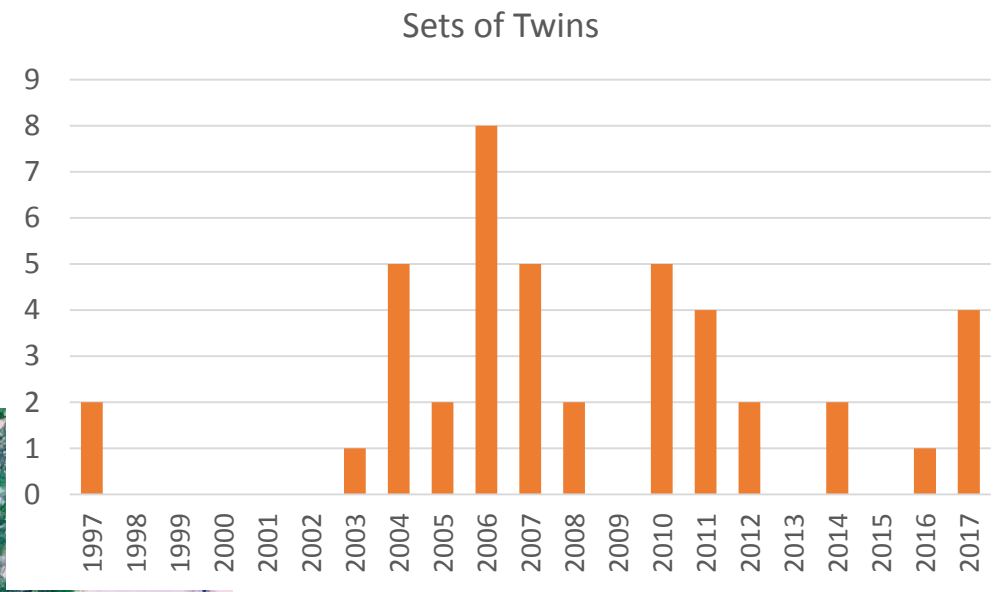
Productivity

- 0.64 chicks per nest
- Greater than 20-year average of 0.49
- Within long term range of variation

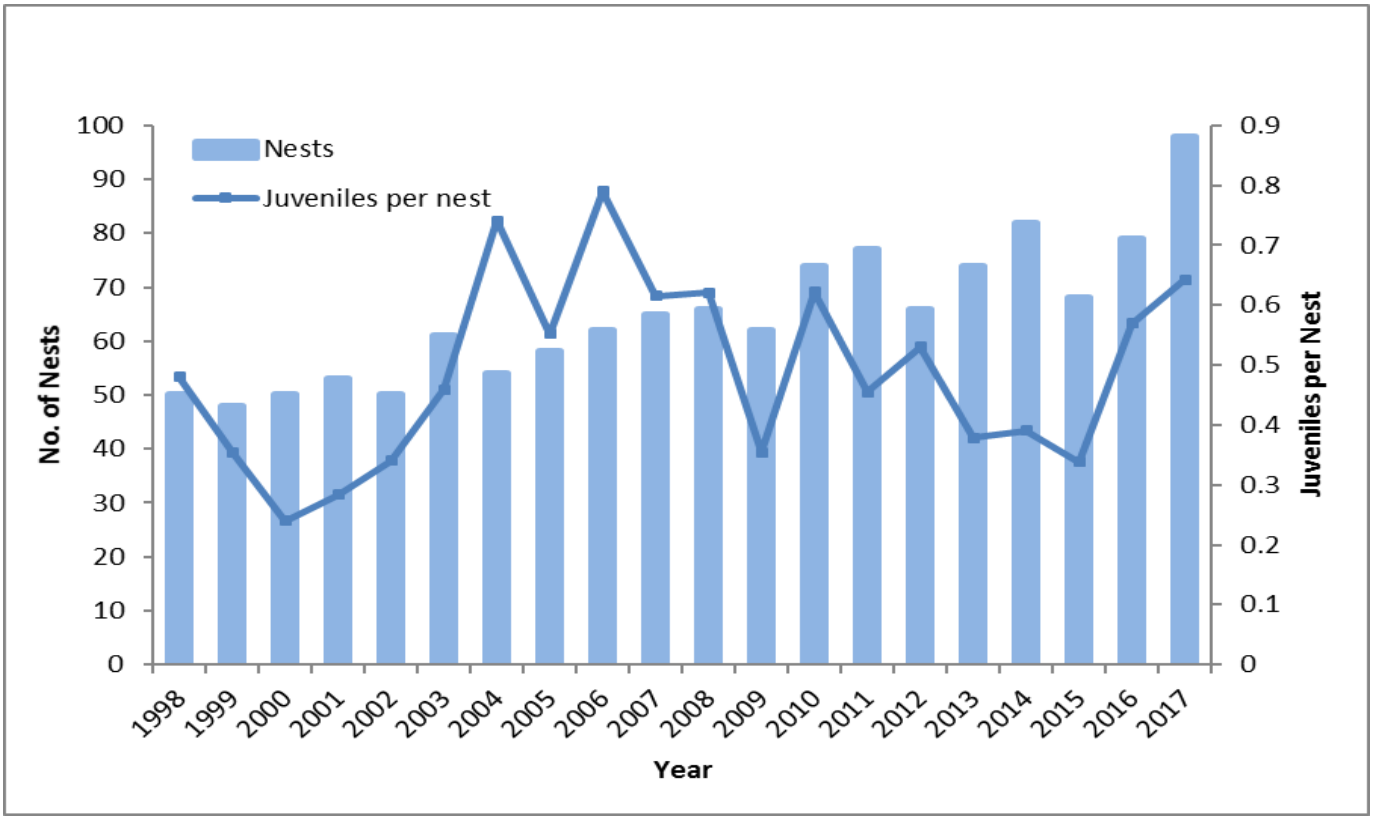
Sets of Fledged Whooping Crane Twins

1997-2017

- Data from fledged chick surveys
- 1996 was the last year that eggs were collected from nests



Whooping Crane Productivity 1998 - 2017



On average half of the pairs successfully raise at least one chick each year, but it varies from year to year (20-80%).

Habitat Conditions

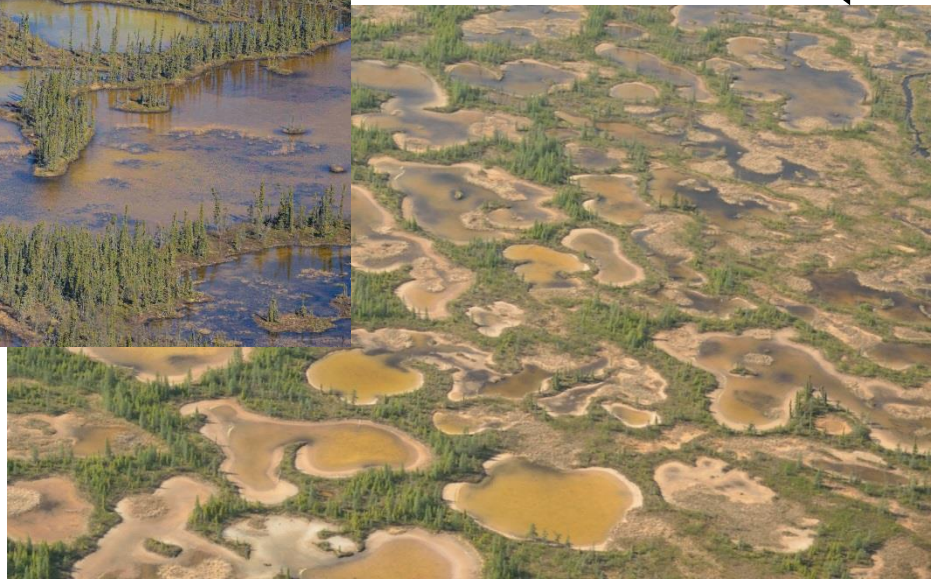
May 2017

Winter Precipitation (mm) for Oct-Mar

Average 1981-2010	**113.2**
2016-2017	98.8
2015-2016	154.8

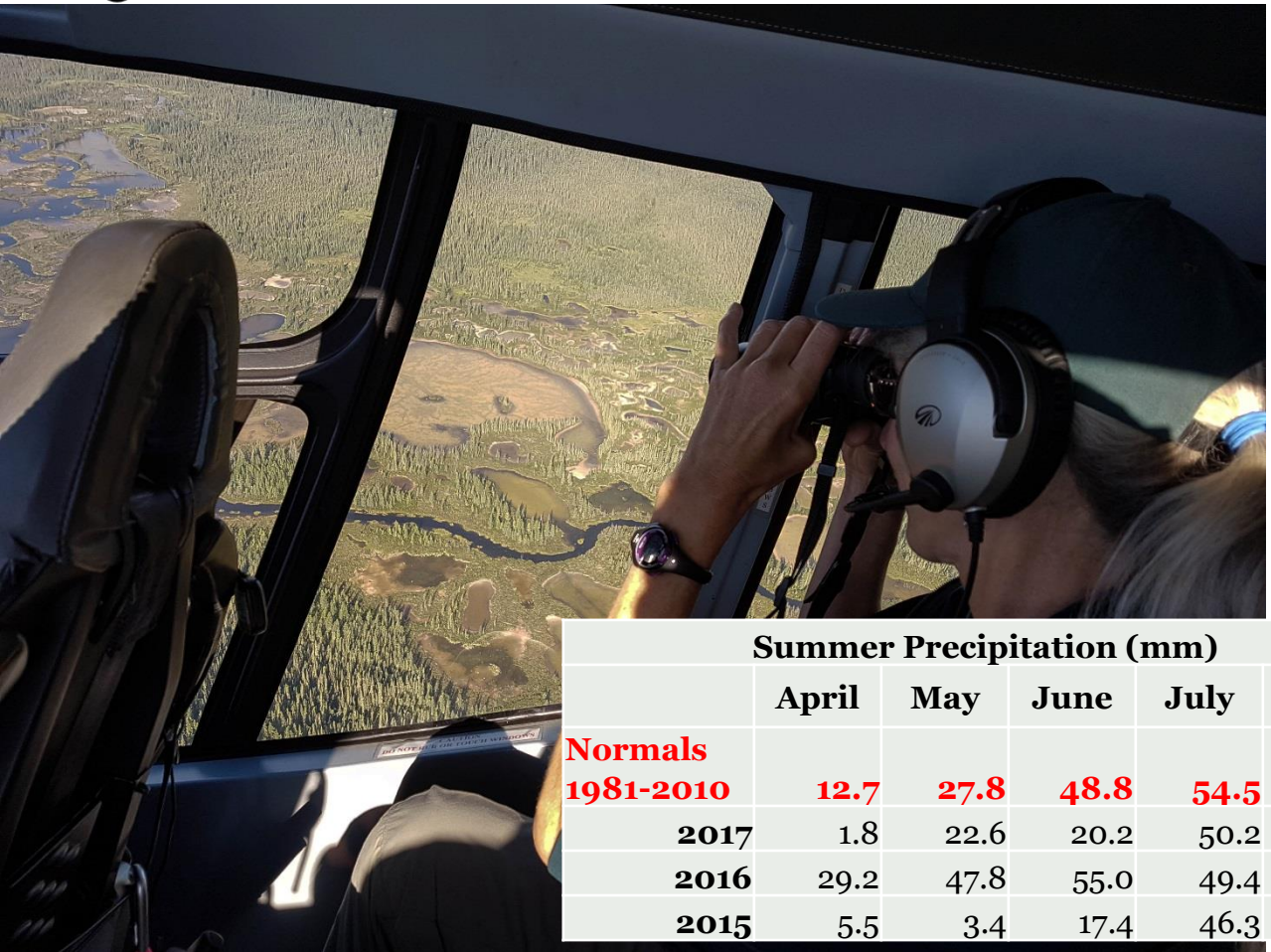
2017

2015



Habitat Conditions

July 2017



Summer Precipitation (mm)					
	April	May	June	July	August
Normals 1981-2010	12.7	27.8	48.8	54.5	54.5
2017	1.8	22.6	20.2	50.2	66.8
2016	29.2	47.8	55.0	49.4	53.0
2015	5.5	3.4	17.4	46.3	65.4

July 2017

Phase 1 Whooping Crane Telemetry 2010-2016

Objectives

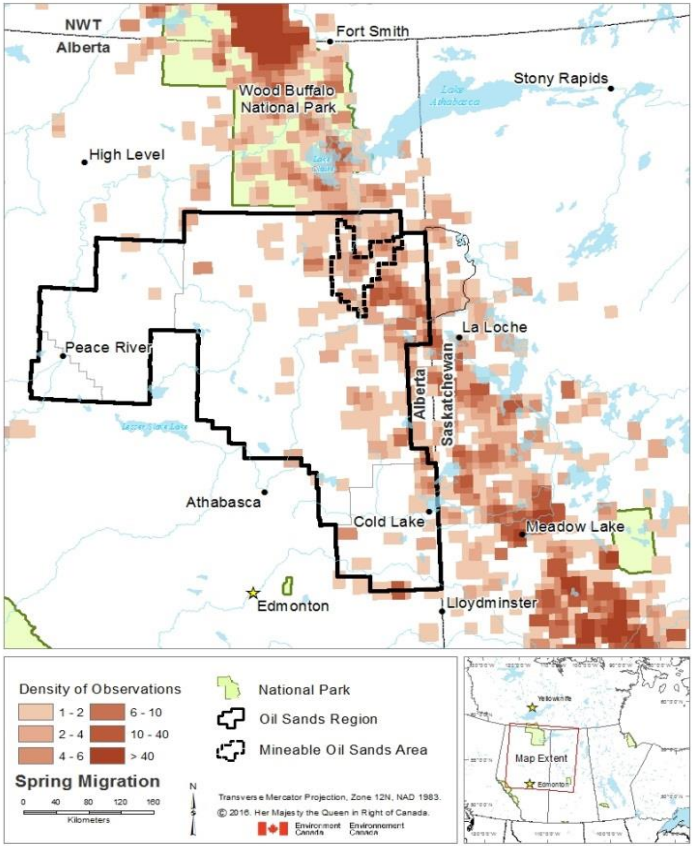
- Delineate migration corridor
- Quantify timing of migration
- Identify important stopover locations (occurrence, density, frequency of use)
- Identify threats in breeding, migration and wintering areas

Activities

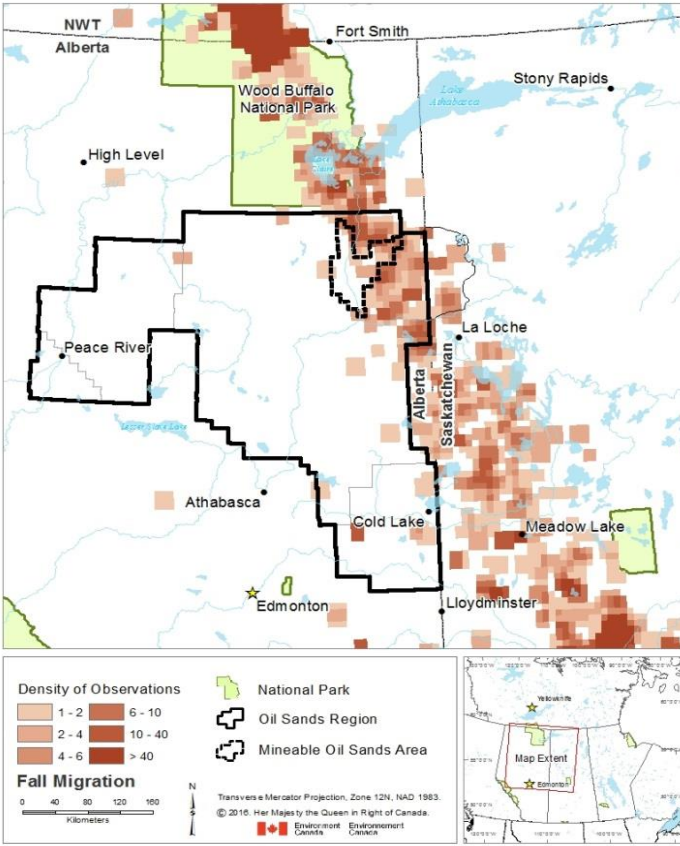
- 68 cranes (20% of population) captured from 2009-2014 (including 31 cranes in WBNP, 2010-2012)
- Banded with satellite tracking devices (4-5 GPS locations per day)
- Monitored movement, survival and habitat use

Analysis from Phase 1 Telemetry 2010-2016

Spring Migration



Fall Migration



Phase 2 Telemetry
2017-2021

- Phase 2 goal is to investigate potential risk to whooping cranes from industrial development (e.g. oil and gas, wind power and mining) in areas used for breeding, migration and wintering.
- In Canada, the main objective is to further investigate risk from oil sands mining and propose methods to mitigate this risk.
- 3 years of banding juveniles in WBNP area
- Plan to band 15-20 each year

Phase 2 Telemetry

2017 Banding

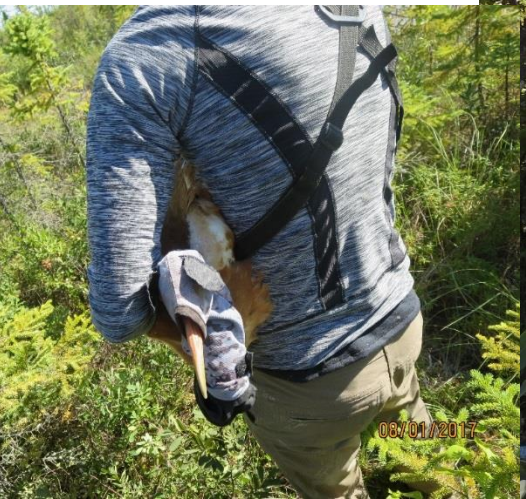
- 10 juveniles on Aug.1-2 (9 inside WBNP, 1 north of the park)
- Multi-agency team (PCA, ECCC, International Crane Foundation, US Geological Survey, Calgary Zoo)
- Health and physical condition of captured birds monitored by project Veterinarian
- Transmitters set to collect a GPS coordinate of the bird's location every 30 minutes (48 per day) – locations downloaded to a server only where cellular coverage exists
- As of 30 Oct, 6 of 10 marked juveniles have provided locations (i.e. have begun migration)

Banding for Phase 2 – August 1-2, 2017

Banding team:

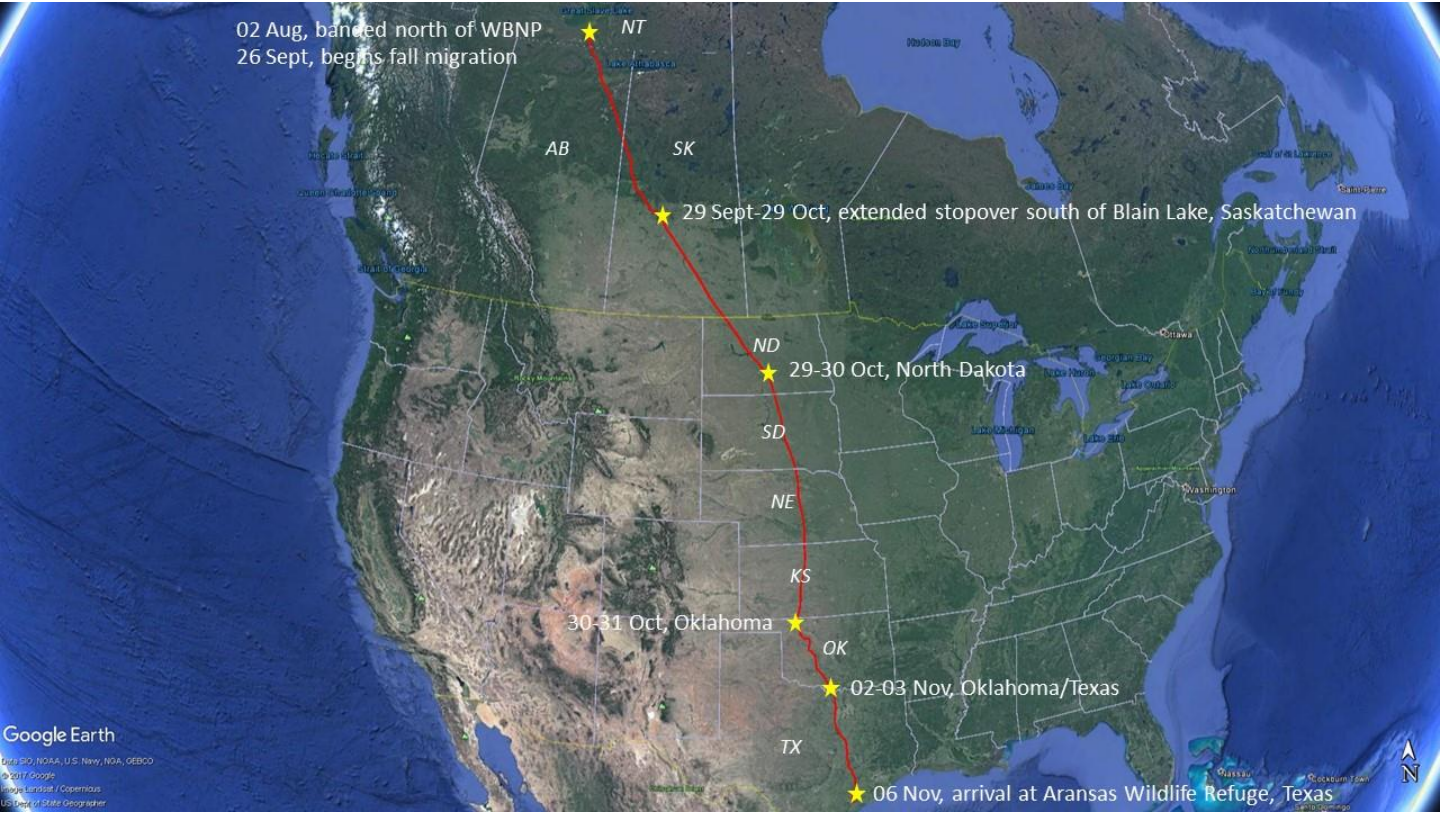
- Dave Brandt, US Geological Service
- Barry Hartup, Int'l Crane Foundation
- Valerie Edwards, Calgary Zoo
- John Conkin, Can. Wildlife Service
- Rhona Kindopp, WBNP

Banding for Phase 2 – August 1-2, 2017



Banding for Phase 2 – August 1-2, 2017

Migration of Juvenile 0A – Fall 2017

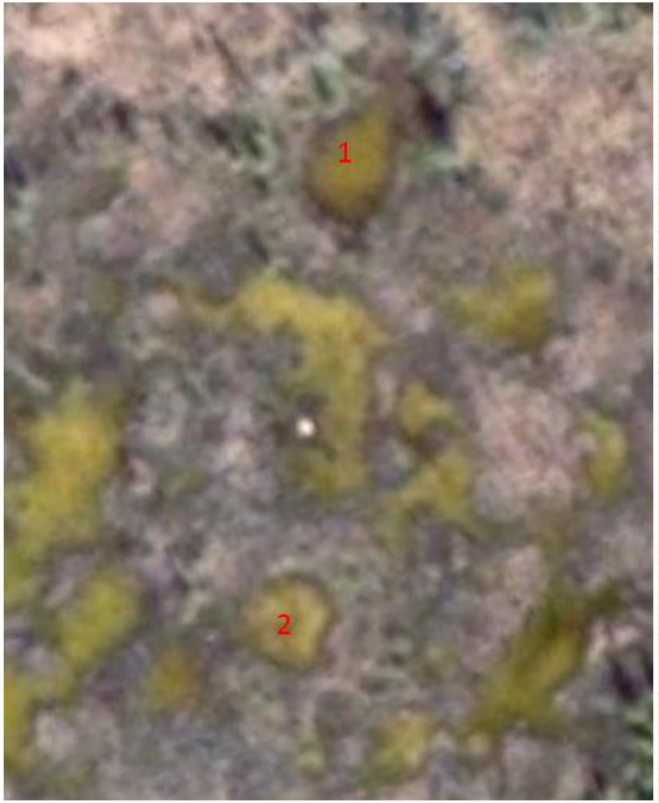


Canadian Wildlife Service Project
Monitoring Whooping Cranes with high resolution satellite imagery

- Rapid population growth since annual aerial surveys began in 1966 by ECCC and PCA
  - population 10x larger
  - breeding range 300x larger
- Breeding may occur beyond the known range
- Concerns about high cost and safety of aerial surveys
- New methods may be needed to monitor this growing population to:
  - detect new nesting pairs within known breeding range
  - discover new breeding areas

Monitoring Whooping Cranes with high resolution satellite imagery

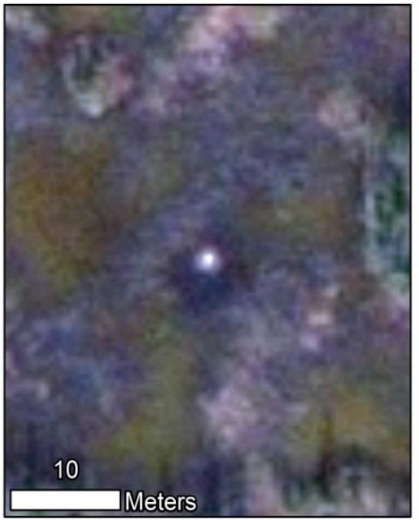
- Can whooping crane nests be detected in historical satellite imagery i.e. compare nest locations from aerial survey against imagery?



Monitoring Whooping Cranes with high resolution satellite imagery

- Determined to be technically feasible in 2016-17
  - known nests generally detectable as a clear, large white object surrounded as a dark 'halo' where vegetation has been plucked for nest construction

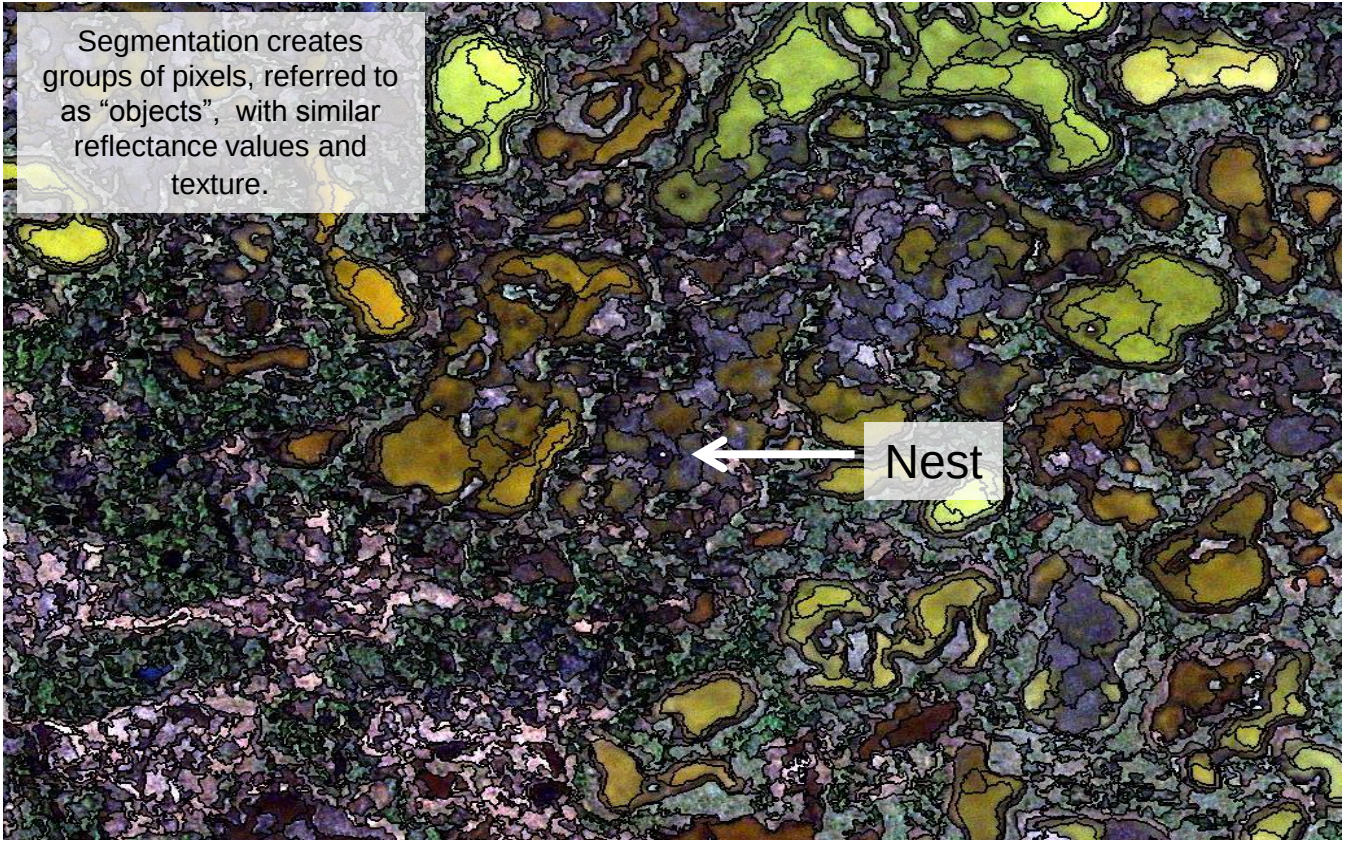
Photo from helicopter



GPS position of nest recorded in aerial survey

100
Meters

Monitoring Whooping Cranes with high resolution satellite imagery



- Automated classification methods are being developed to detect nests
  - Early stages, but methods are promising

Our Partners

Alberta Biodiversity Monitoring Institute
Calgary Zoo
The Crane Trust
Digital Globe/MDA Corporation
Ducks Unlimited Canada
Environment Climate Change Canada
Government of the Northwest Territories – Department of Environment and Natural Resources
Gulf Coast Bird Observatory
Joint Oil Sands Monitoring
International Crane Foundation
Parks Canada – Wood Buffalo National Park
Platte River Recovery Implementation Program
Salt River First Nation
US Fish and Wildlife Service
US Geological Survey

Wildlife Health Surveillance in the South Slave Region

Government of
Northwest Territories

Northwest Territories

Outline

- What is wildlife health vs. disease?
- What are the components of a wildlife health program relevant to the NWT?
- What are some additional goals for the future in a changing environment?

What is wildlife health?

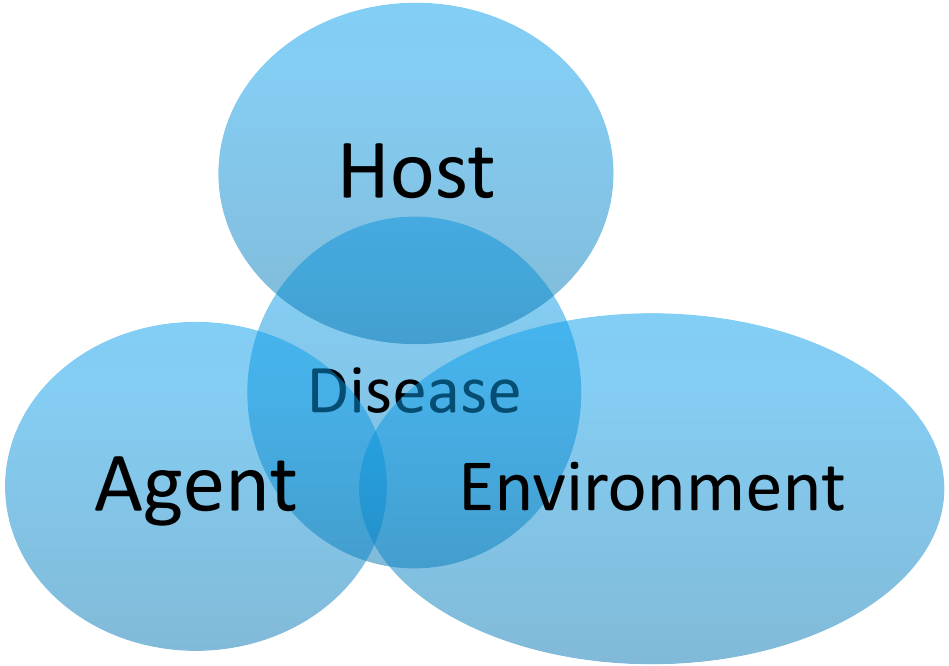
- WHO (1948) defined health as “a state of complete physical, mental and social well-being, and not merely the absence of disease ”
- Overall goal is often the sustainability of wildlife populations with adequate habitat and food resources

How do we measure health?

- Individual animals
- Population

What is disease?

- Pathogens (e.g. germs)
- Effects of contaminants
- Starvation due to lack of food

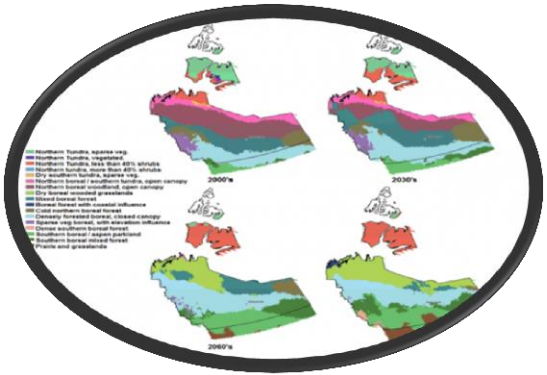


Winter Tick

Host

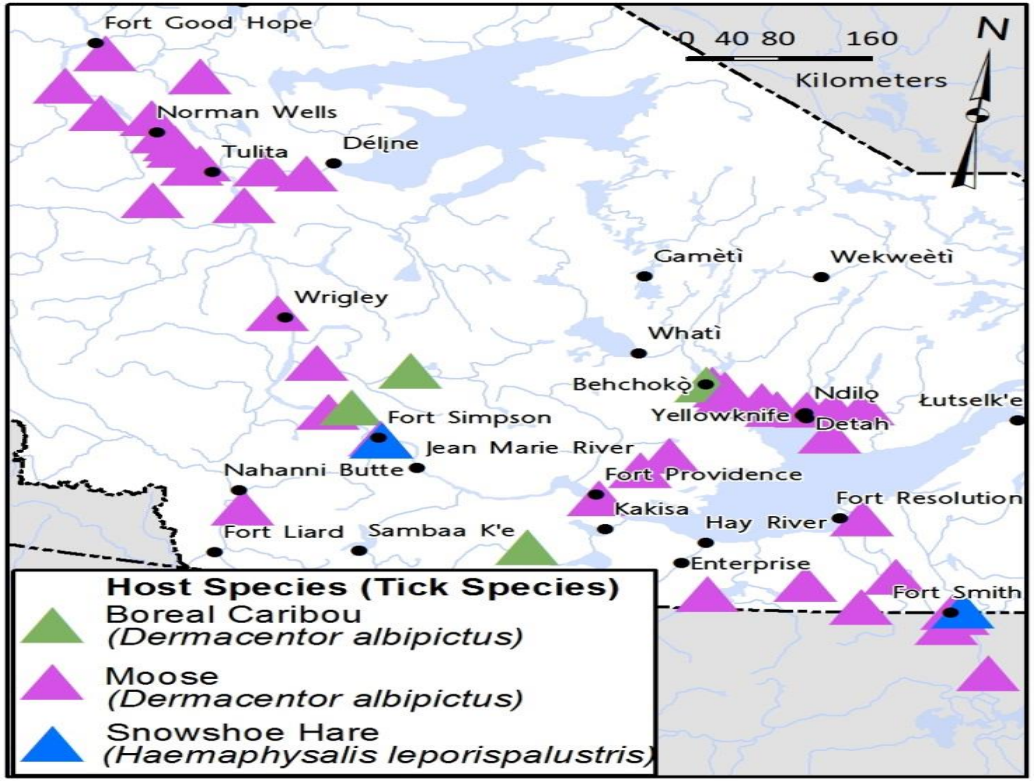
Agent

Environment



Recorded Tick Observations in the NWT (1975-2017)

Government of Northwest Territories



NOTES

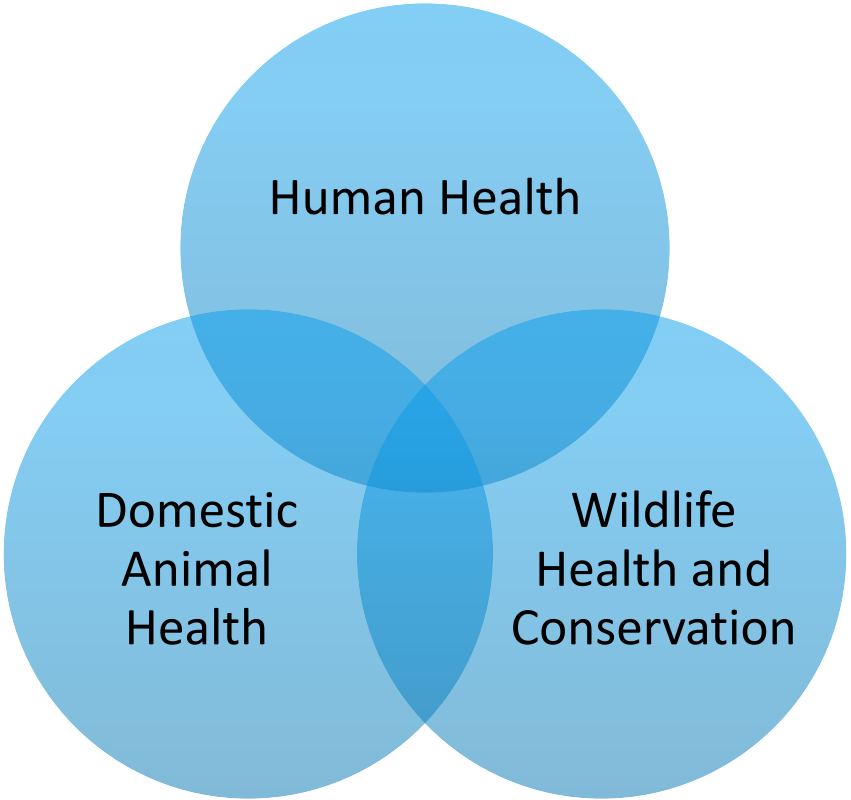
The map only includes tick observations on wildlife and tick species thought to be completing their life cycle within the NWT.

DISCLAIMER

THIS MAP IS FOR ILLUSTRATIVE PURPOSES ONLY. ACTUAL FEATURE BOUNDARIES DEPICTED MAY NOT BE EXACTLY AS SHOWN. THE GNWT AND THE NWT CENTRE FOR GEOMATICS ARE NOT RESPONSIBLE FOR ERRORS OR DISCREPANCIES.

GIS	AS	7/20/2017	Doc ID: MXD-001
QA/QC	HF	7/14/2017	GNWT Wildlife Division

One Health: *interface of wildlife, domestic animal and human health*



Human Health

- Ensure safe and sustainable access to protein for Northwest Territories residents (healthy wildlife make for healthy people)
- Assist with surveillance for pathogens of significance to human health (e.g. rabies, brucellosis, tuberculosis, and trichinosis)
- Trap mosquitoes to look for diseases that could affect people

Photo: www.deneajourney.com

Wildlife Health and Conservation

- Maintain and develop scientifically robust assessments of populations and participate in analysis of data to answer questions related to potential roles of pathogens and “disease” in population declines
- Monitor for cumulative effects

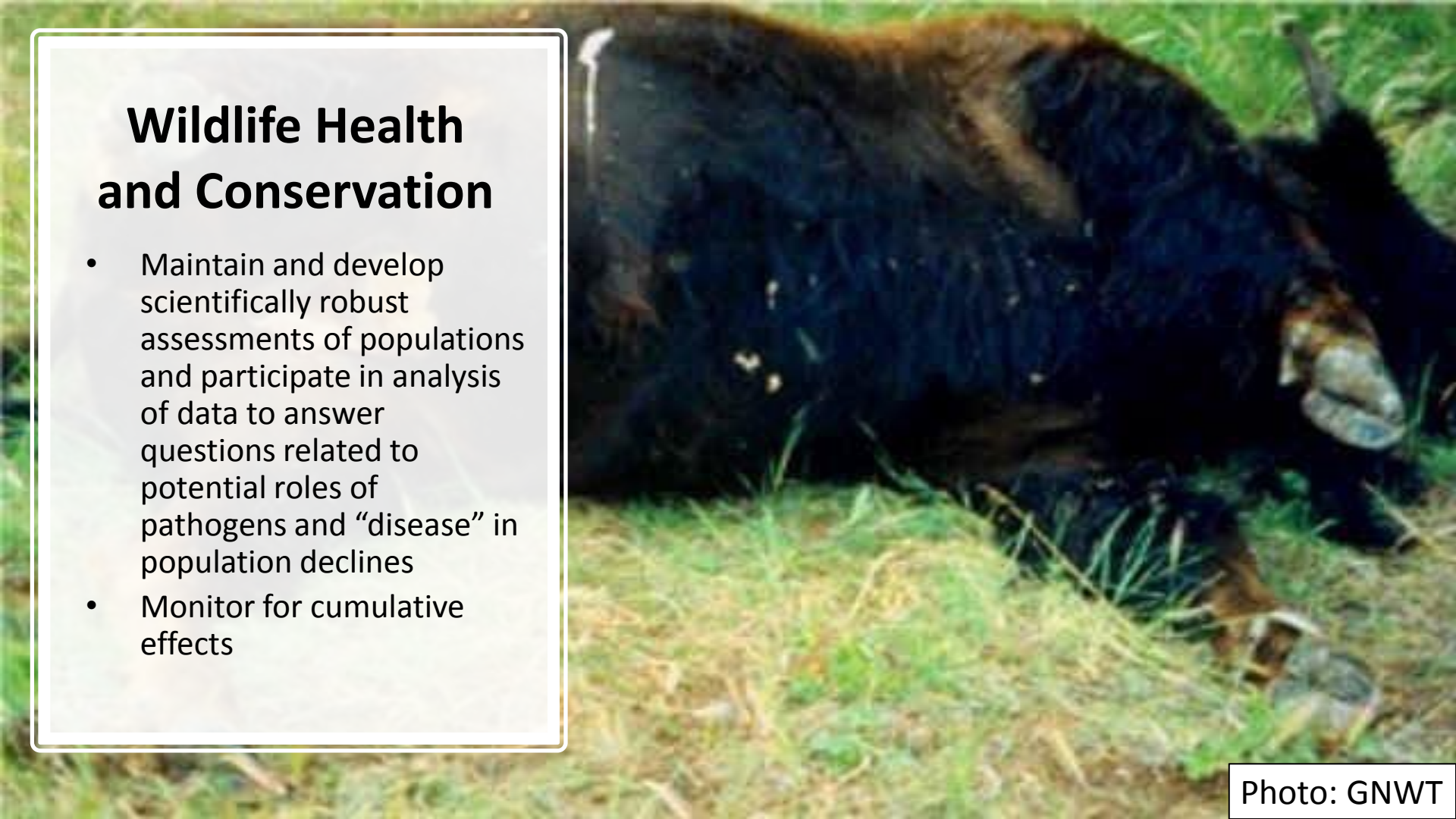
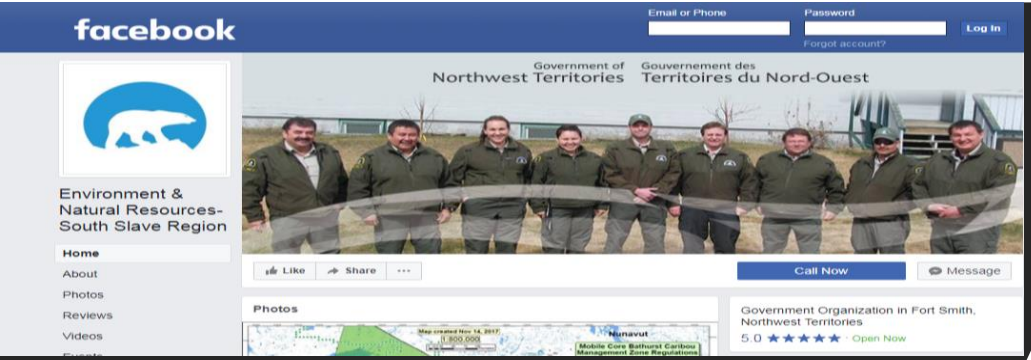


Photo: GNWT

Additional Sources of Information



Hunters, trappers, and other members of the public are crucial for recognition and reporting of sick and dead wildlife and abnormalities

Challenges

- Confirmation may require specialized testing that often involves sending samples to laboratories in the south
- Results do not always come back for weeks to months
- Often need to save up samples for bulk shipments for baseline monitoring

Additional Sources of Information

- Vehicle collisions
- Hunter and trapper submitted samples can assist with baseline information

Future Goals

- Continue and Enhance Community-Based Monitoring
- Enhance Traditional Knowledge in Wildlife Health Monitoring
- Create Opportunities for Youth
- Establish monitoring programs to look ahead for new and emerging diseases (e.g. chronic wasting disease)
- Respond to local concerns

Mahsi Cho

- Ashley McLaren

- Brett Elkin

- Canadian Wildlife Health Cooperative
- heather_fenton@gov.nt.ca
- 867-444-0636

CANADIAN
WILDLIFE HEALTH
COOPERATIVE

Northwest
Territories

Government of
Northwest Territories

Florian Graner

Preparing Northwest Territories for White-nose Syndrome in Bats

Dr. Cori Lausen

Wildlife Conservation Society Canada

WCS CANADA

White-nose Syndrome

- *Invasive* fungal disease
  - Specific to only to bats
- Mass mortality of bats in eastern North America

- Bats die during *winter* hibernation
  - Premature fat depletion (frequent arousals)
  - Physiological disruption
  - Wing damage

WNS –2017

White-Nose Syndrome
Occurrence by County/District
(or portions thereof)

Bat hibernation period
Fall-Winter-Spring

- 2006-07
- 2007-08
- 2008-09
- 2009-10
- 2010-11
- 2011-12
- 2012-13
- 2013-14
- 2014-15
- 2015-16
- 2016-17

First detected 2/2006
Confirmed: Solid color
Suspect: Solid color with dots

0 250 500 KILOMETERS
0 250 500 MILES

Map Created: 5/9/2017

e map - by year (2017). Data Last Updated: 5/9/2017. Available at: https://www.whitenosesyndrome.org/resources/map.

Bats of NWT

- ~8+ species
  - 5 likely hibernate in territory

M. Proctor

-susceptible to WNS

-predicted hardest hit = Myotis spp.

hibernate

Little brown **myotis** ← -prior to WNS this used to be most common bat in North America

Northern **myotis**

Long-legged **myotis**

Long-eared **myotis**

Big brown bat

Silver-haired bat

Hoary bat

Red bat

L. Kaupas

= federally endangered due to WNS mass mortalities in east

J. Acorn

Bats of NWT

- ~8+ species
  - 5 likely hibernate in territory
    - *-susceptible to WNS*
    - *-predicted hardest hit = Myotis spp.*

M. Proctor

hibernate

★ Little brown **myotis**
★ Northern **myotis**
Long-legged **myotis**
Long-eared **myotis**
Big brown bat
Silver-haired bat
Hoary bat
Red bat

Currently Most Common in NWT

L. Kaupas

★ = federally endangered due to WNS mass mortalities in east

J. Acorn

Conclusions about NWT bats

- Following the arrival of WNS, bat numbers may plummet in the territory
  - Because myotis that hibernate in NWT are likely to have die-backs caused by WNS

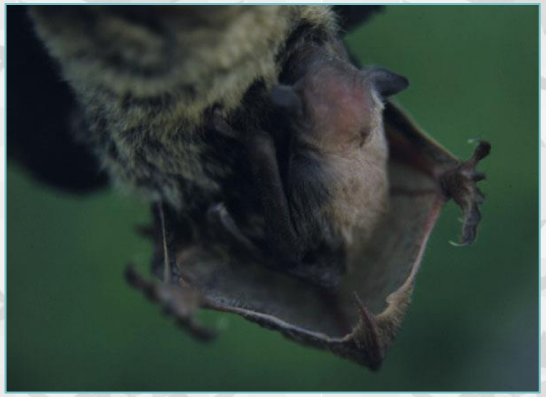
But….

- Bats could bats in the north have adaptations that allow them but survive WNS better than southern bats?
  - One of our proposed northern projects (Survivorship assessment) will help answer this question.

Why bats are a *special* case…

Long-lived
Slow reproduction

Single pup born each year



39 year old little brown myotis in Alberta cave

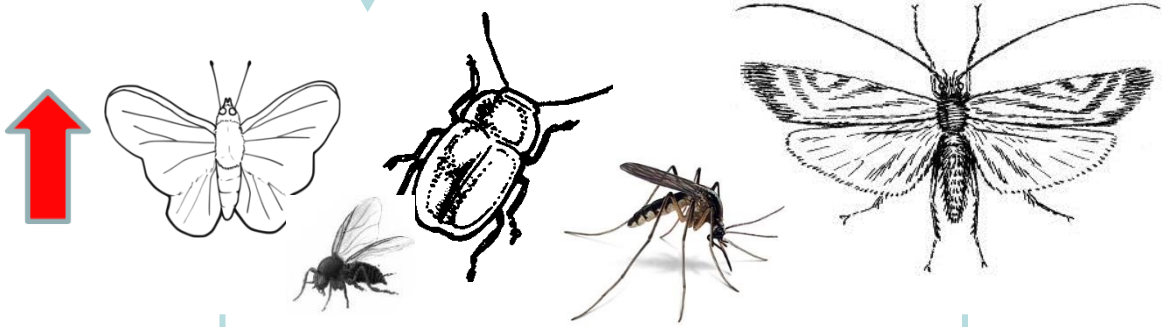
Why bats are a *special* case…

- Unlike other small mammals, bats can't rebound from mass die-backs
- Bats are more similar to large mammals than small mammals
  - Their life history traits make them like little 'flying grizzly bears'
- Following WNS die-off, it will be an estimated 300+ years for bat populations to recover in numbers, if ever.

Food Chain – Unpredictable Changes

Decline
In bats

Increase in
insects



Increased pesticide use

Negative
impacts

Lumber supply

Changes in Plant Communities and Animal Populations

Food Chain – Unpredictable Changes

Bats are the primary consumer of night-time insects (eg. mosquitoes, moths).

-many insects are considered pests on forests, crops, and humans.

-a bat can eat its own body weight in insects in night of foraging (like a human adult eating hundreds of hamburgers in a day).

-tons of insects that go uneaten will cause a cascade of negative effects in the food web

-pesticide use increases to offset this sharp increase in insects.

Without natural predators in place to consume insects that fly at night, there will be a shift in increased pest insect abundance.

-plants and animals depend on bats. Healthy ecosystems depend on bats.

-**bats are worth billions of dollars to agriculture**; bats keep pesticide use low and demand for genetically modified foods low

Unpredictable changes are likely to be the fallout of cascading trophic effects following mass bat declines.

-forestry industry, agriculture, organic farming, etc. will be affected

-even shifts in fish populations that could affect fishing industry

Increase in pesticides in eastern areas (where bats have been hit hardest by WNS to date) has been linked to higher infant mortality rates, confirming that bats are important for **human health**.

-bats also help control vectors of human disease such as eating mosquitoes that can carry West Nile virus, etc.

Bats are needed = health of ecosystem, humans and the economy

Western Canada Bat Conservation Goals

In light of the threat of WNS:

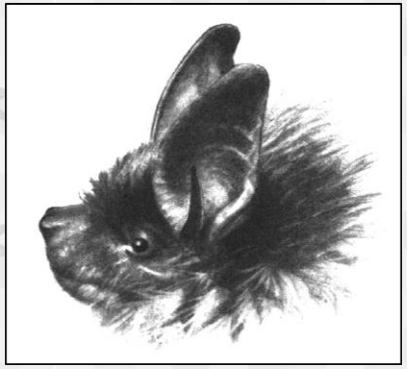
I. Find where bats overwinter (species-specific).

II. Fill key knowledge gaps:
-significant summer maternity roosts
-winter habitat requirements
-ecology, physiology and behaviour
-WNS susceptibility

We have limited time! WNS could jump to other locations.

III. Conservation Strategies
-future mitigation/treatment and surveillance

Proposed extensions of projects for NT



BatCaver

Where are bats in winter?

Community Bat Program

Where are bats in summer?

How can we engage communities to help bats?

(and help citizens with ‘bat issues’?)

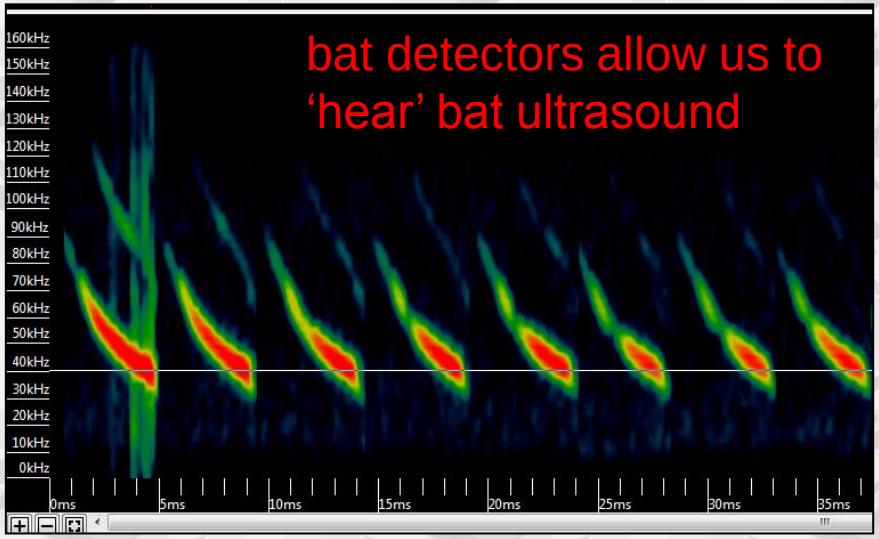
Determining WNS Survivorship

Research – who, where, how bad will WNS be?

How can we plan for impact (mortality) to be reduced?

Methods

Acoustic recording



bat detectors allow us to ‘hear’ bat ultrasound

WCS CANADA

Methods

Winter (or Fall) Capture

We measure and sample bats:

-wing microbes (fungi, bacteria)

-"good microbes" can potentially be used to treat WNS.

-fat going into hibernation – to help predict whether bats will survive WNS

WCS CANADA

Methods

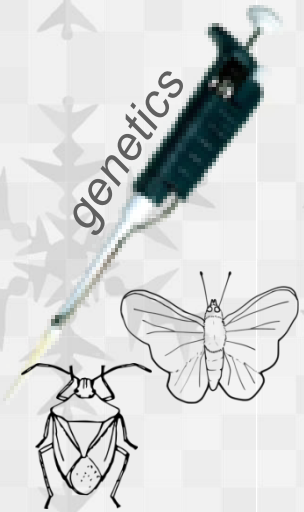
Temperature-sensitive radiotelemetry

We can glue temporary transmitters on their backs to determine how often they arouse from hibernatoin. Frequent arousal causes death in WNS infected bats.

WCS CANADA

Methods

Guano collection



Guano can be used to identify species through genetics. It can also show us what insects bats are feeding on.

WCS CANADA

Methods

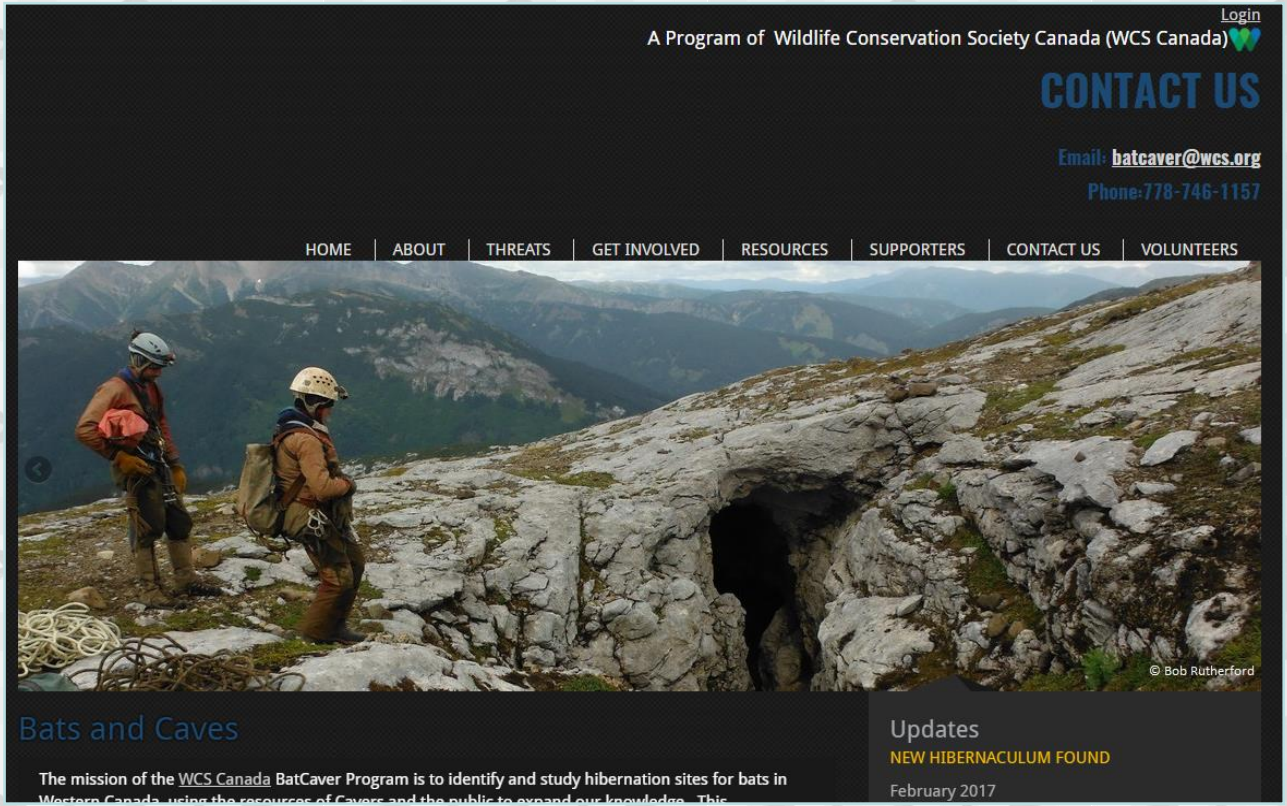
Cavers, Citizens

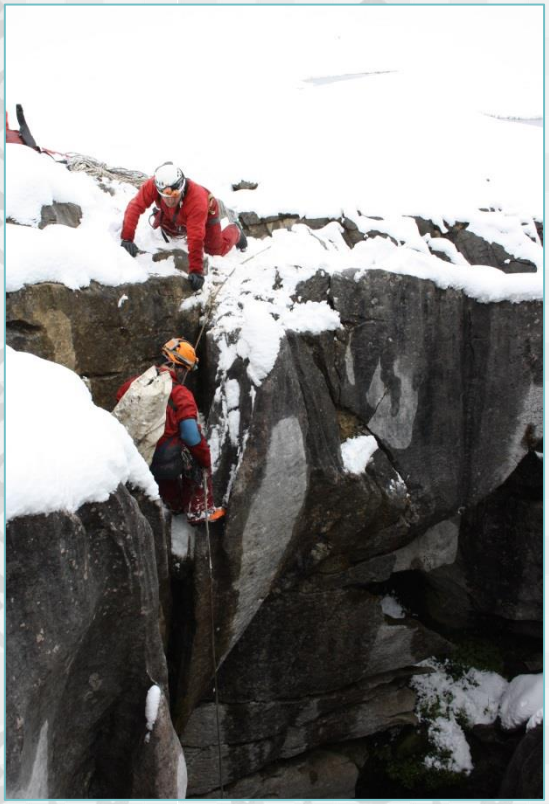
Engaging communities, citizens.
Eyes to help find bats.
Hands to help deploy and retrieve detectors.

Citizens helping

Monitoring, Inventory, Disease Surveillance

1) BatCaver.org

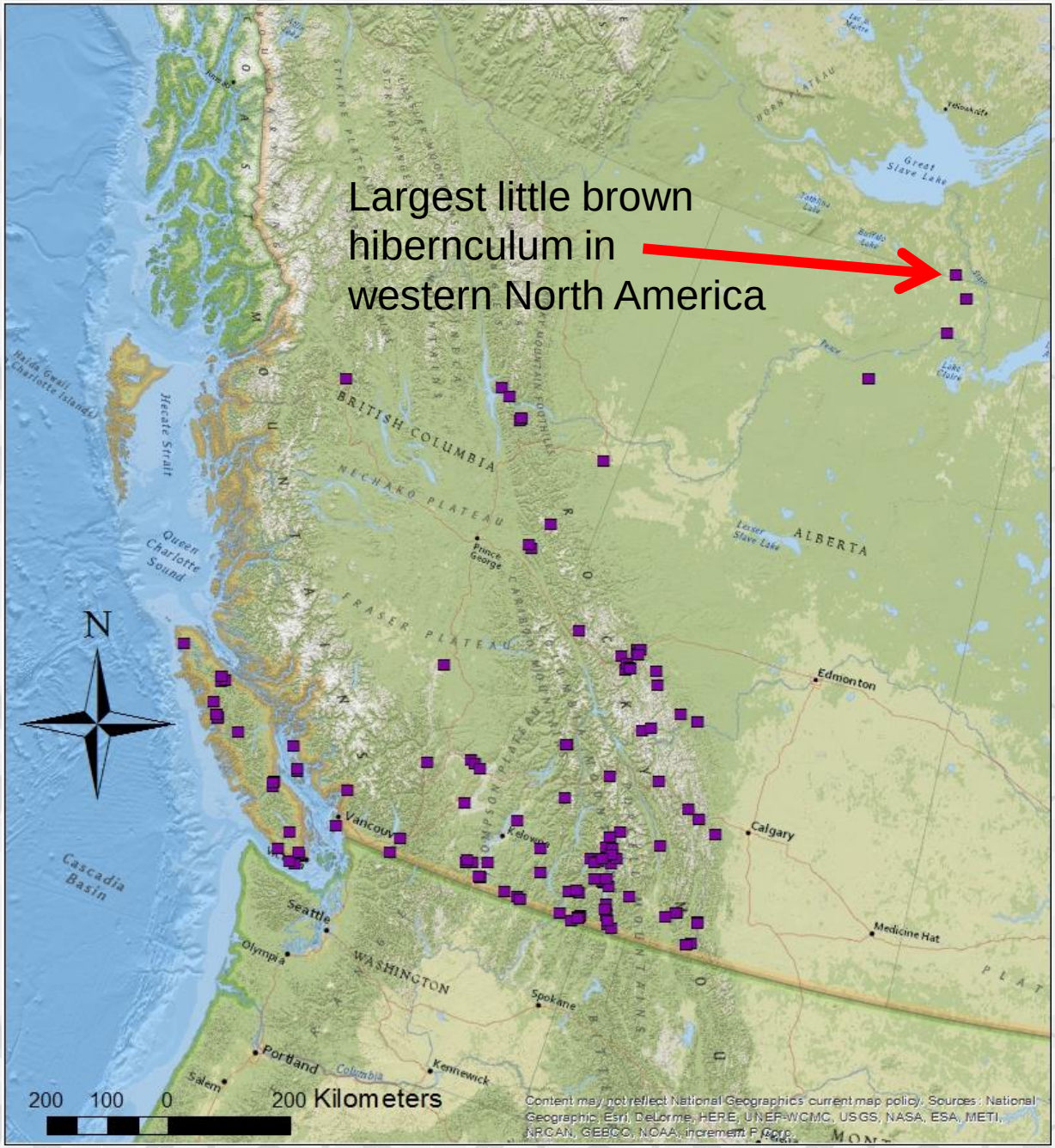




WCS CANADA


TITLEY

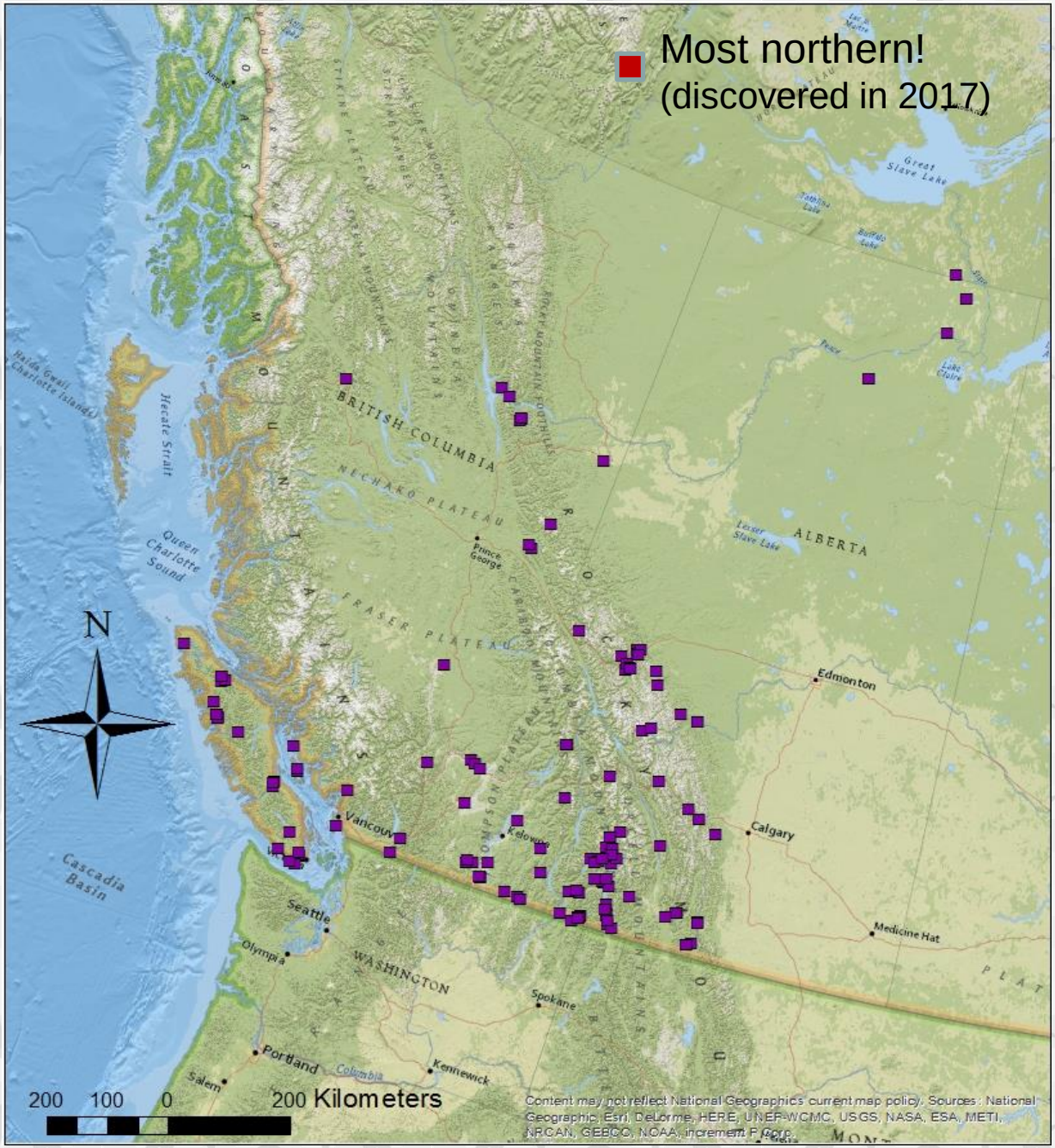
BAT CAVER.ORG
Helping Our Bats



WCS CANADA

BAT CAVER.ORG
Helping Our Bats

Canada



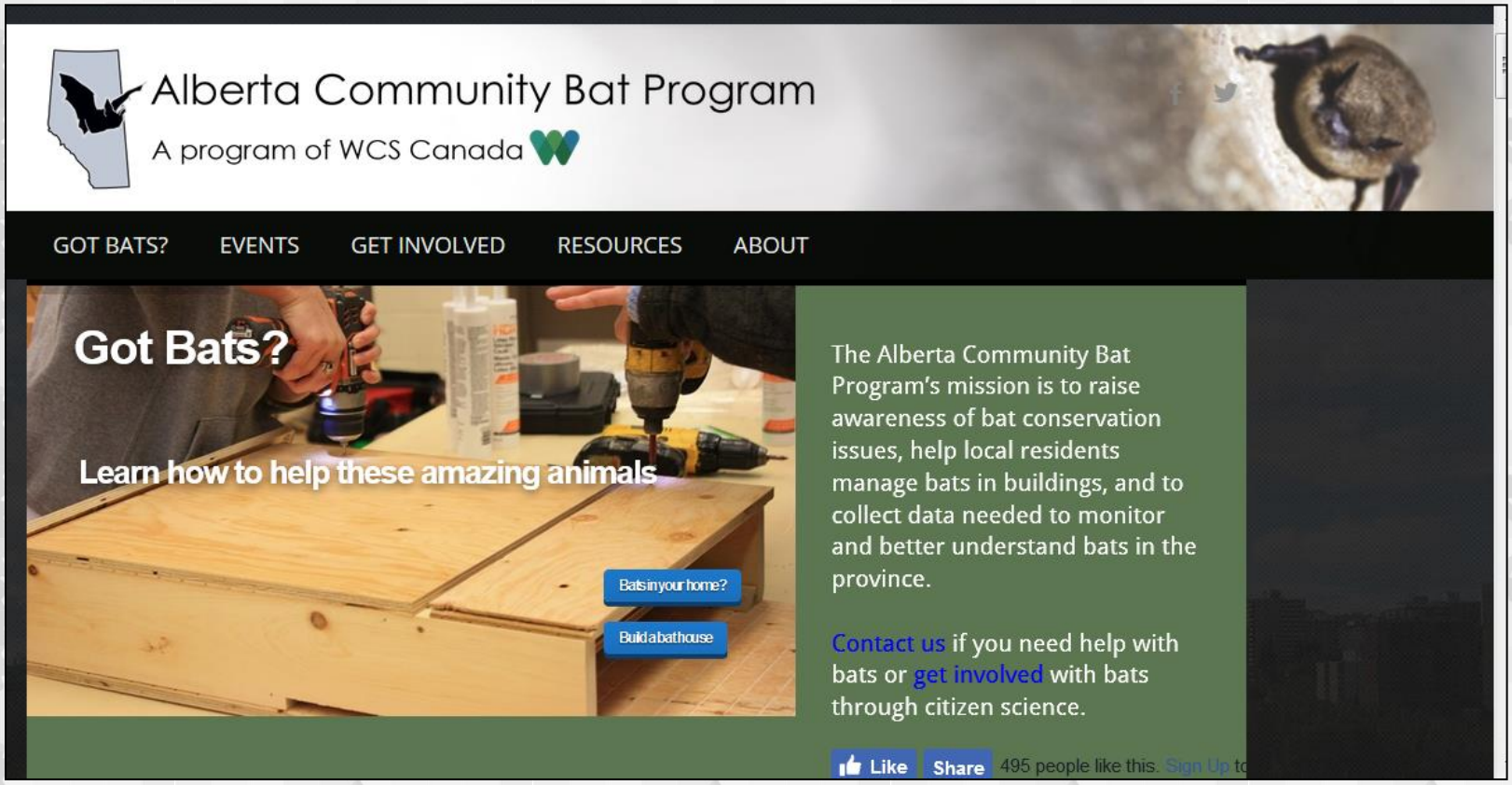
Expanding the search?…

Location	live	carcass	bones	guano	moth wings	historic
Grotte Valerie	X	X		X		
Grotte Mickey		X		X	X	X
Grotte Andrée	X	X	X	X		X
Grotte Louise	X	X	X	X		X
Trou Jean	X		X	X		
Trou Claudette			X	X	X	
Cave 56B (near Jean)				X		
Cave 57B (near Jean)						
Cave 91B (Kraus HS)				X		X
Cave 92B (Kraus HS)			X	X		X
Cave 93B (Kraus HS)				X		X
Frost Pocket Kraus HS				X	X	X
Grotte Thérèse						X
Cave Glacée						

BAT CAVER.ORG
Helping Our Bats

2) Community Bat Programs

- **Alberta Community Bat Program** Albertabats.ca



- **BC Community Bat Program** BCbats.ca

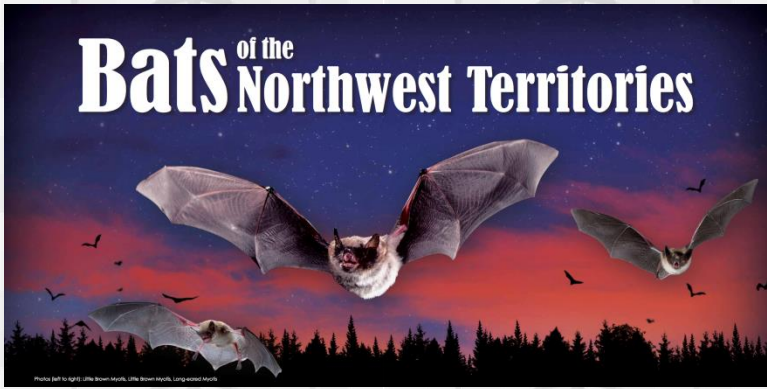
Proposed

Jesika Reimer
Laura Kaupas

Community Bat Program, *NWT*

Objectives:

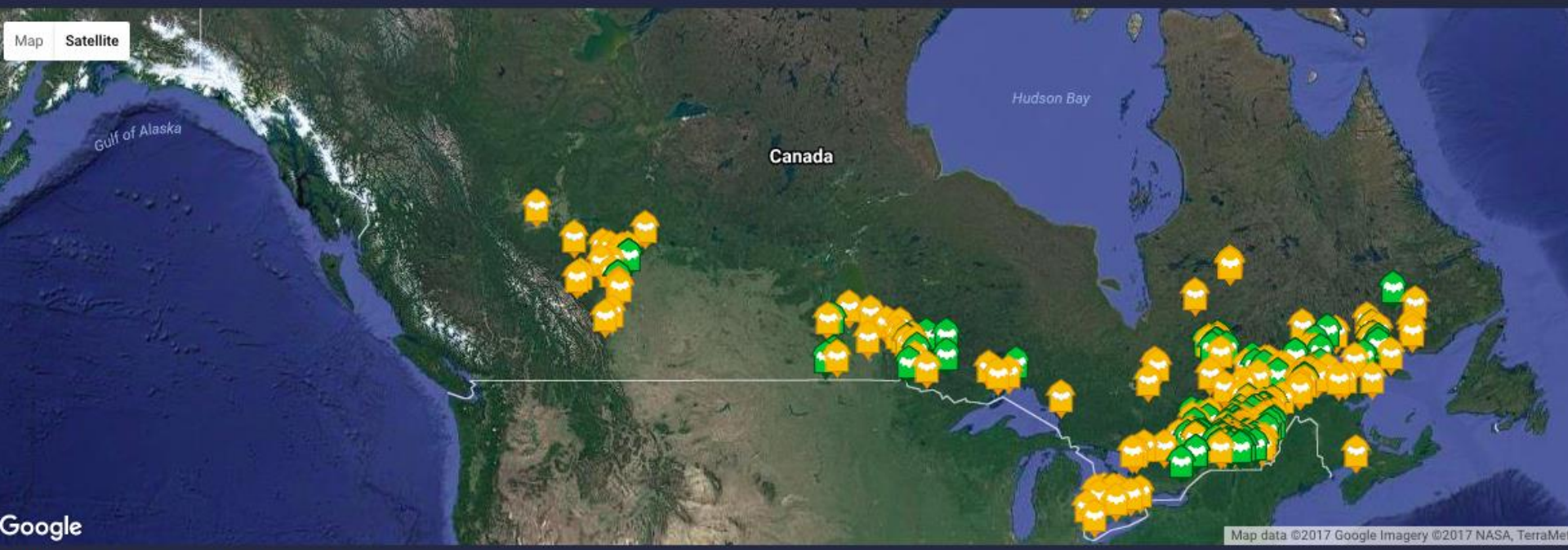
- Website, Facebook with NWT specific bat information
- Promote and make it easy to report bat sightings and colonies
- Provide outreach materials for teachers, visitor centres, etc.
- BatWatch – connect the NWT to rest of Canada



Neighbourhood
Bat Watch

CSBQ QCBS

Home | News | Learn about bats | Useful information | Explore | Participate | Contact us | Log in | Register



Number of recorded colonies: 449

www.batwatch.ca

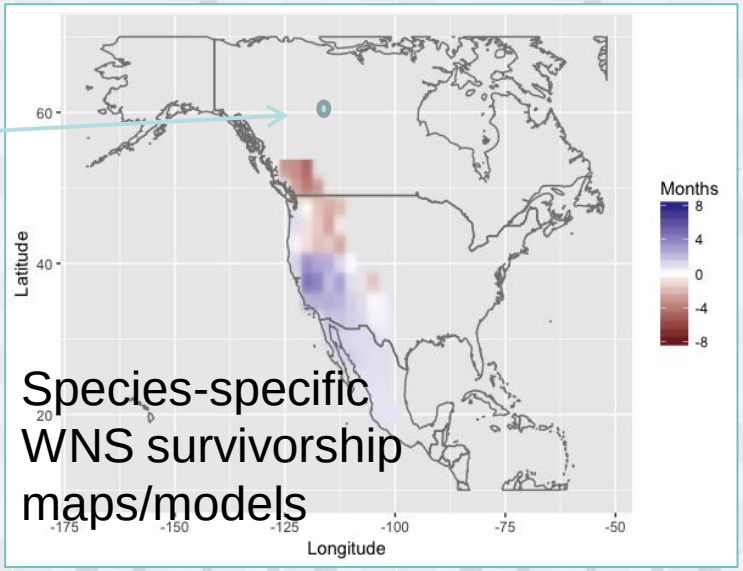
Research to Prepare NWT for WNS

Who is most at risk, where?

How will the northern-most significant hibernacula fare?

Could they be refugia from the disease?

Will the continent's largest little brown hibernaculum be wiped out by WNS?



Species-specific WNS survivorship maps/models

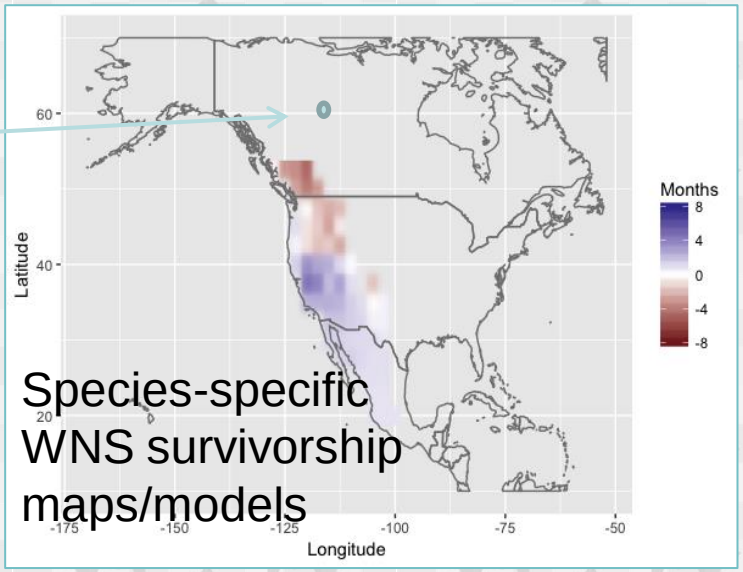
WCS CANADA

Research to Prepare NWT for WNS

Answers we need to assess risk of WNS to NWT bats

Who is most at risk, where?

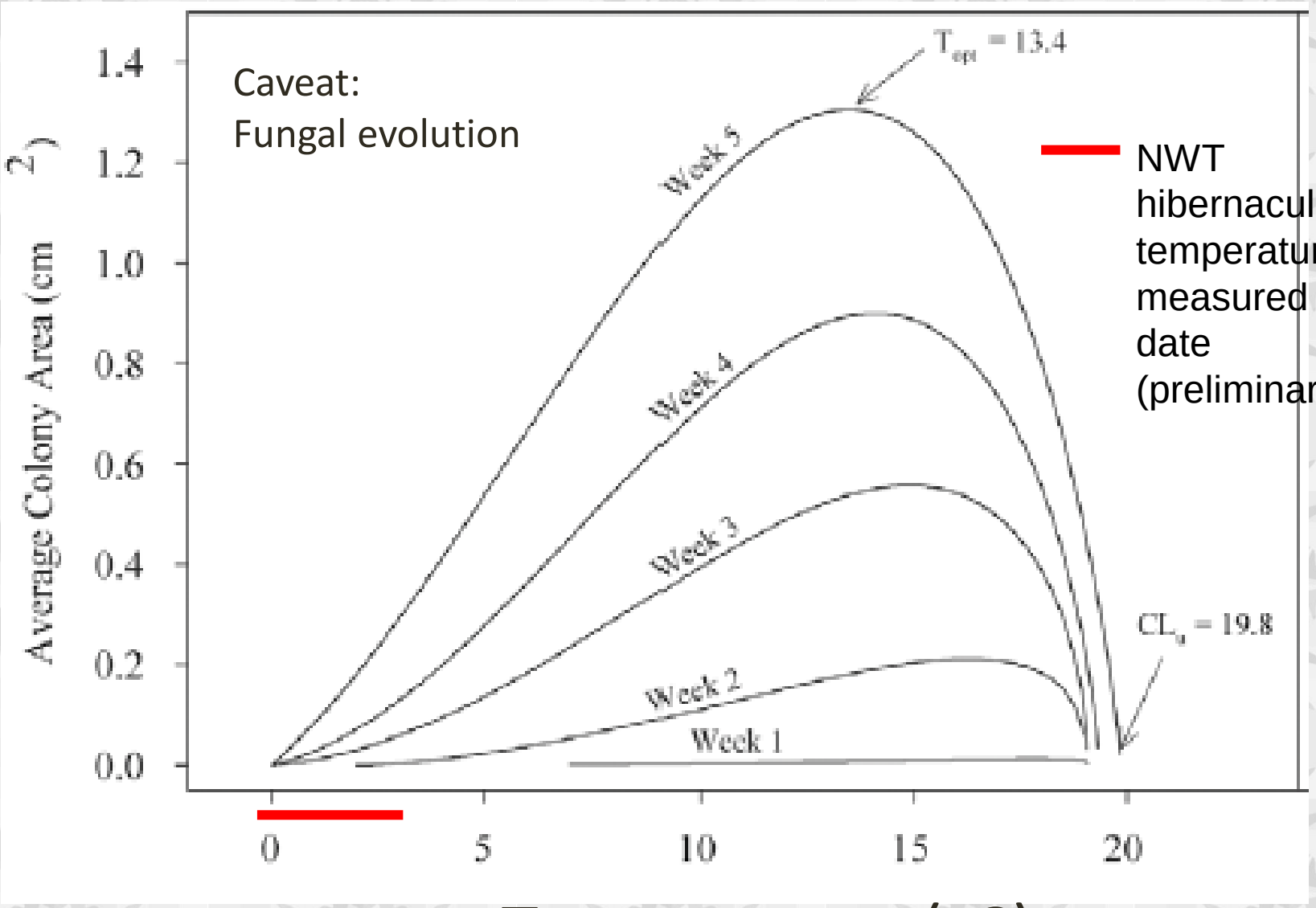
- Data to collect:
  - Winter length
  - Fat use by bats overwinter
    - weight
    - respiration rate
    - arousal rates
  - Temperature and humidity of hibernacula (caves/mines)



Species-specific WNS survivorship maps/models

WCS CANADA

WNS Fungal Growth Curves with Temperature



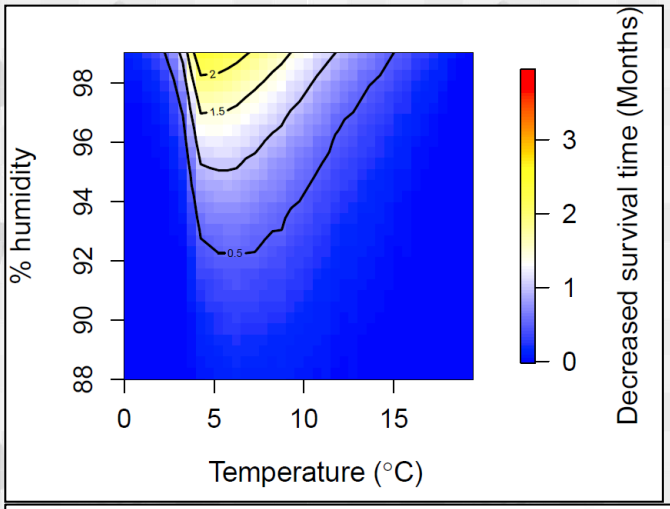
(Verant et al. 2012)

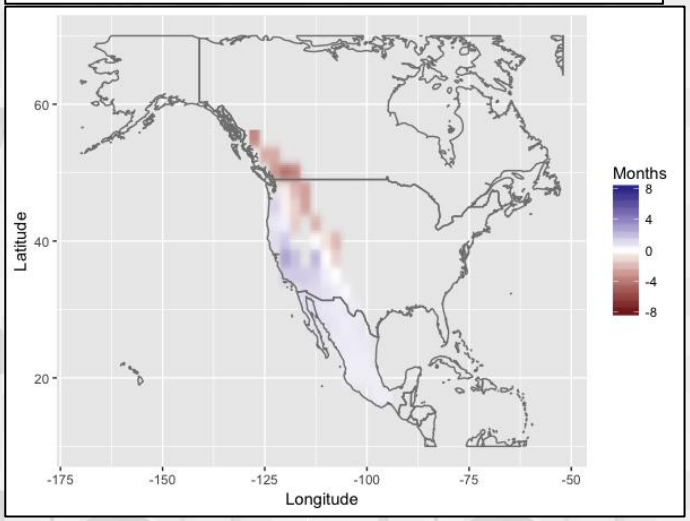
A glimmer of hope??

Survivorship Assessments/Predictions

- Collaboration with universities and disease modellers (US, Canada, New Zealand)

- Parameters:
  - Winter length
  - Fungal growth
  - Cave conditions
  - Bat ‘adaptations’ (fat use)

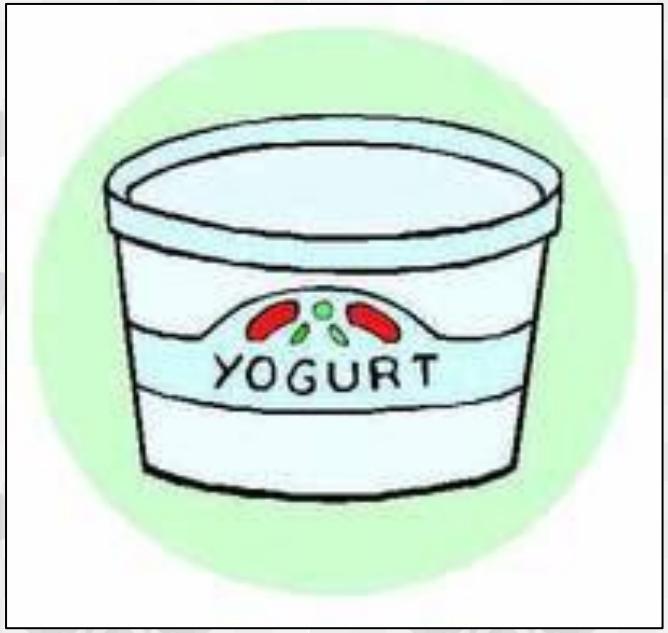




Who can overwinter where, and for how long?

What is the plan? – if northern bats are at risk, can the mortality be reduced?

Potential Treatment for WNS



"probiotic" / prophylaxis approach
(similar principle to eating yogurt)

-goal: to reduce mortality of bats
-action: bats contact 'good bacteria' that will grow on wings
-source microbes naturally occurring already on wings of bats but in low numbers
-may reduce or prevent infection
-wing application at maternity roosts to help bats once they are in hibernation

- Funded by USFWS
- Collaboration:
  - WCS Canada
  - Thompson Rivers, Winnipeg, McMaster Universities
- Field testing in Vancouver spring 2018!

Looking ahead

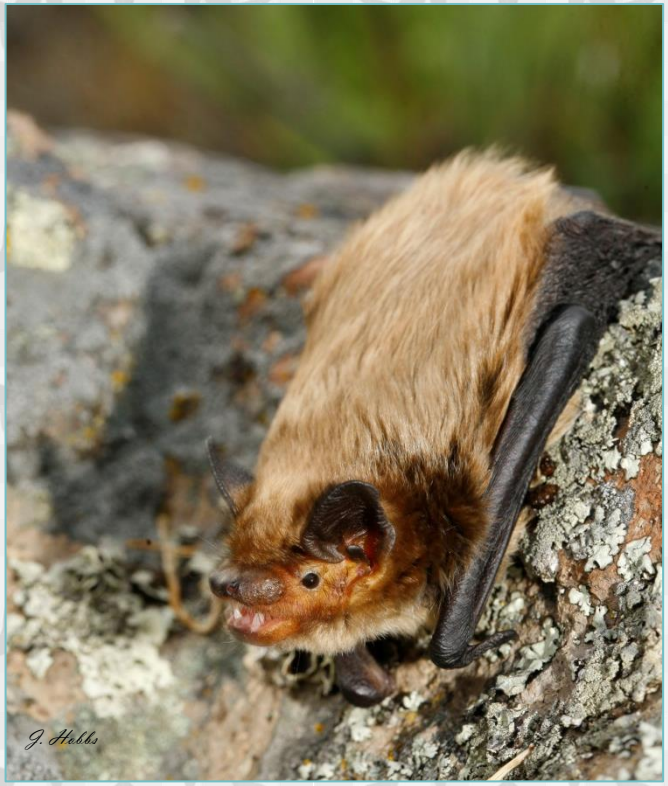
Hope for NT bat conservation

- increased knowledge, baseline
- collaborations, networks
- Community awareness, participation
- research to prepare for WNS
- make progress in the limited time we have

BatCaver

Community Bat

WNS Survivorship Research



WCS CANADA

Our bat conservation and research occurs across western Canada.
Thank you to our partners and funders:

Canadian Cave Conservancy

Columbia Basin trust

U.S. Fish & Wildlife Service

Massey University – Te Kunenga ki Pūrehuroa – University of New Zealand

McMaster University

Thompson Rivers University

Alberta Speleological Society

National Fish and Wildlife Foundation – NFWF

SUSTAINABLE FORESTRY INITIATIVE – SFI-00001

British Columbia Speleological Federation

Columbia Power Corporation

Habitat Conservation Trust Foundation

Canada

patagonia

Canadian Wildlife Federation / Fédération canadienne de la faune

British Columbia – Ministry of Environment

Nature Conservancy Canada

British Columbia – Ministry of Forests, Lands and Natural Resource Operations

FISH & WILDLIFE COMPENSATION PROGRAM – COLUMBIA BASIN

TD Friends of the Environment Foundation

The Chawkers Foundation

BCTS – BC Timber Sales – Kootenay

University of Regina

R. Howard Webster Foundation

This project was undertaken with the financial support of:
Ce projet a été réalisé avec l'appui financier de :
Environment and Climate Change Canada / Environnement et Changement climatique Canada

The McLean Foundation

Bison Program and Bison Control Area Review

Terry Armstrong

November 14, 2017

Northwest Territories
Environment and
Natural Resources

NWT Bison Program

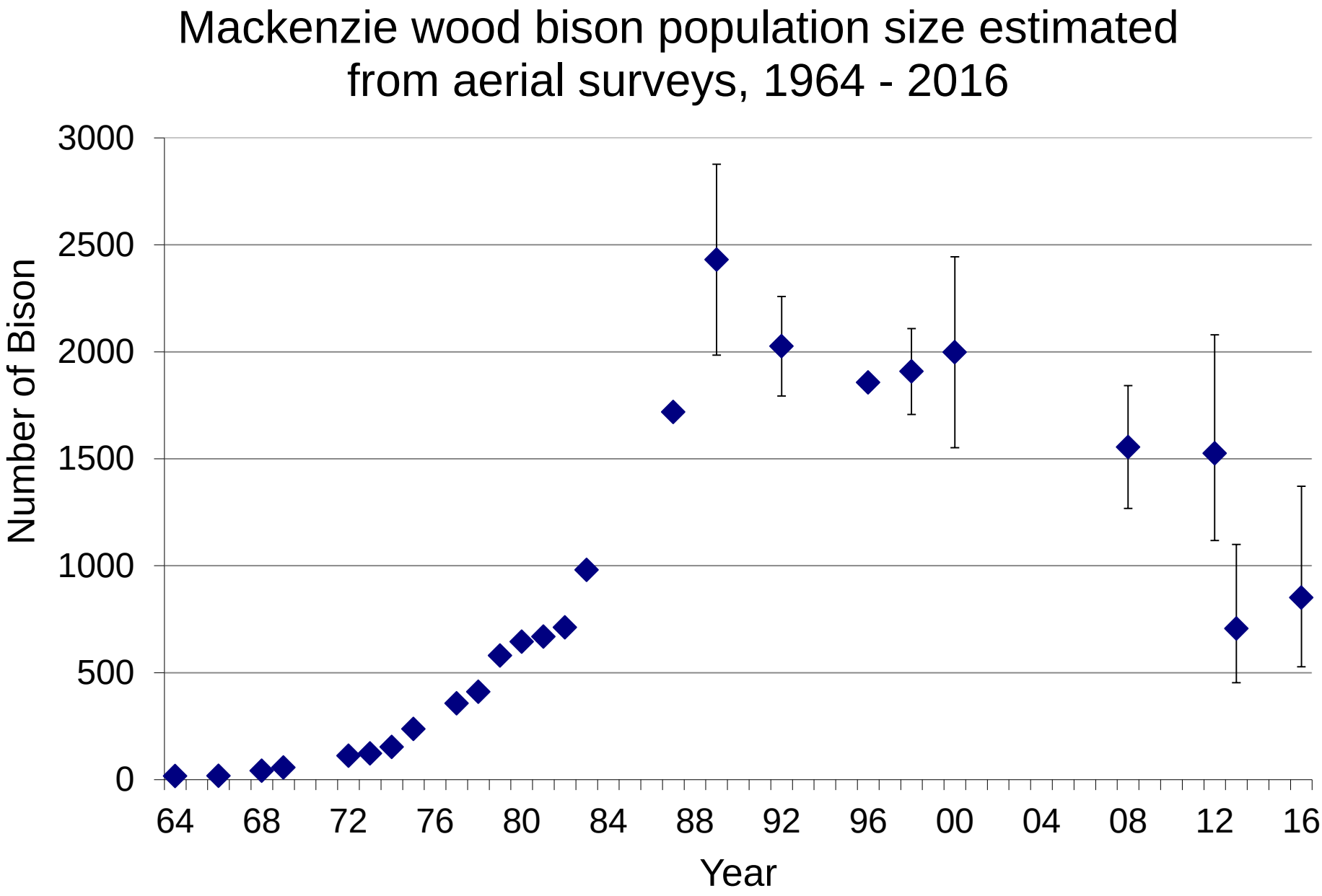
- Developing management plans
- Population surveys
- Disease surveillance & response

Management Planning

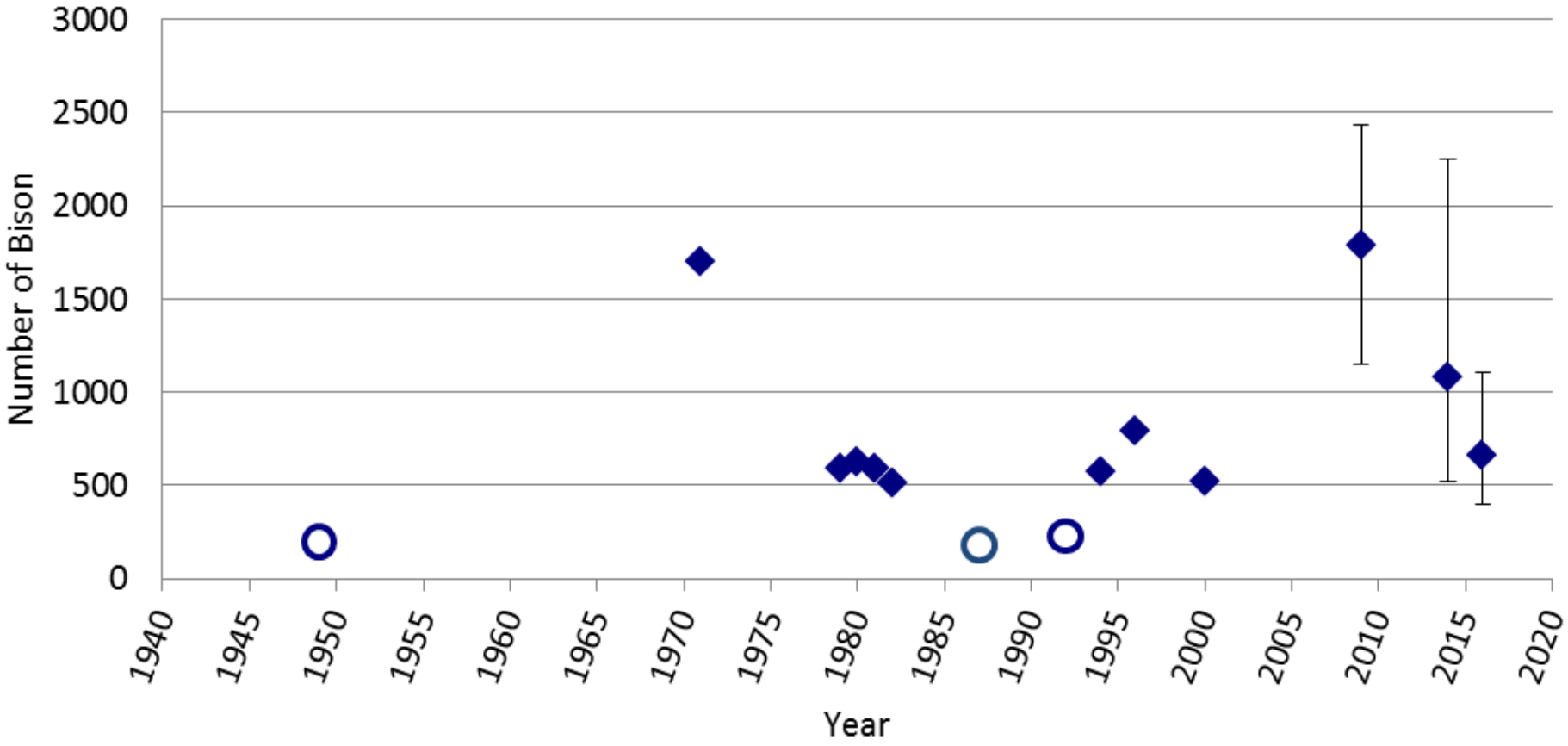
- Mackenzie Bison Management Plan
  - October 2017 Completed Section 35 Consultations
  - WRRB review
- Nahanni
- Slave River Lowlands

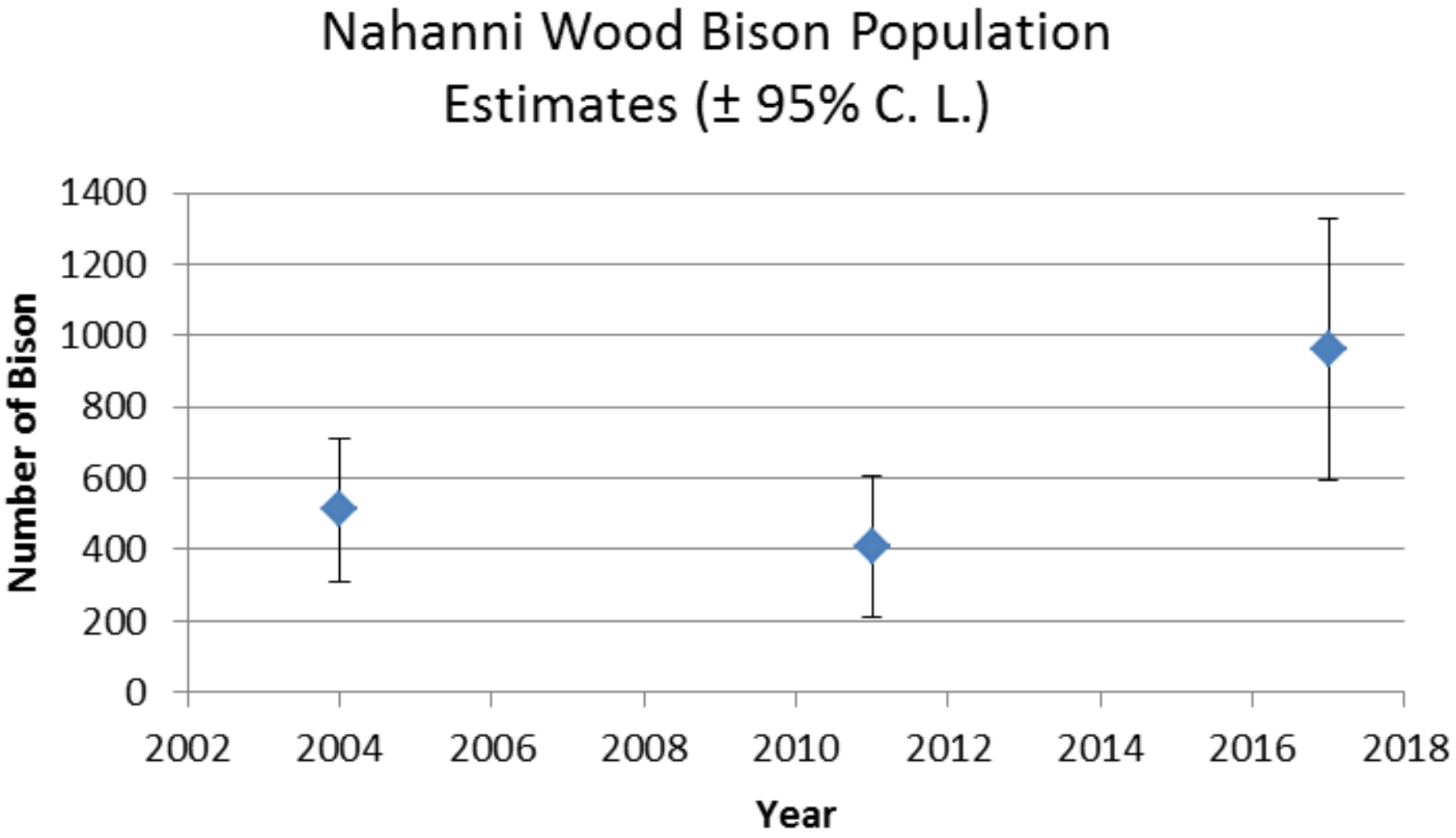
Population Surveys

- 2016 Mackenzie
- 2016 SRL
- 2017 Nahanni


Mackenzie wood bison population size estimated from aerial surveys, 1964 - 2016
Number of Bison
3000
2500
2000
1500
1000
500
0
64
68
72
76
80
84
88
92
96
00
04
08
12
16
Year

Estimates of Bison in the Slave River Lowlands from Aerial Surveys, 1949 - 2016

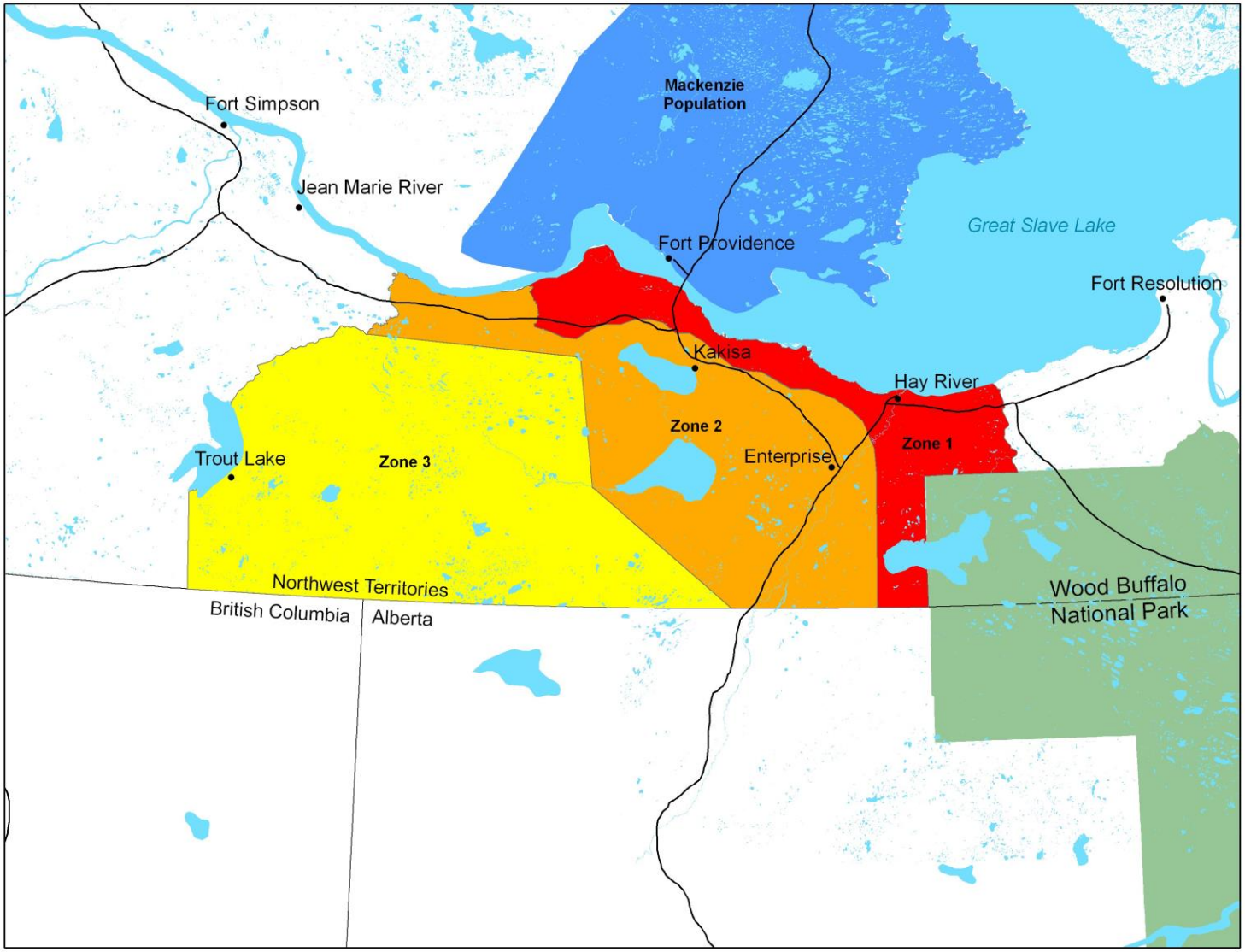



Nahanni Wood Bison Population
Estimates (± 95% C. L.)
Number of Bison
1400
1200
1000
800
600
400
200
0
2002
2004
2006
2008
2010
2012
2014
2016
2018
Year

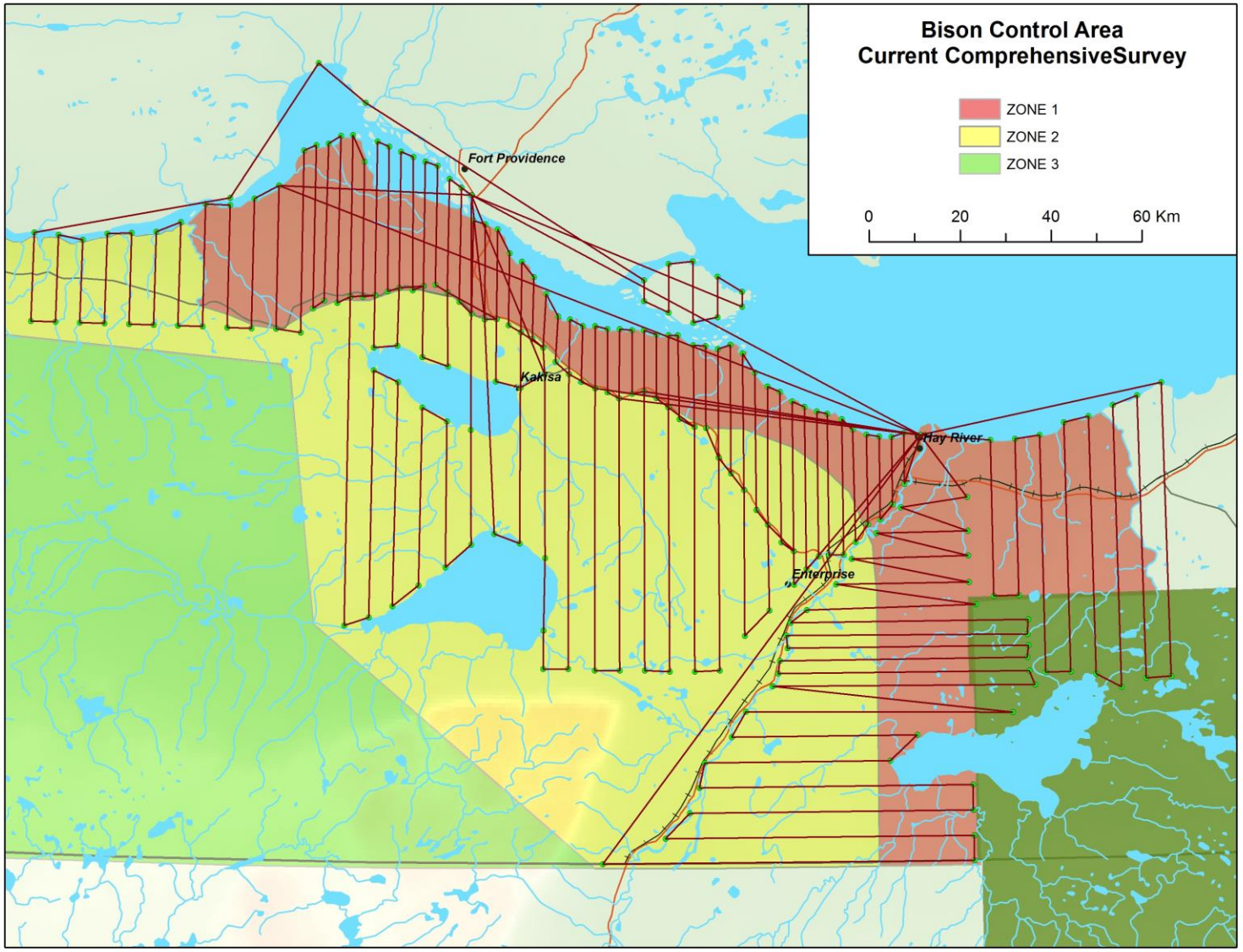
NWT *Species at Risk Act*

- Wood bison listed as Threatened
  - Small population size
  - Recent population decline

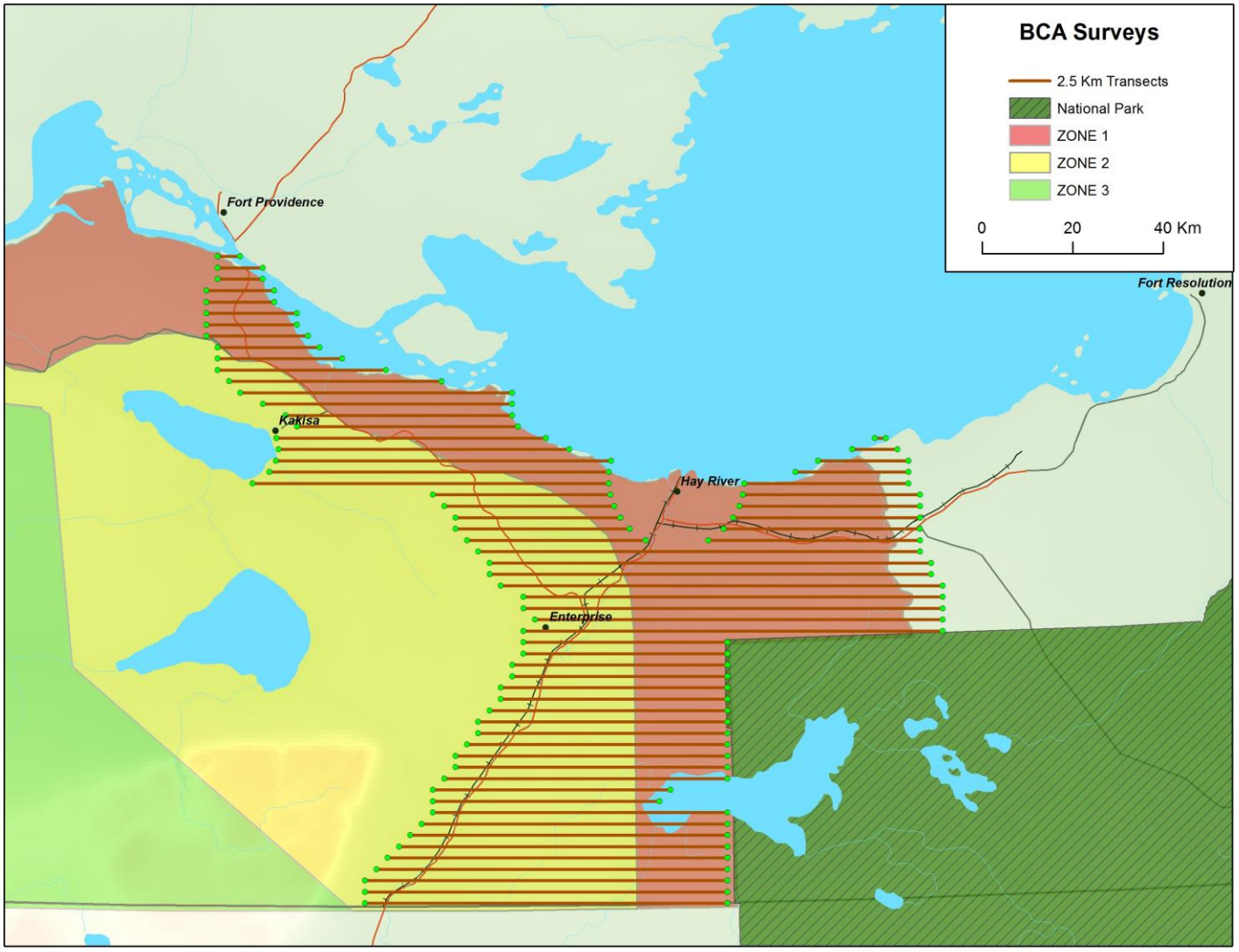
Bison Control Area Program



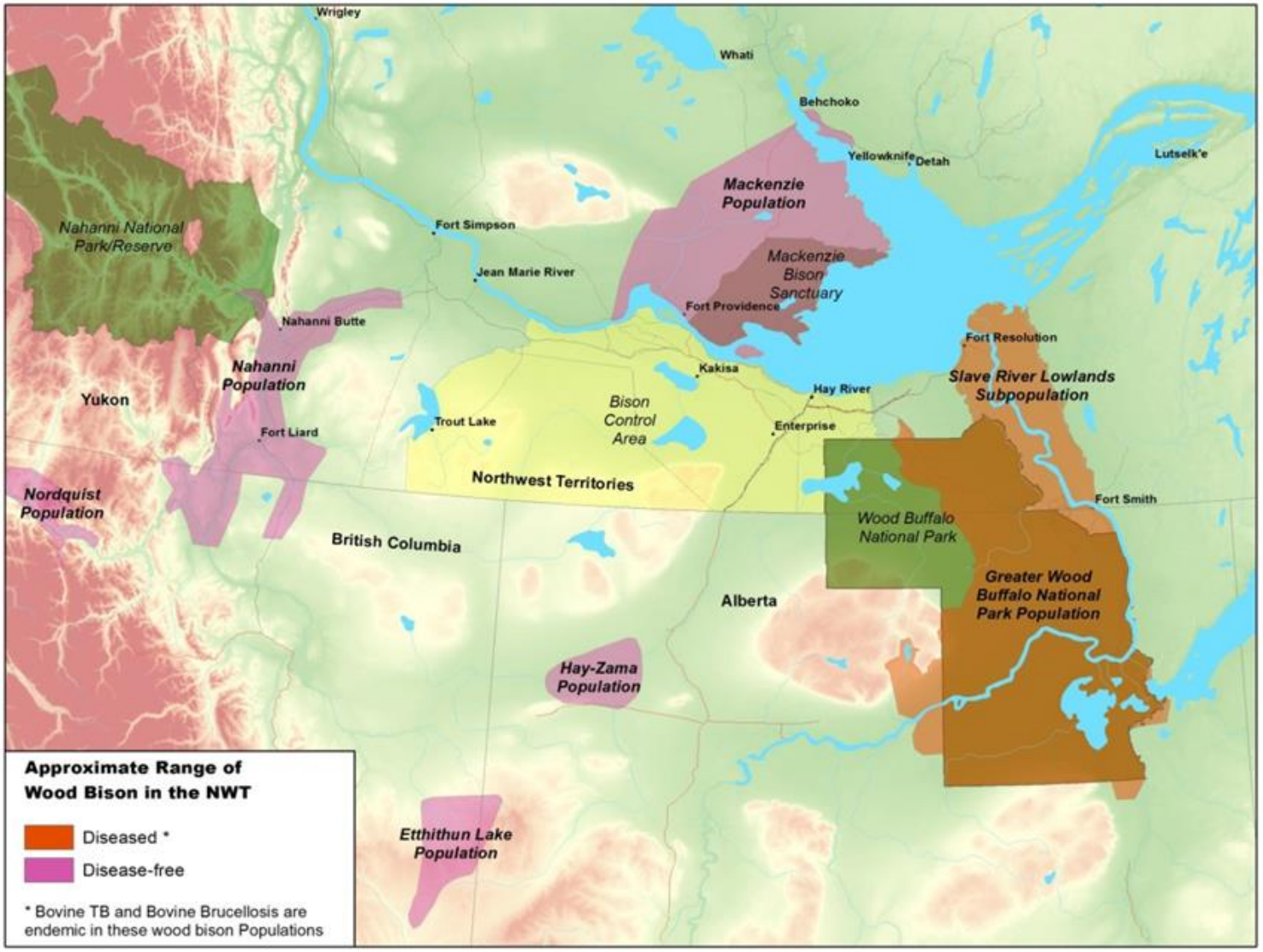
BCA Program Review



New Operational Protocol



Anthrax


Wrigley
Whati
Behchoko
Yellowknife
Detah
Lutselk'e
Mackenzie Population
Nahanni National Park/Reserve
Fort Simpson
Jean Marie River
Mackenzie Bison Sanctuary
Fort Providence
Nahanni Butte
Fort Resolution
Nahanni Population
Kakisa
Slave River Lowlands Subpopulation
Yukon
Hay River
Bison Control Area
Trout Lake
Enterprise
Fort Liard
Northwest Territories
Nordquist Population
Fort Smith
Wood Buffalo National Park
British Columbia
Greater Wood Buffalo National Park Population
Alberta
Hay-Zama Population
Approximate Range of Wood Bison in the NWT
Diseased *
Disease-free
* Bovine TB and Bovine Brucellosis are endemic in these wood bison Populations
Etthithun Lake Population

Thank You

- Members of management plan working groups
- Community members, pilots working on surveys

Moose and Muskox Management Strategies

Terry Armstrong

November 16, 2017

Government of Northwest Territories

Moose Strategy

- Status report
- Fall 2019

Muskox

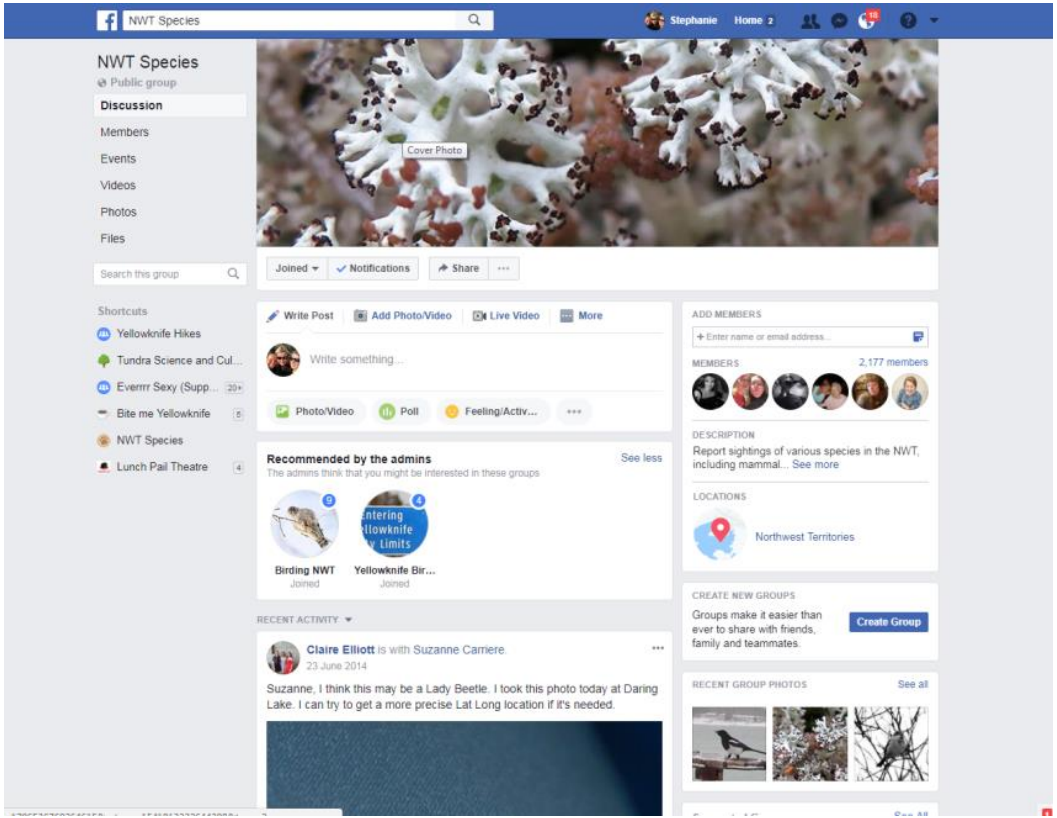
Questions?

On-line Education

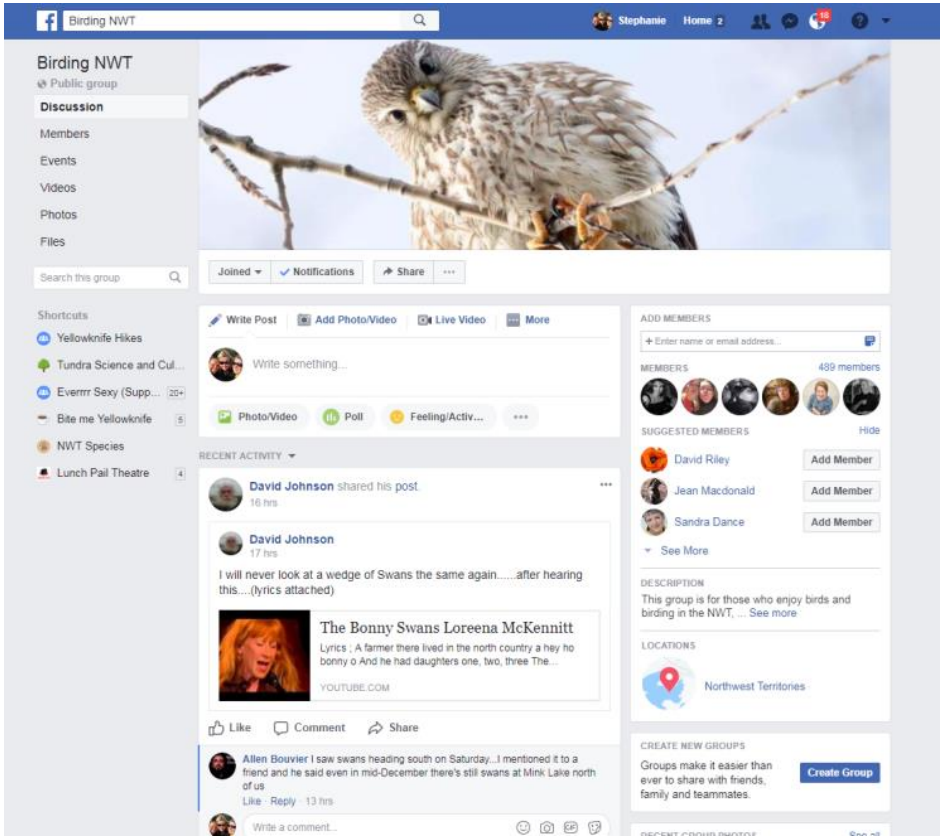
Stephanie Yuill – Public Education Coordinator

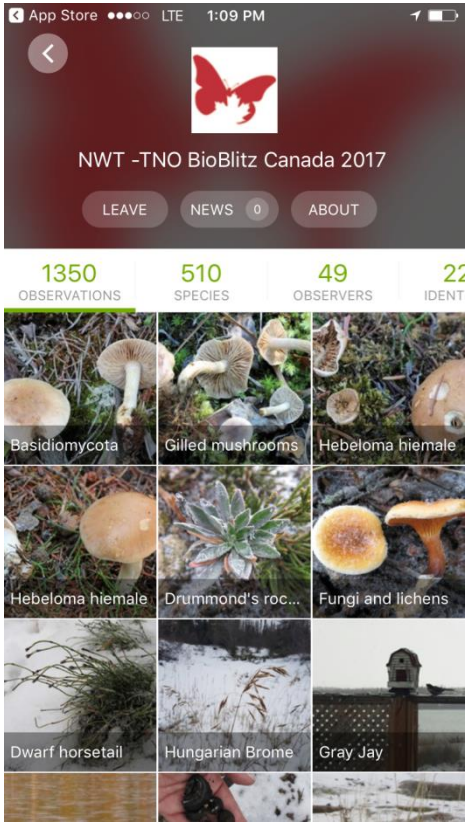
Facebook & NWT Species

https://www.facebook.com/



Facebook & NWT Birds





https://www.inaturalist.org/

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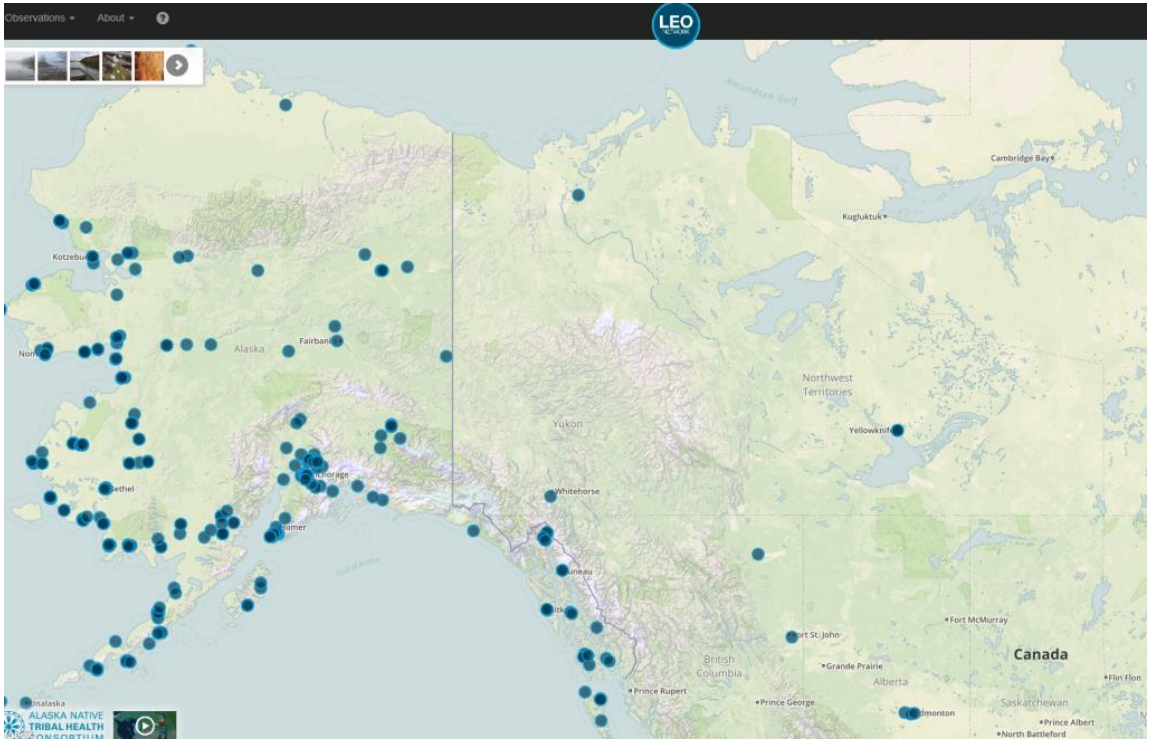
Northwest Territories

LEO – Local Environmental Observer Network

https://www.leonetwork.org/en/signin



Mársı ~ Kinanāskomitin
Thank you ~ Merci ~ Hąi’
Quana ~ Qujannamiik
Quyanainni ~ Máhsı ~ Máhsı
Mahsì

UPDATES FIRE SEASON 2017

November 16th, 2017

Daniel Allaire - Manager, Forests - South Slave Region

Government of
Northwest Territories

Overview

- Our Policy
- Our Role
- South Slave Region –Updates & Statistics
- Fire Smart
- Questions

Wildland Fire Management Policy

- Wildland fire is a significant and natural phenomenon in the forests of the Northwest Territories.
- The first consideration in the allocation of fire management resources shall be the protection of human life (including our fire fighters).
- Effective fire management should include community consultation and be responsive to the needs of the Northwest Territories residents.
- Fire Management should draw upon local and traditional knowledge.

Wildland Fire Does Not Destroy the Forest

- It is a natural disturbance that:
  - Ensures habitat rejuvenation
  - Returns valuable nutrients to the ground
  - Warms the soil
  - Creates openings in the canopy so new plants can grow

Our Role

- The NWT Forest Fire Management Policy require that all forest fires receive a response based on consideration of the following criteria:

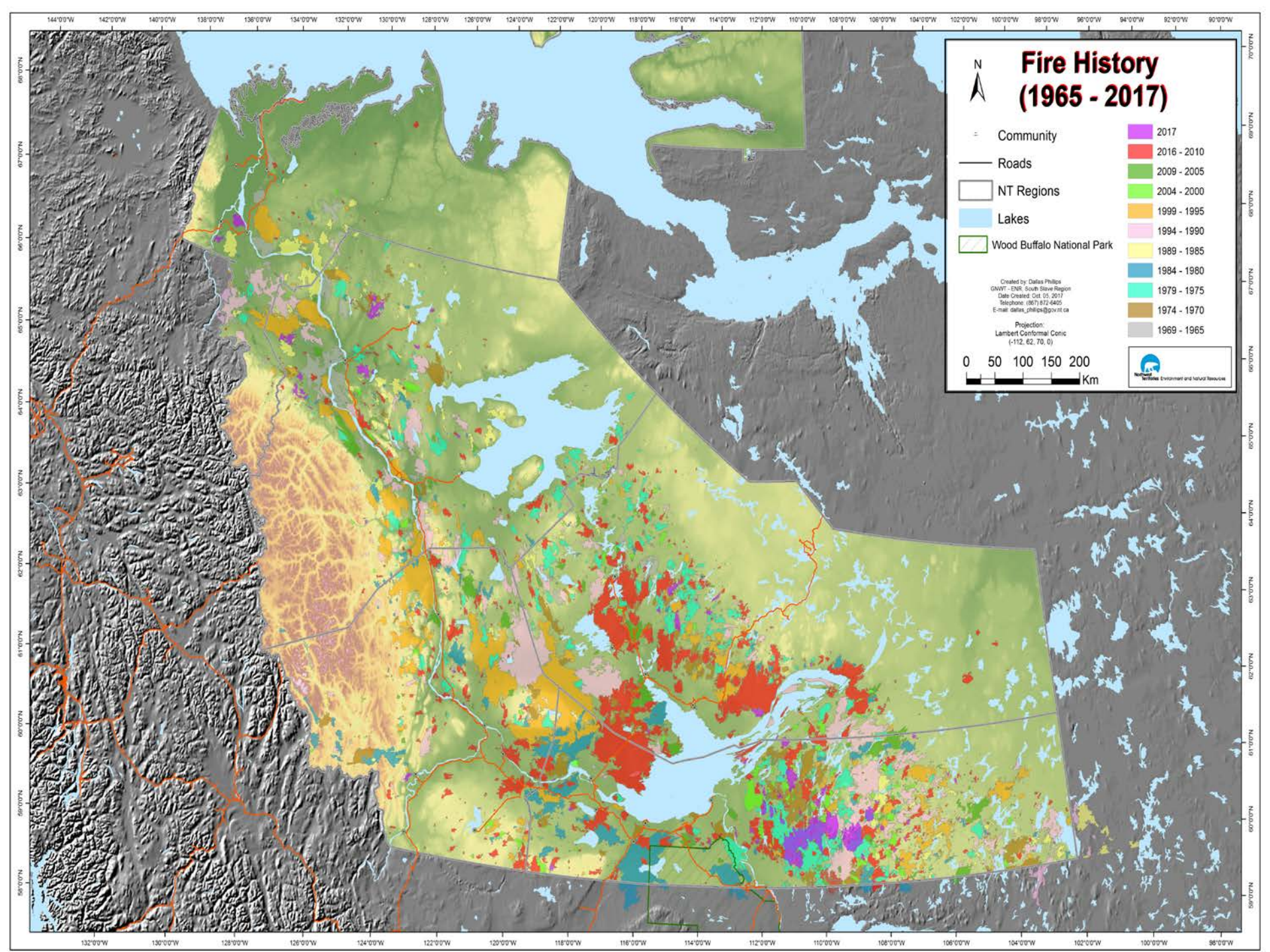
- Values-at-Risk
- Land and resource management objectives
- Availability of personnel and equipment
- Fire weather
- Fire risk in higher-valued areas
- Where property or resources are threatened, the relative value of that being threatened

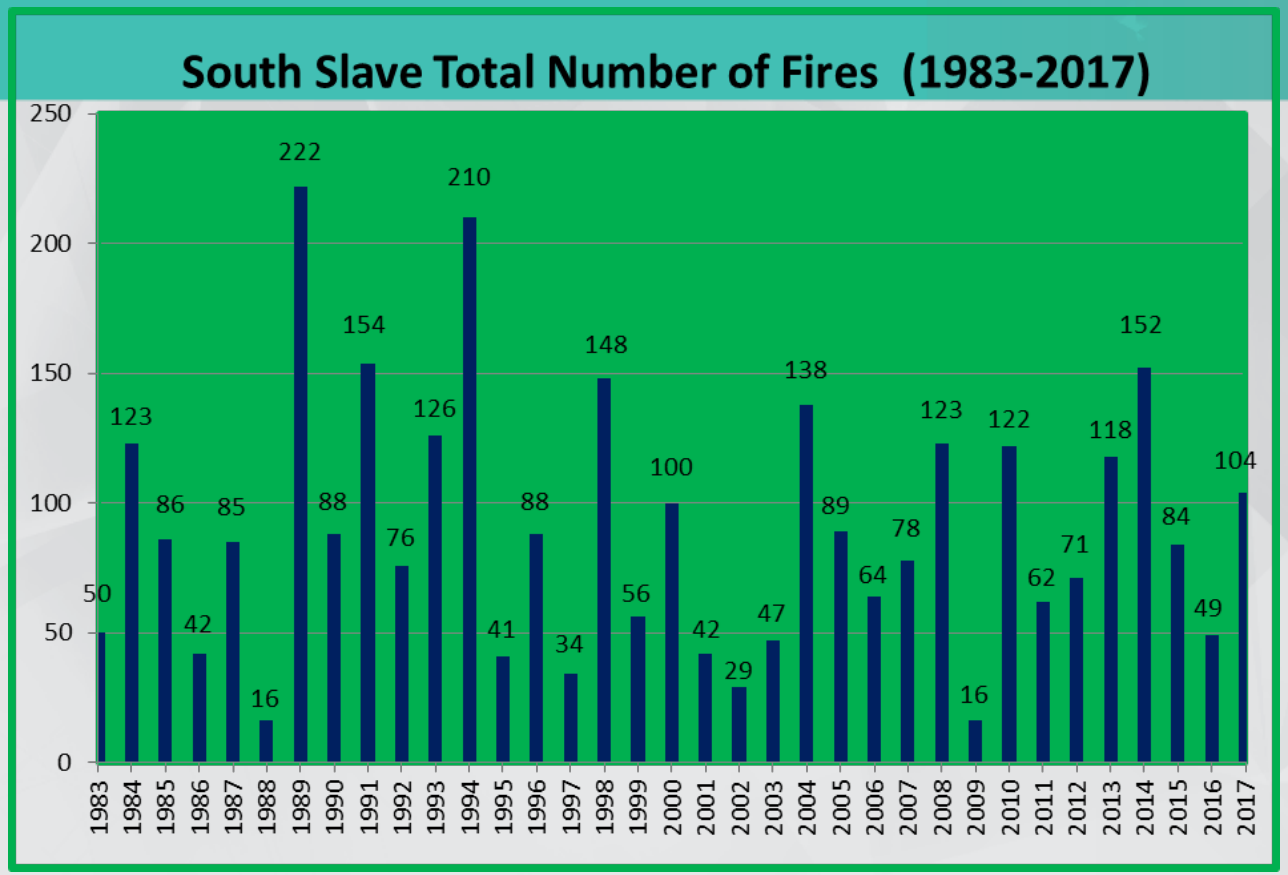
Our Role

- It is neither desirable nor feasible to suppress all forest fires within a given landscape.
- Total exclusion of fires on a landscape contributes to ecological deterioration in our fire-prone ecosystems. Total exclusion of fire contributes to more severe fire events when the appropriate factors combine in a fire occurrence.
- Consideration should be given to maintaining a natural fire regime while protecting values-at-risk.

Our Role

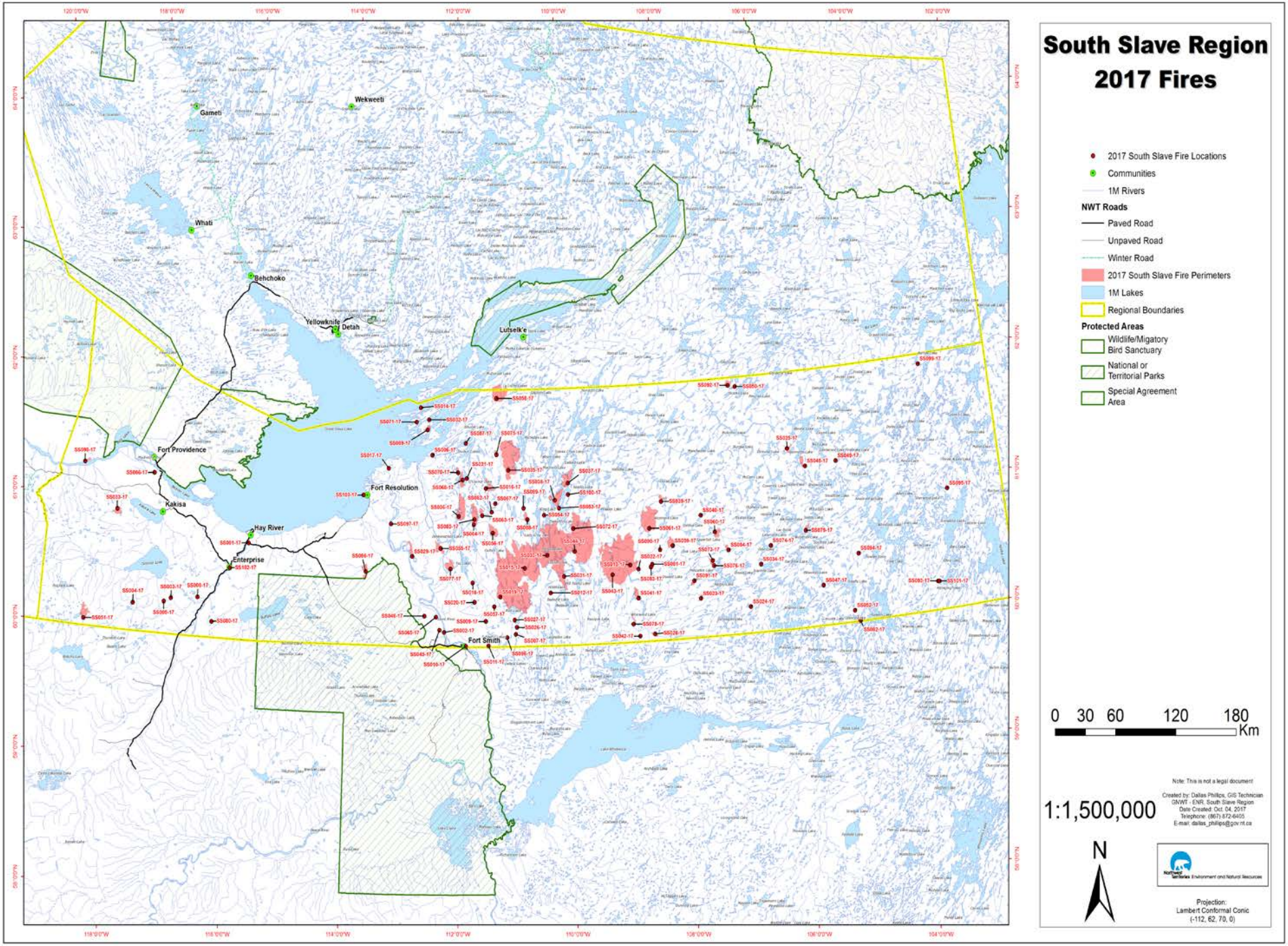
- ENR responds to every fire. When a fire is discovered it is assessed. Depending on the location of the fire and the potential to affect values-at-risk:
  - A fire may be monitored to ensure that it does not affect a value-at-risk later in the summer season; or
  - Action may be taken to protect the value-at-risk; or
  - A fire may be suppressed


Fire History
(1965 - 2017)
N
Community
Roads
NT Regions
Lakes
Wood Buffalo National Park
2017
2016 - 2010
2009 - 2005
2004 - 2000
1999 - 1995
1994 - 1990
1989 - 1985
1984 - 1980
1979 - 1975
1974 - 1970
1969 - 1965
Created by: Dallas Phillips
GNWT - ENR, South Slave Region
Date Created: Oct. 05, 2017
Telephone: (867) 872-6405
E-mail: dallas_phillips@gov.nt.ca
Projection:
Lambert Conformal Conic
(-112, 62, 70, 0)
0 50 100 150 200
Km
Northwest Territories Environment and Natural Resources



South Slave Total: 104 Fires
South Slave Total Area Burned: 711,040.2Ha
South Slave Land Area 15,197,800.0 Ha
(excluding WBNP & water bodies)
Total Burnt Area: 4.67%
Annual Average: 89 Fires

Government of
Northwest Territories

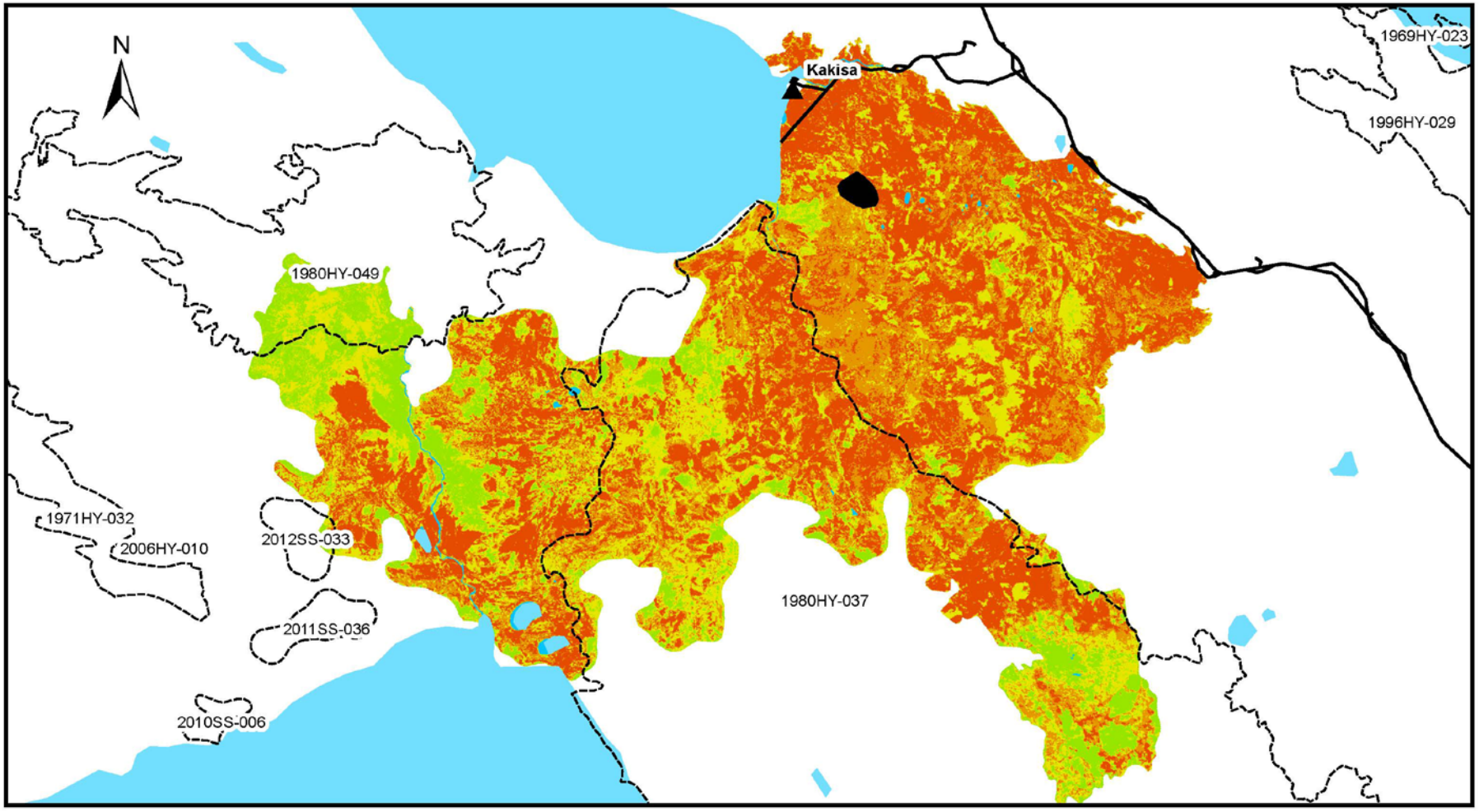

South Slave Region
2017 Fires
2017 South Slave Fire Locations
Communities
1M Rivers
NWT Roads
Paved Road
Unpaved Road
Winter Road
2017 South Slave Fire Perimeters
1M Lakes
Regional Boundaries
Protected Areas
Wildlife/Migatory Bird Sanctuary
National or Territorial Parks
Special Agreement Area
Gameti
Wekweeti
Whati
Behchoko
Yellowknife
Detah
Lutselk'e
Fort Providence
Kakisa
Fort Resolution
Hay River
Enterprise
Fort Smith
0 30 60 120 180 Km
1:1,500,000
N
Note: This is not a legal document
Created by: Dallas Phillips, GIS Technician
GNWT - ENR, South Slave Region
Date Created: Oct. 04, 2017
Telephone: (867)-872-6405
E-mail: dallas_phillips@gov.nt.ca
Projection:
Lambert Conformal Conic
(-112, 62, 70, 0)

Natural Resources Canada | Ressources naturelles Canada

Canada

Burn Severity SS-03 Fire Complex and Local Fire History

Northwest Territories



Previous fires (1965-2013) | Clouds / Cloud shadow | Water | Unburned | Low severity | Moderate severity | High severity

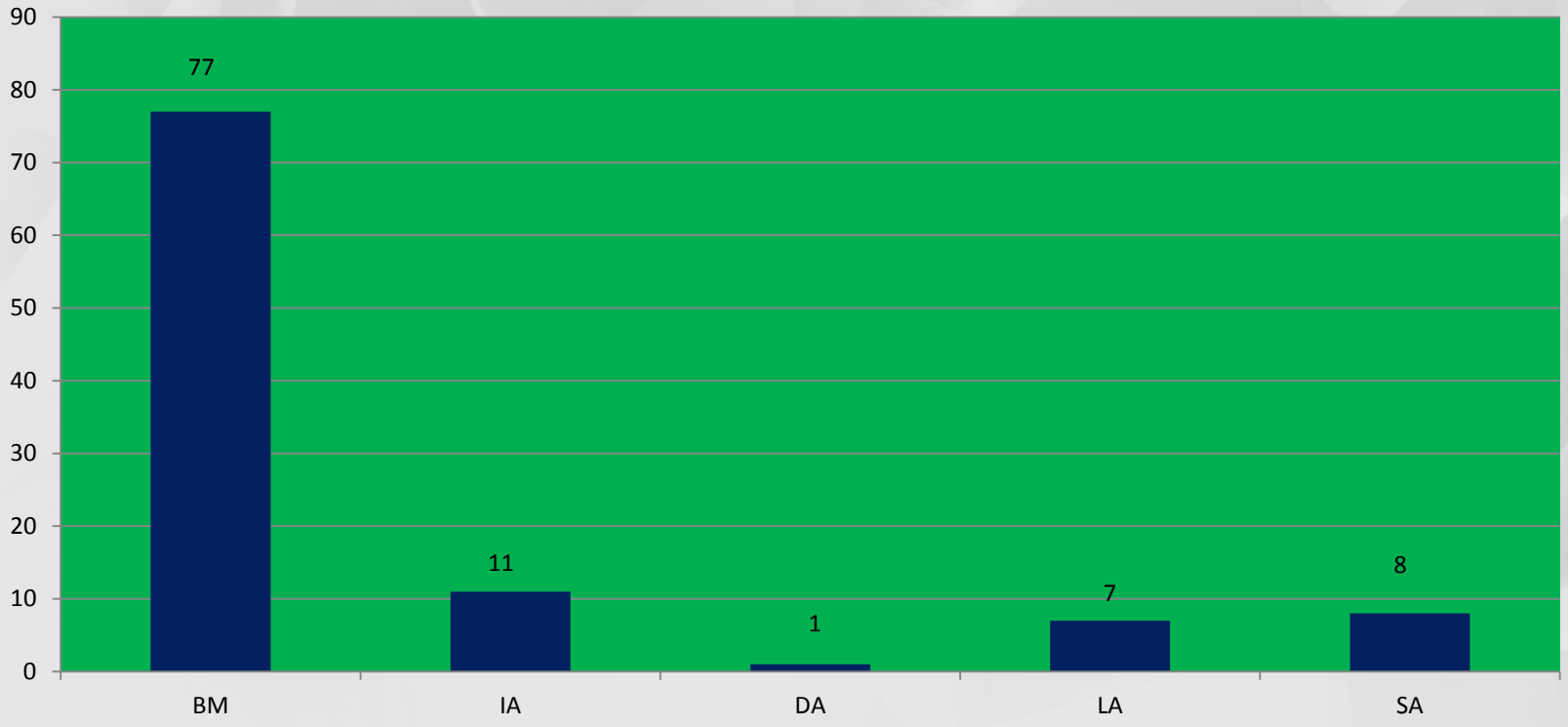
1:275,000

0 5 10 20 Kilometers

Note: seamlines depicting areas of minimal burn are solely the result of missing data.

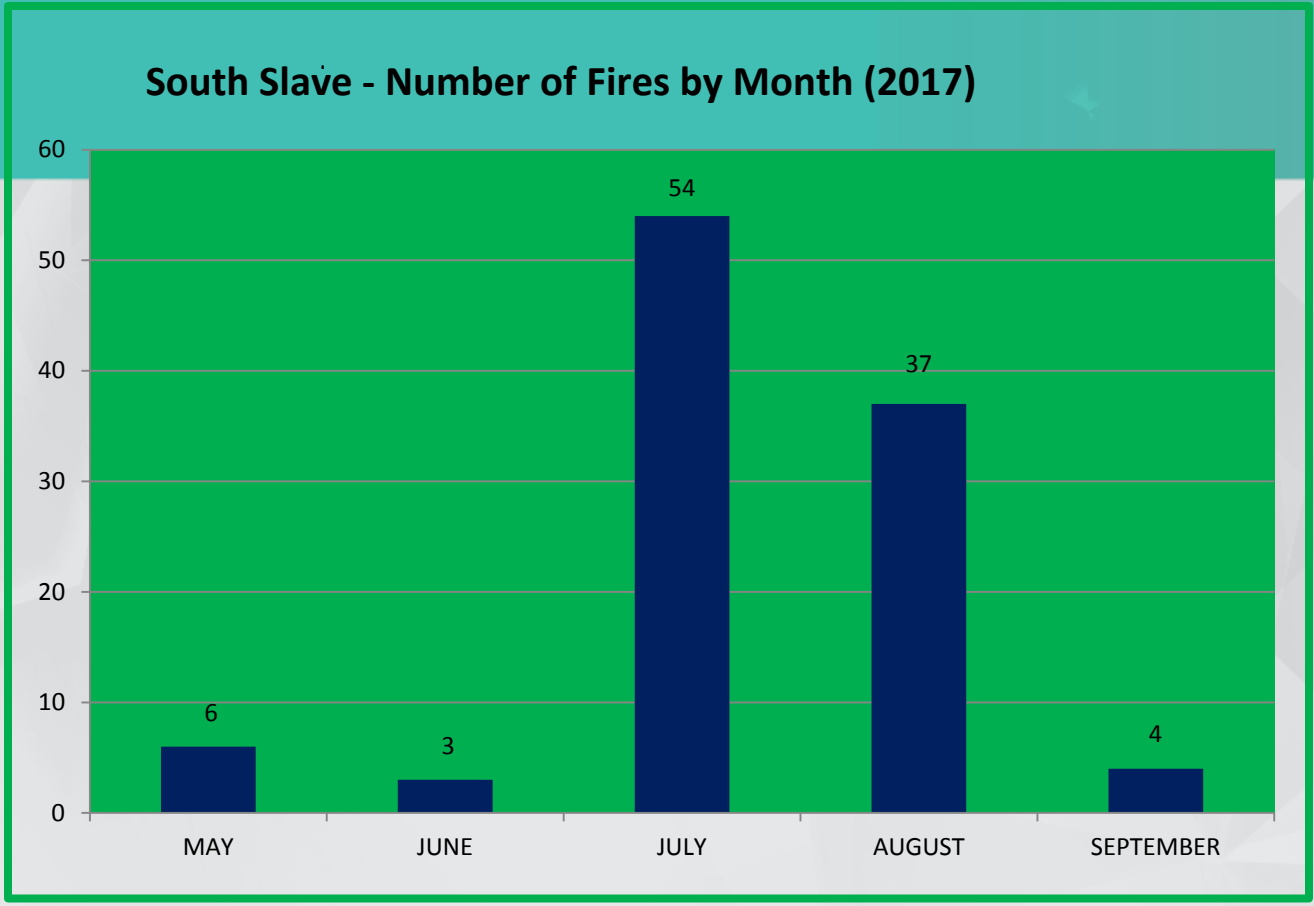
Note: 2014 areas within the fire boundary may show as unburned because of the post-fire image date being earlier than the latest fire activity.

South Slave Fire Response (2017)



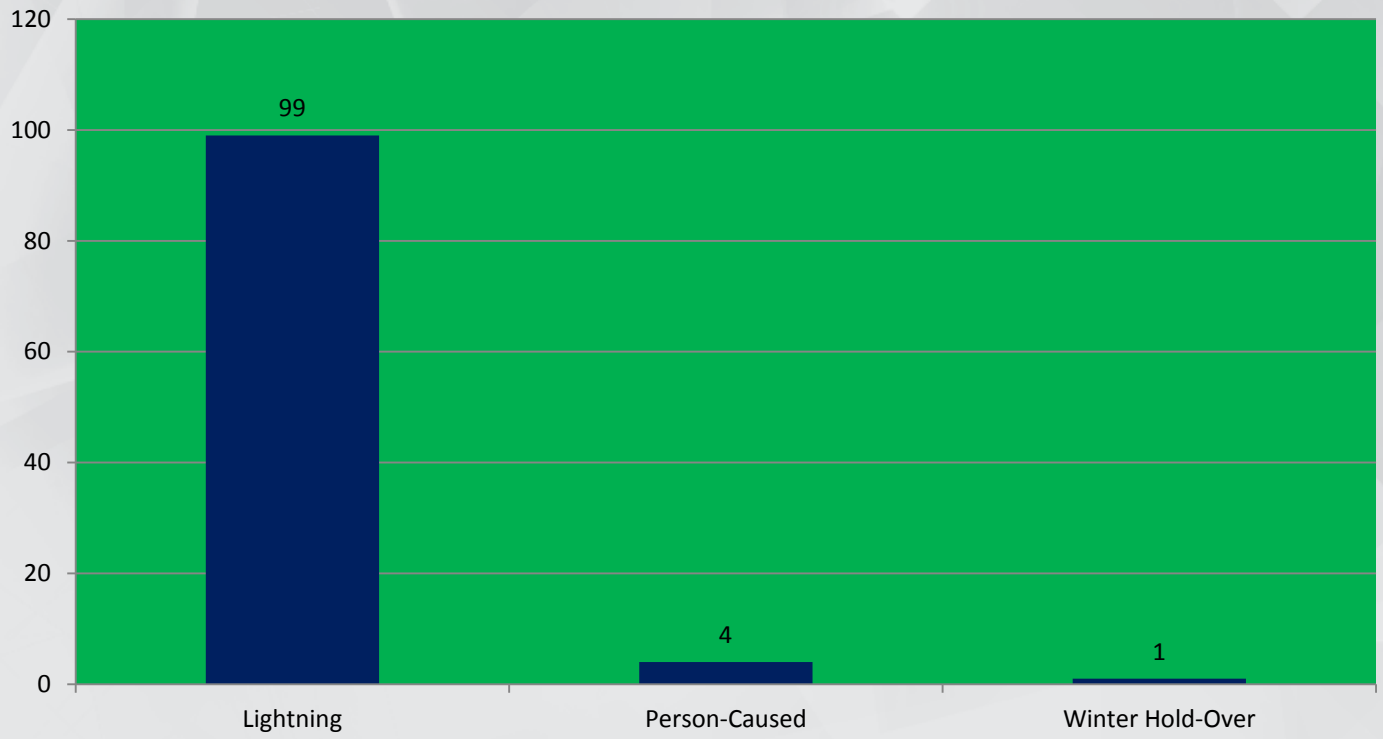
Total of 77 fires (74%) were Being Monitored
Total of 27 fires (26%) received some type of actions

Government of
Northwest Territories



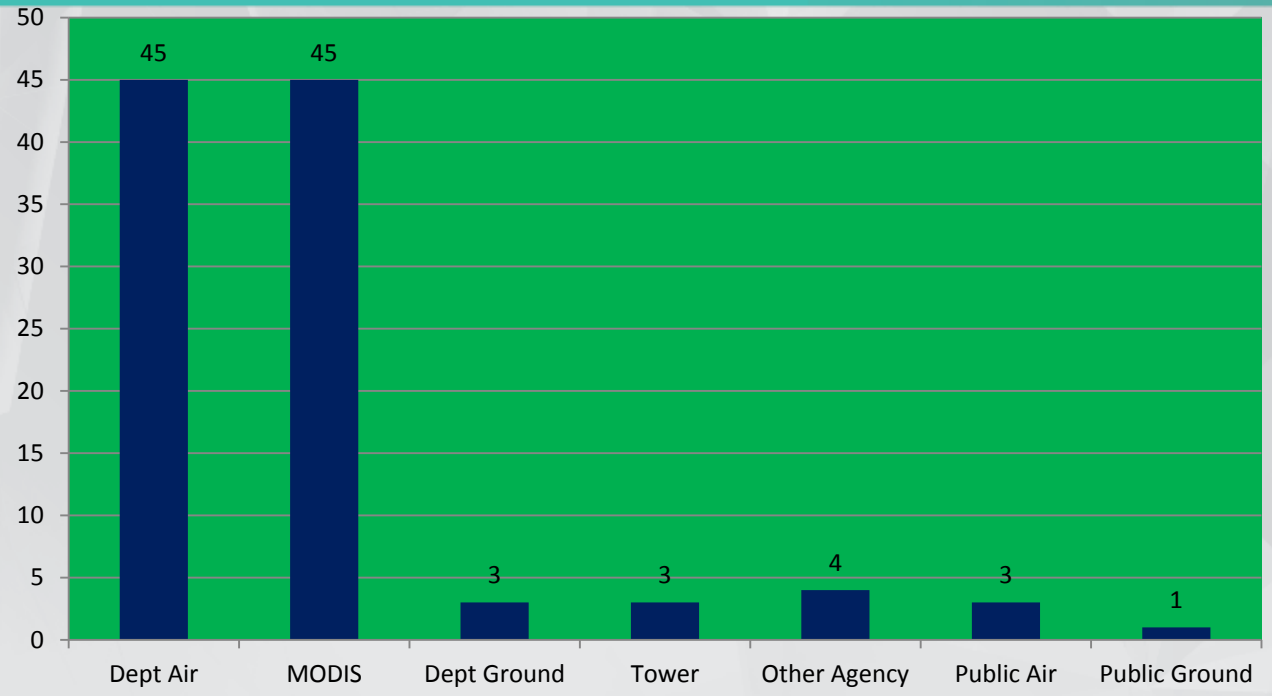
First Fire: May 21st
Last fire: Sept 28th
Total of 37 fires (35.5%) from July 17th – 30th (14 days)
Total of 21 fires (20.2%) from August 2nd – 9th (8 days)
Total of 12 fires (11.5%) from August 13th – 18th (6 days)
Total of 70 fires (67.3%) for a period of 28 days (fire season May-Sept: 153 days)

South Slave - Fire Sources (2017)



Three of the person-caused fire originated near the communities of Fort Smith, Hay River & Fort Resolution

South Slave - Discovery Agent (2017)



Total 96 fires (92.3%) discovered by ENR
Total of 4 fires (3.8%) discovered by public
Total of 4 fires (3.8%) discovered by other agency (WBNP & Alberta)

FIRESMART

- Wildland fire is a threat to communities and values-at-risk in the boreal forest.
- This threat cannot be solved by firefighters or more equipment.
- Solving the problem depends on what happens BEFORE the fire, in our own BACKYARDS!
- www.firesmartcanada.ca

FIRESMART

- 85 to 90% of homes/cabins with fire resistant roofs and ten meters of clearance will survive a major wildfire.

- More than 50% of homes destroyed by wildfires are ignited by embers.

FIRESMART STRUCTURES

- Use construction materials that are fire resistant or non-combustible whenever possible.
- Consider using materials such as asphalt shingles, slate or clay tile, metal or cement products for roof construction.

FIRESMART STRUCTURES

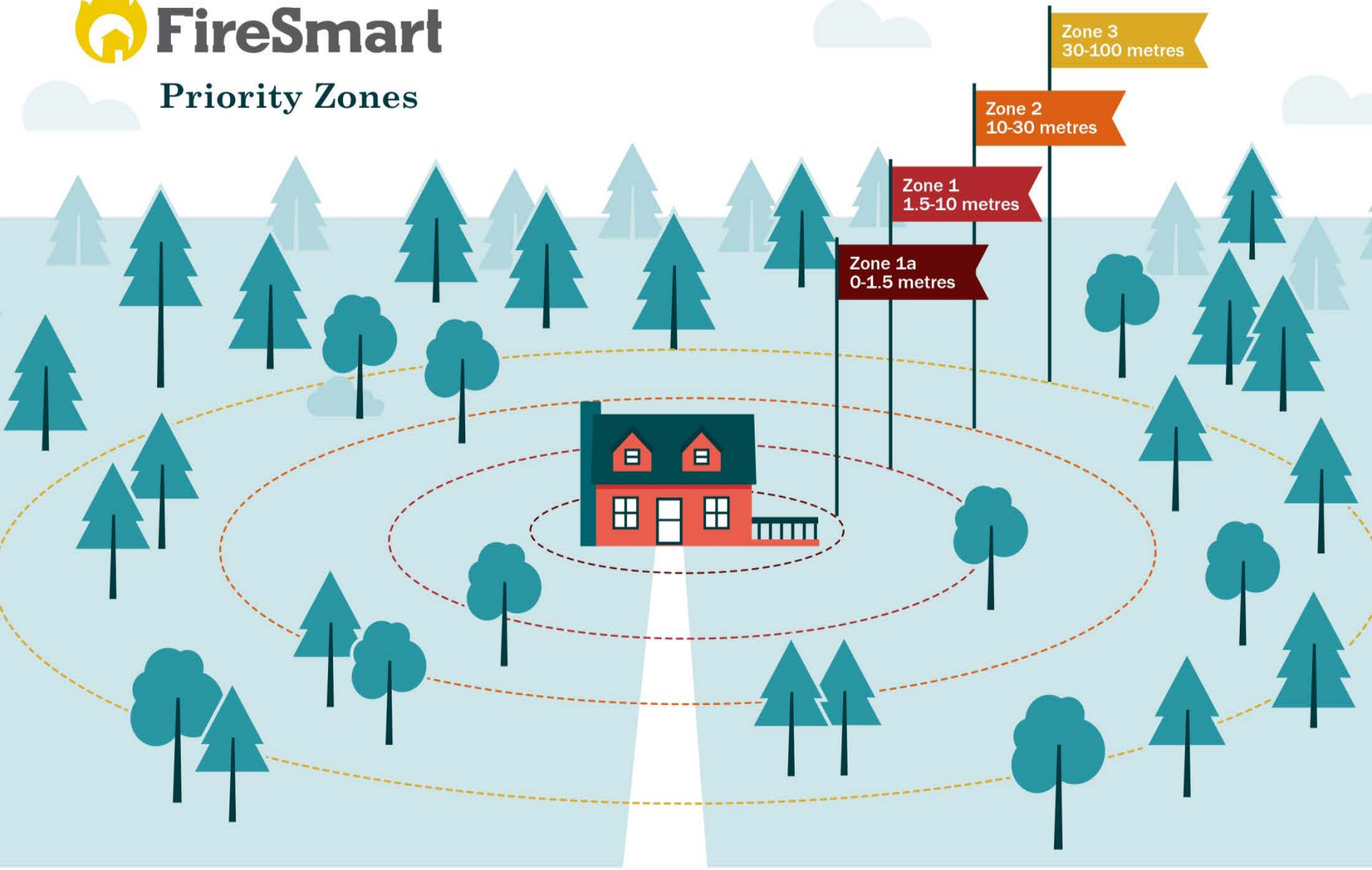
- Keep your gutters eaves and roofs clear of leaves and other debris.
- Any structure attached to the house such as decks, fences and sheds should be considered part of the house.
- Prevent combustible material from accumulating beneath decks; screen underneath or box in areas under decks with wire mesh less than 1/8 of an inch.

FIRESMART PRIORITY ZONES

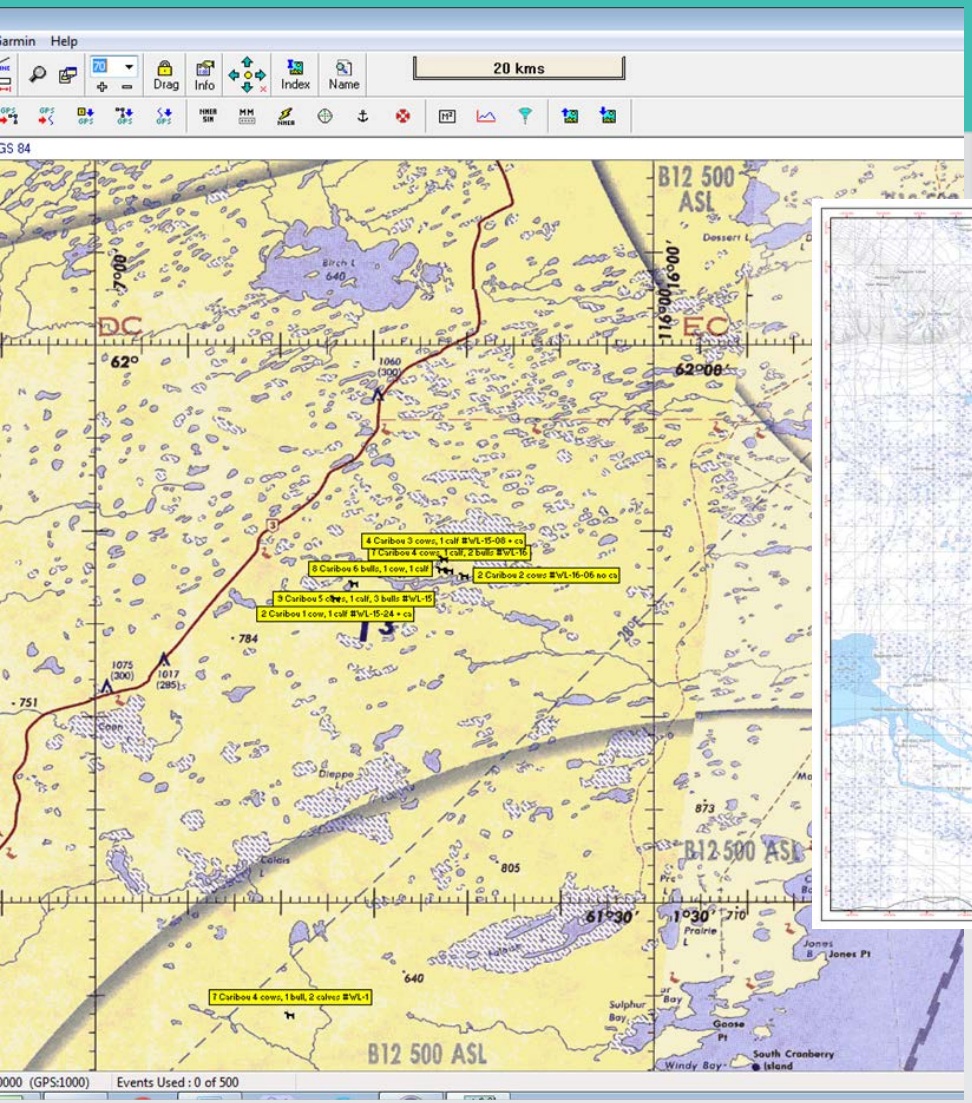
- To create a landscape that will make your home less vulnerable to wildfire, the primary goal is fuel reduction.
- Think of the area around your home in 4 Zones.
- Zone 1a is closest to your home and Zone 3 is furthest away.

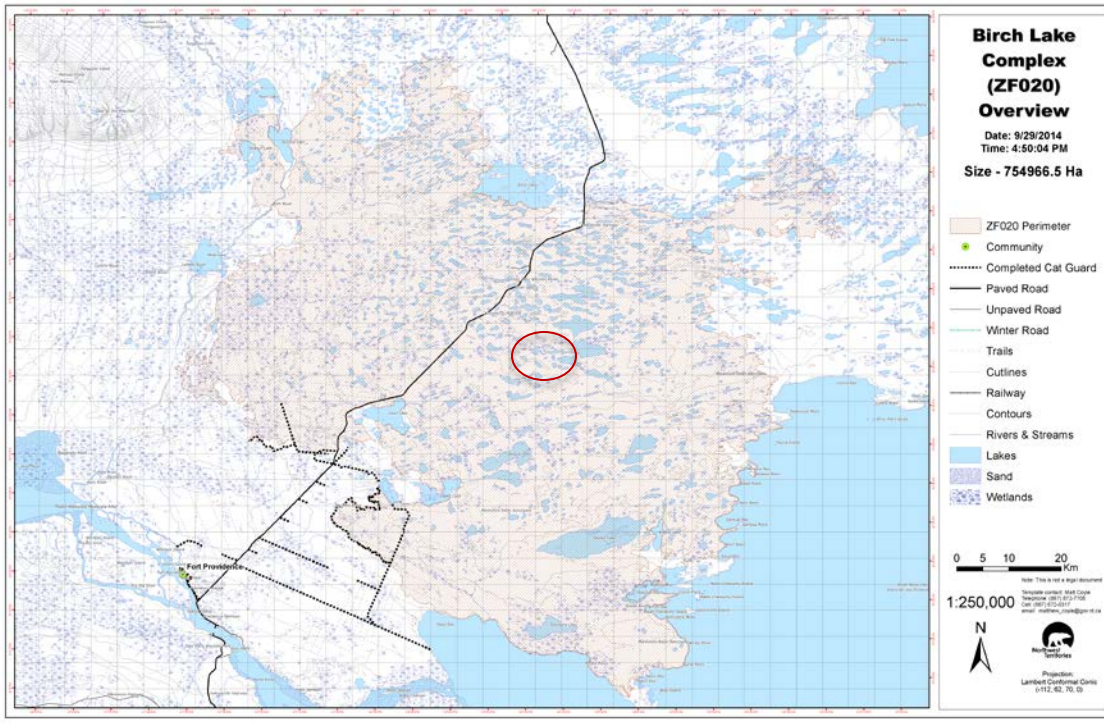
FireSmart

Priority Zones



Work with your neighbours in any overlapping priority zones!





Government of
Northwest Territories

QUESTIONS?

South Slave Region Black Bears

Government of
Northwest Territories

By Madison Hurst
Wildlife Technician ll , Wildlife Research and Monitoring
Department of Environment and Natural Resources, South Slave Region

Black Bears

- Black bears are a common NWT animal

-Problem bears pose a risk to human safety

Problem bears are:

-Scared away

-Relocated

-Destroyed

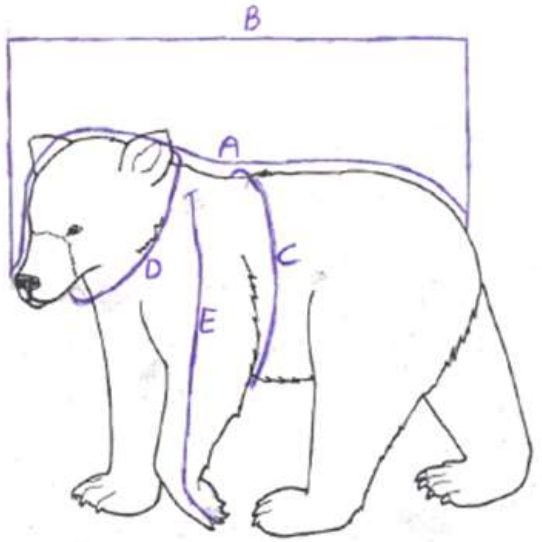
Bear Samples

- Samples are taken from destroyed bears
- Samples:
  - Tongue
  - Tooth (first premolar tooth behind the canines)
  - Tip of ear

- Record
  -Sex
  -Situation
  -Age estimate
  -Location
  -Measurements

Measurements

- Total Body length
- Straight Line Length
- Chest circumference
- Neck circumference
- Height at Shoulder



$$\text{Weight} = 0.2647(TL) + 0.0956(HAS) + 0.7702(NC) - 1.5124(CC) + 0.0145(CC^2)$$
(units=cm)

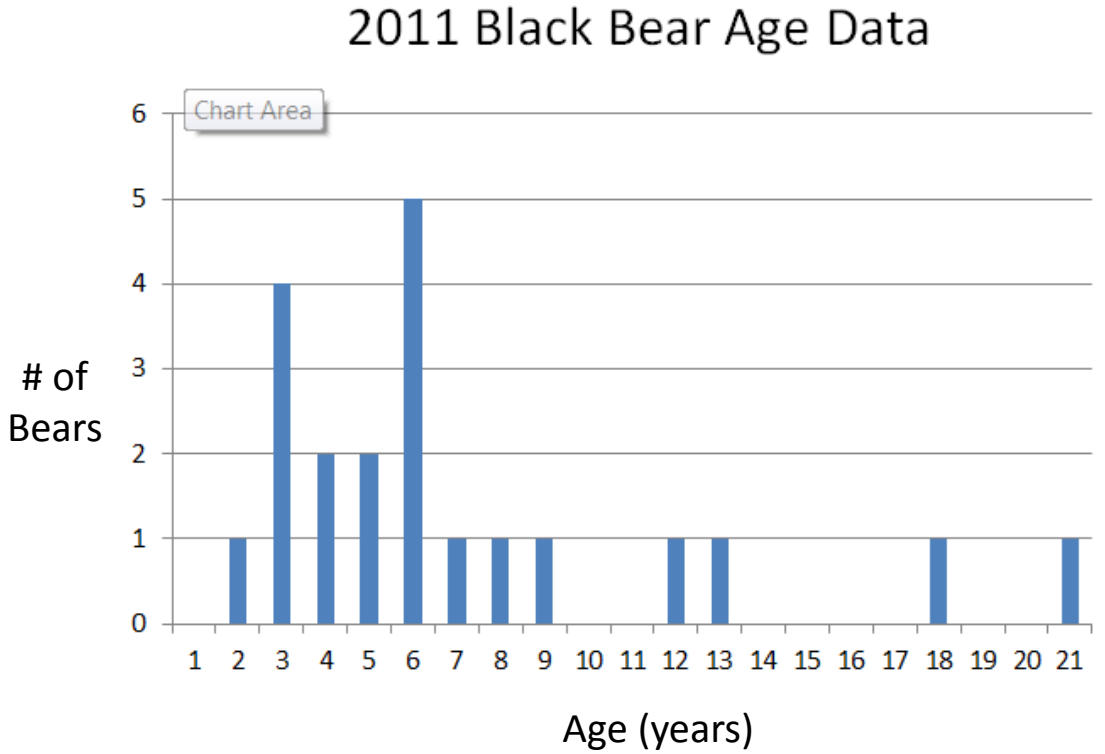
2017

- 20 problem bears destroyed in South Slave Region
- 3 females
- 17 males

Black Bear Age

21 bears

-15 Male
-3 Female
-3 Unknown



Relocation

Bear Safety

- If you see bears:

  -Avoid them

  -Do not feed them

  -Report problem bears to a wildlife officer right away

Questions

References

- https://i.pinimg.com/736x/e0/ce/06/e0ce0695dcbde7c7bab8f41983e2089c--oak-tree-houston-texas.jpg
- http://i.imgur.com/IzVu4sO.jpg
- http://static1.squarespace.com/static/55e691c2e4b02be29cee217d/55e76bffe4b0bef2892b98d7/57efea1129687faa60ed4f44/1494488900119/?format=1000w
- Gnwt Photos
- https://media-cdn.tripadvisor.com/media/photo-s/0f/de/47/25/black-bear-swimming-across.jpg