

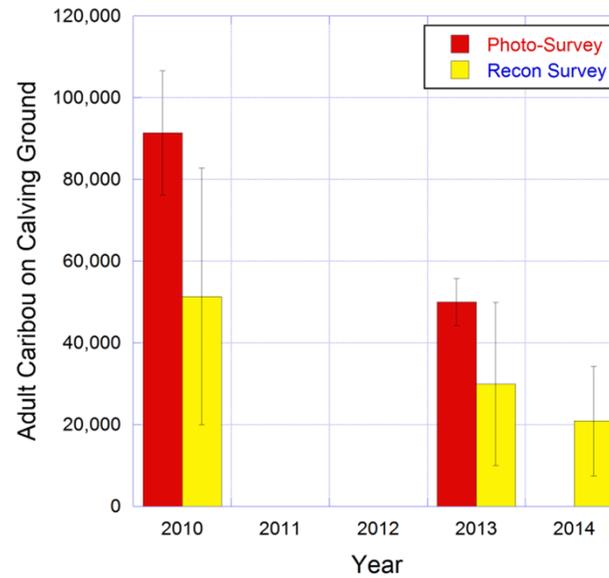
Bathurst & Bluenose-East Caribou Herds: Overview of Population Trends 2009-2014

GNWT ENR, September 2014

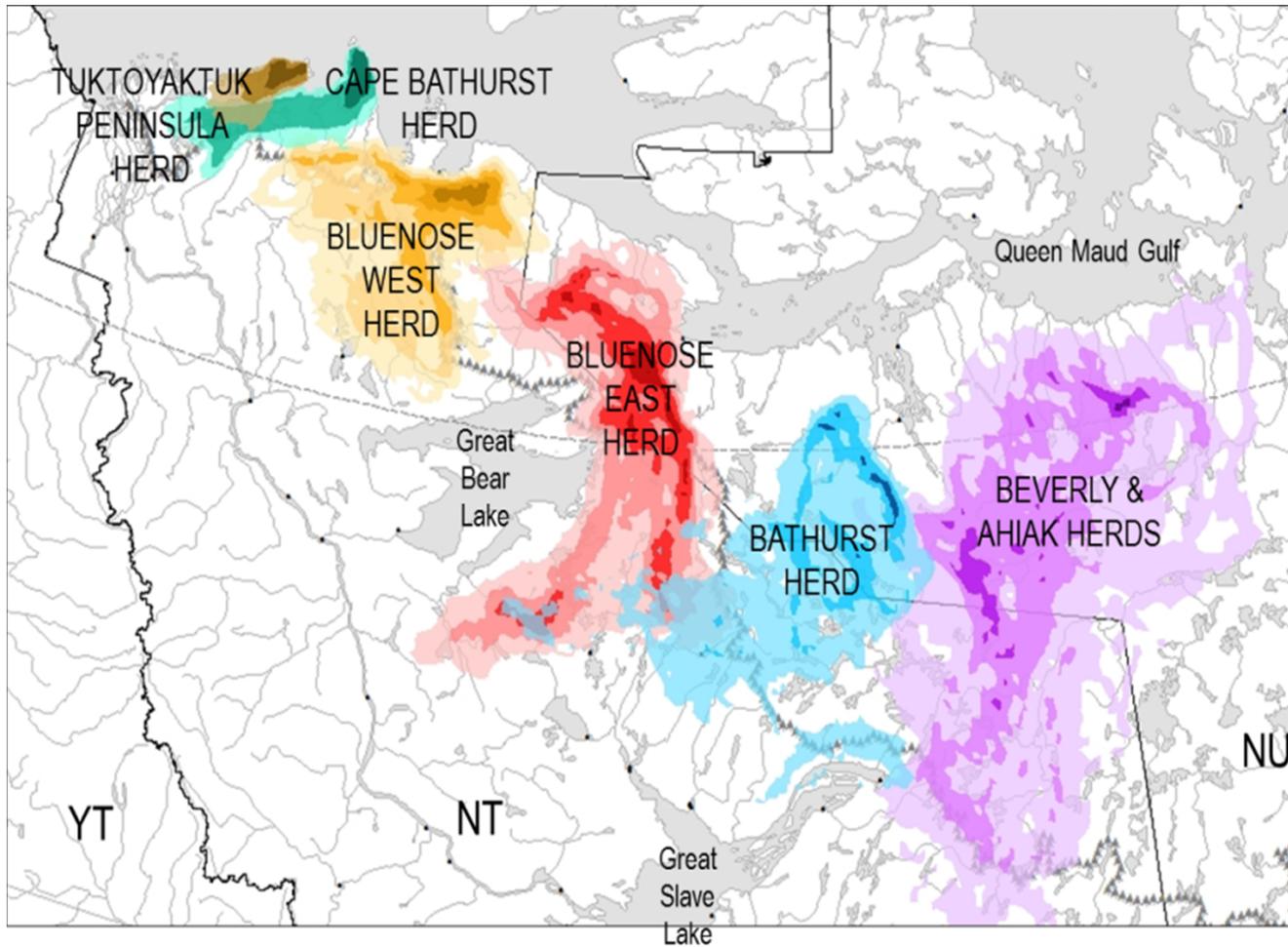


Photo A. Gunn

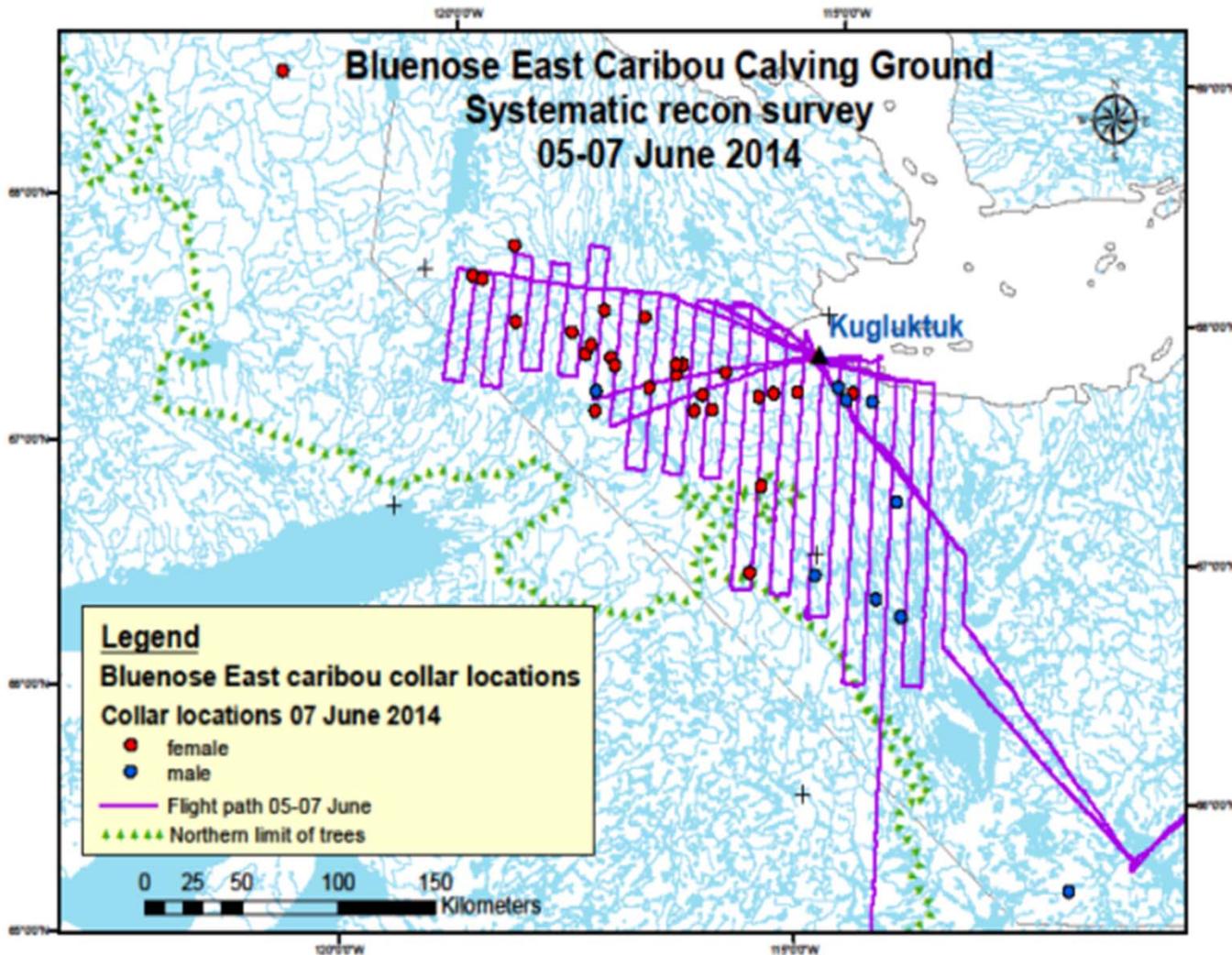
Bluenose-East Calving Ground Adult Caribou Estimates
2010-2014



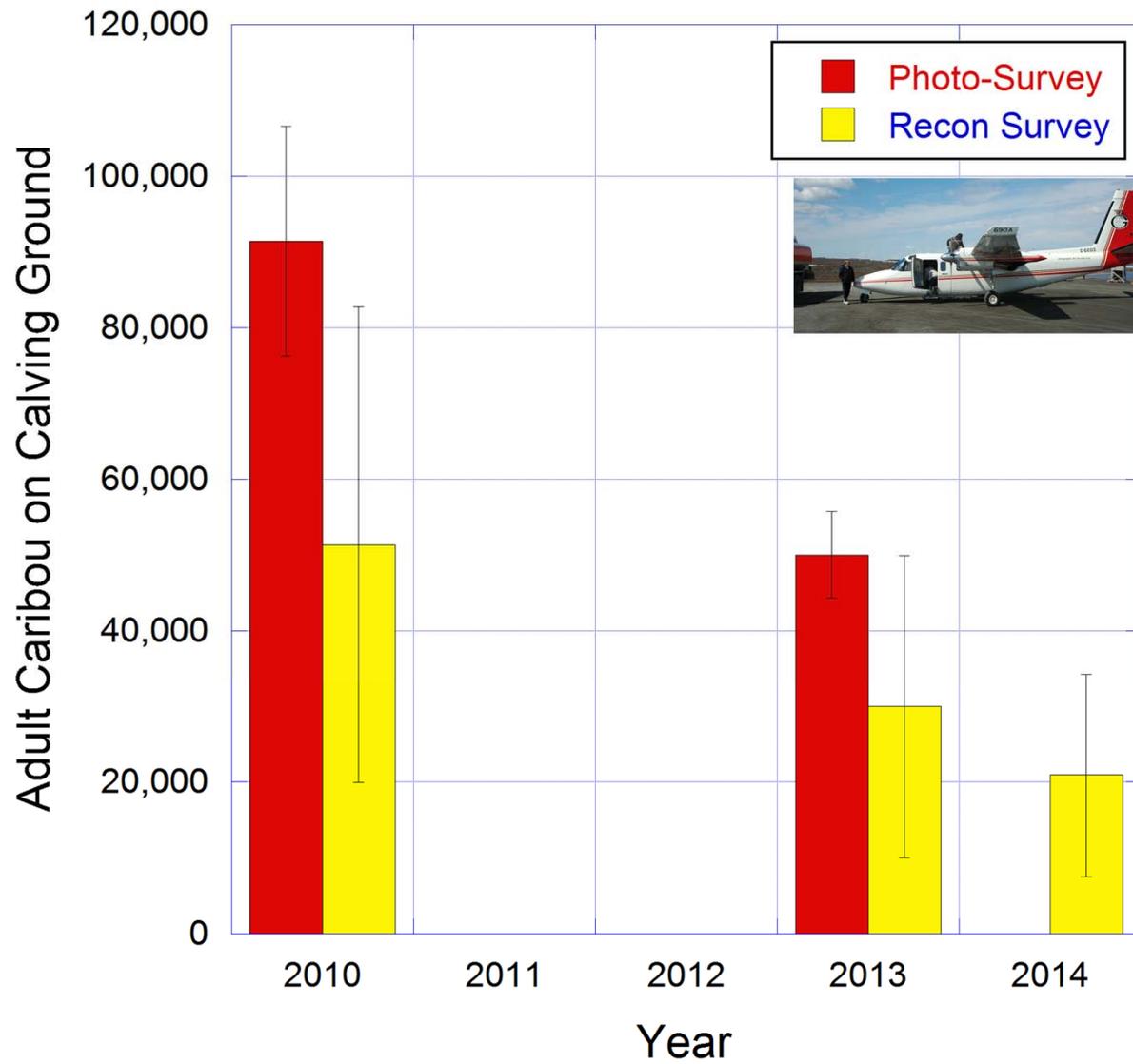
Ranges of Barren-Ground Caribou Herds in NWT
and eastern NU 2006-2012 (based on collared caribou)



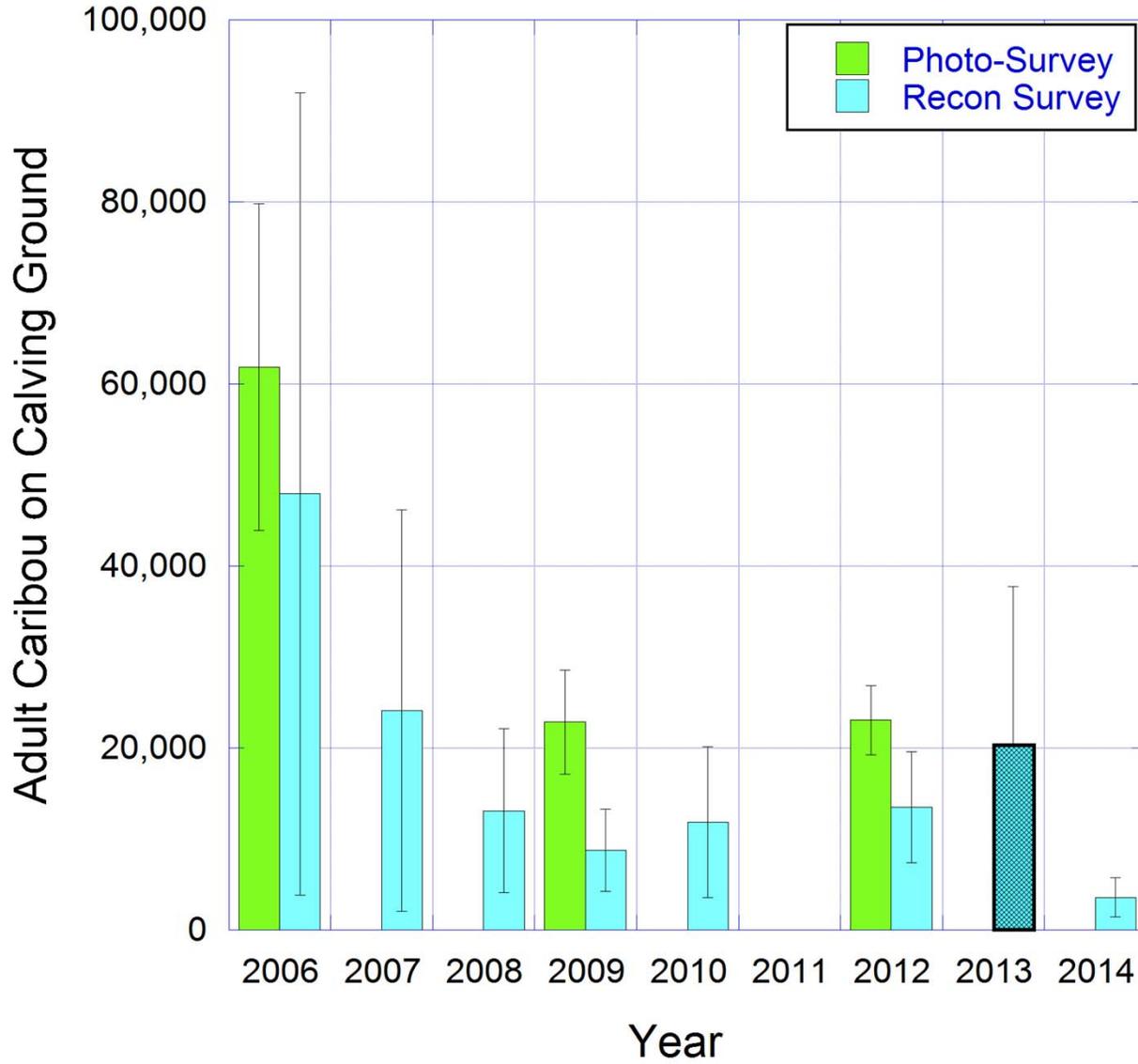
Bluenose-East Calving Reconnaissance Survey June 2014



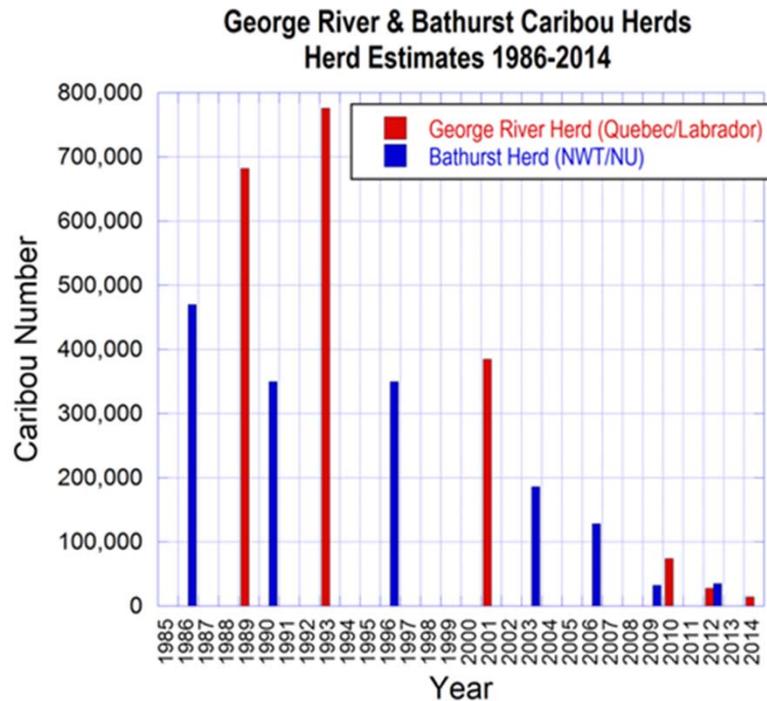
Bluenose-East Calving Ground Adult Caribou Estimates 2010-2014



Bathurst Calving Ground Adult Caribou Estimates 2006-2014



Long-Term Caribou Fluctuations (Cycles): Complex



Caribou Cycles: Multiple Factors at Work

1. Weather/Climate: all seasons
e.g. summer range: pregnancy
winter: snow, access to food
2. Weather Effects at Lower Numbers:
NWT herds 2000-2006/2008
3. Caribou Grazing Effects (v. high numbers)
(e.g. George River Herd 1990s)
4. Predators: Affect Caribou at high & low numbers
probably most important at lower herd size
5. Harvest: Effects mostly at lower herd size
Especially in herd declining naturally

Declining Caribou Herds: Demographic Indicators

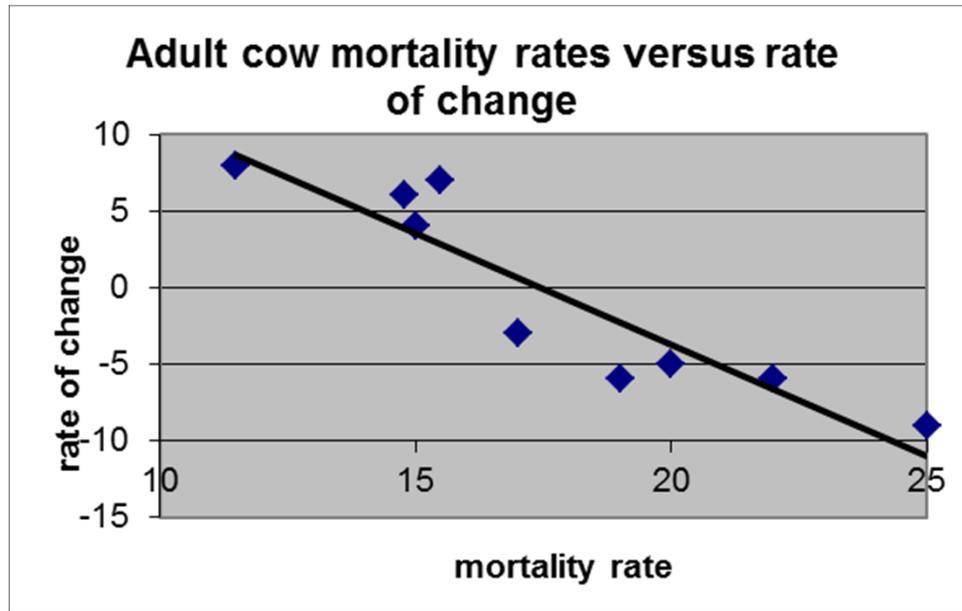
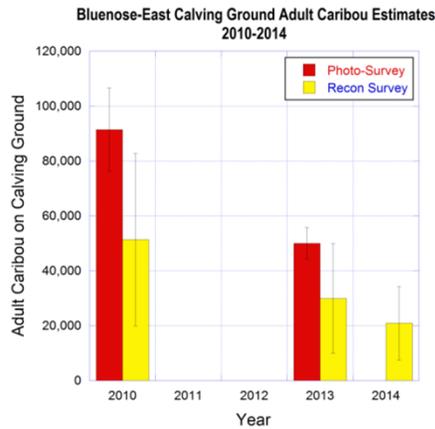


Photo A. Gunn

Demographic Indicators in the George River Herd: Increasing vs. Declining Herds

Indicator Herd	Increasing Herd (1970s)	Declining (early 1990s)
Cow Survival Rate	90-95%	80-84
Spring Calf:Cow Ratio	28-60:100	9-19:100
Pregnancy Rate	89-100%	59-78%

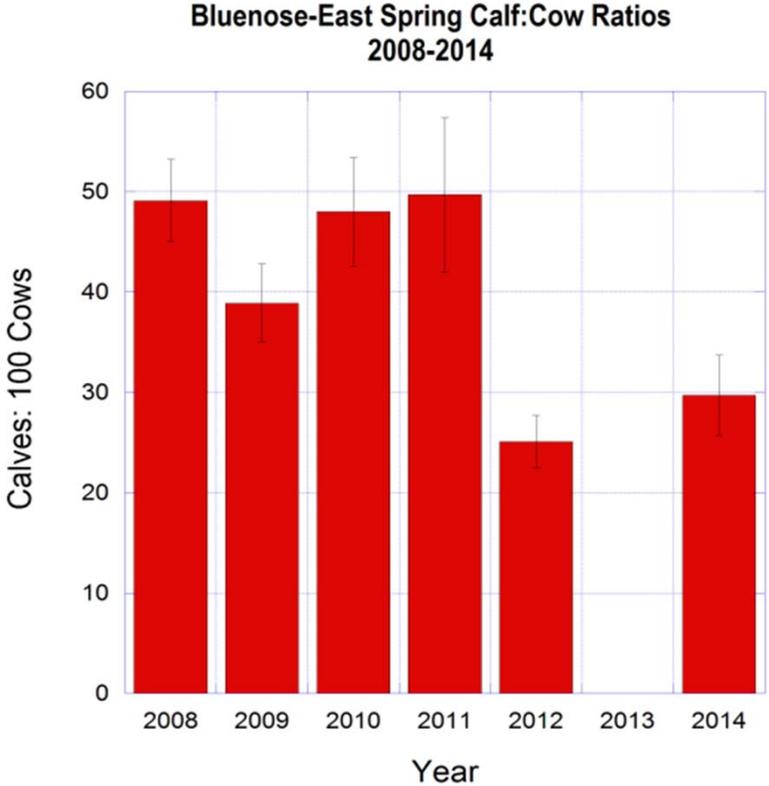
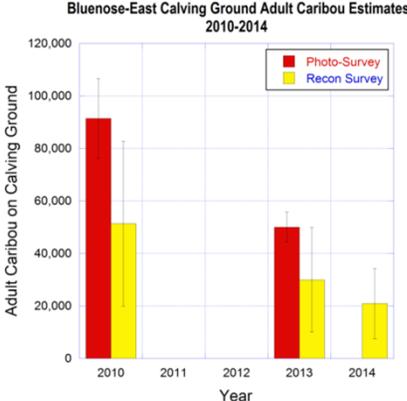
Bluenose-East Herd: Demographic Indicators: Cow Survival Rate



Adult cow caribou mortality rate compared to population rate of change in barren-ground caribou herds (courtesy of D. Russell, pers. comm. 2009)

**Bluenose-East Herd: Estimated Cow
Survival Rate 2010-2013: 73-75%
(mortality rate 25-28%)**

Bluenose-East Herd: Demographic Indicators: Spring Calf: Cow Ratios

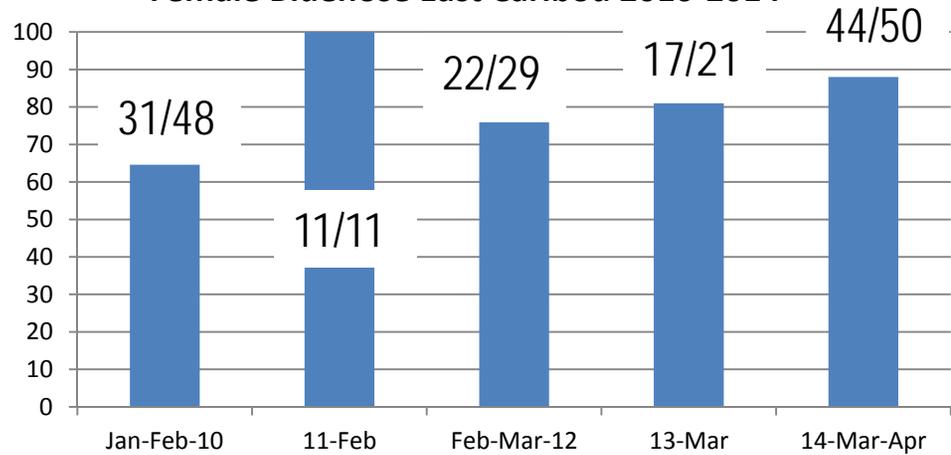


Bluenose-East Herd: Demographic Indicators: Pregnancy and Condition

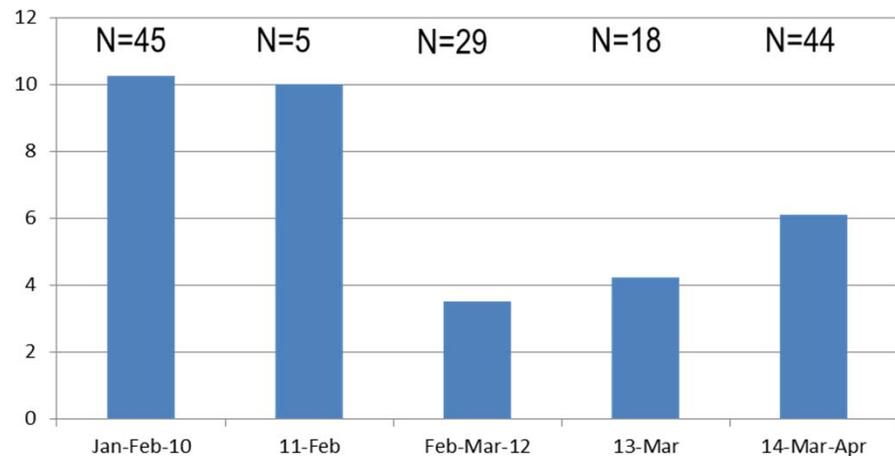
Pregnancy Rate 2012 NWT-wide: Captured Cows

	Blood collected (females)	# Pregnant	Pregnancy Rate
Bathurst	13	12	92.3
BNEast	42	27	64.3
Beverly	27	16	59.3
BNWest	34	17	50.0
CB	12	7	58.3
TP	10	5	50.0
Totals	138	84	60.9

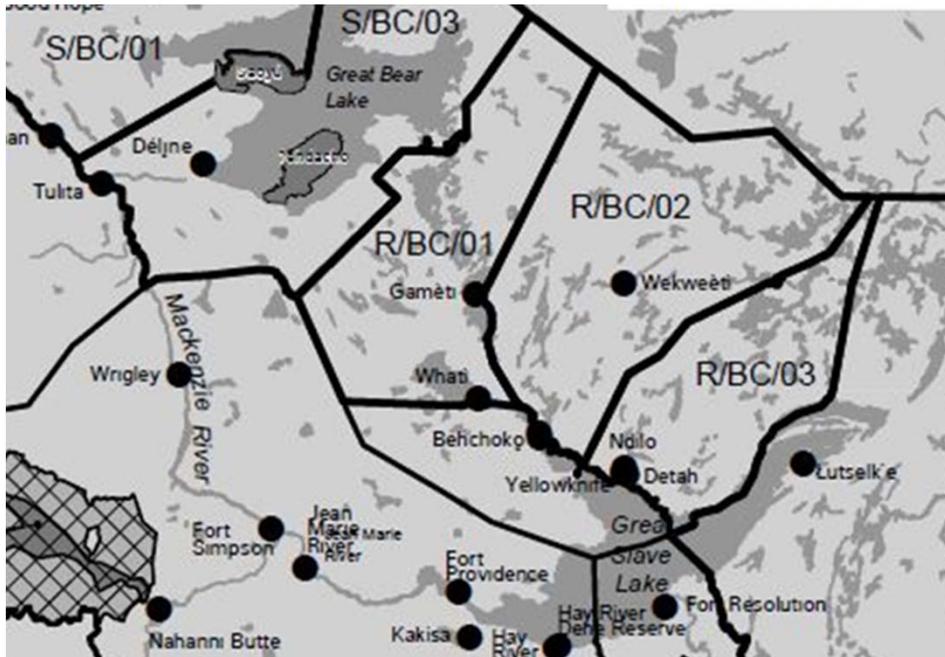
Pregnancy Rate (%) in Hunter-Killed Female Bluenose East Caribou 2010-2014



Late Winter Back Fat Thickness (mm) Adult Female Bluenose East Caribou



Bluenose-East Herd: Harvest Estimates 1998-2005 and 2010-2013



Bluenose-East Harvest Estimates

1998-2005:

Deline 1260/year, 60% cows (SRRB)
Limited harvest NU, Ticho

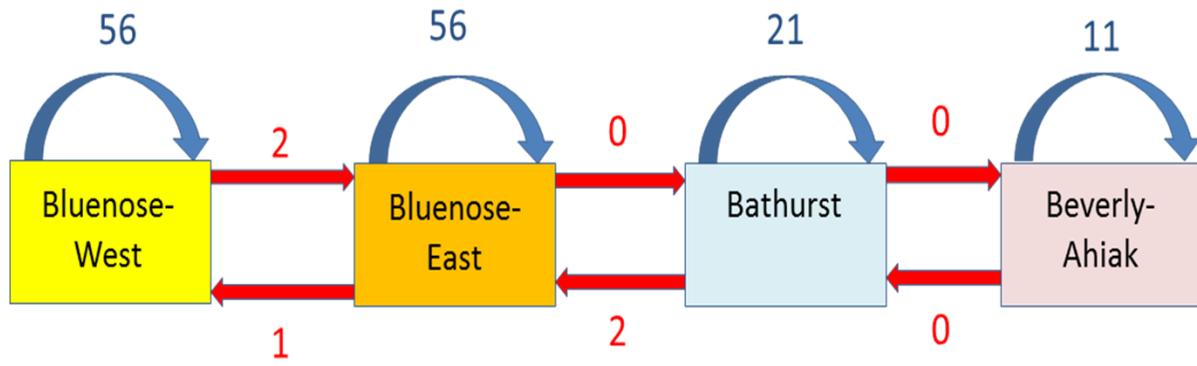
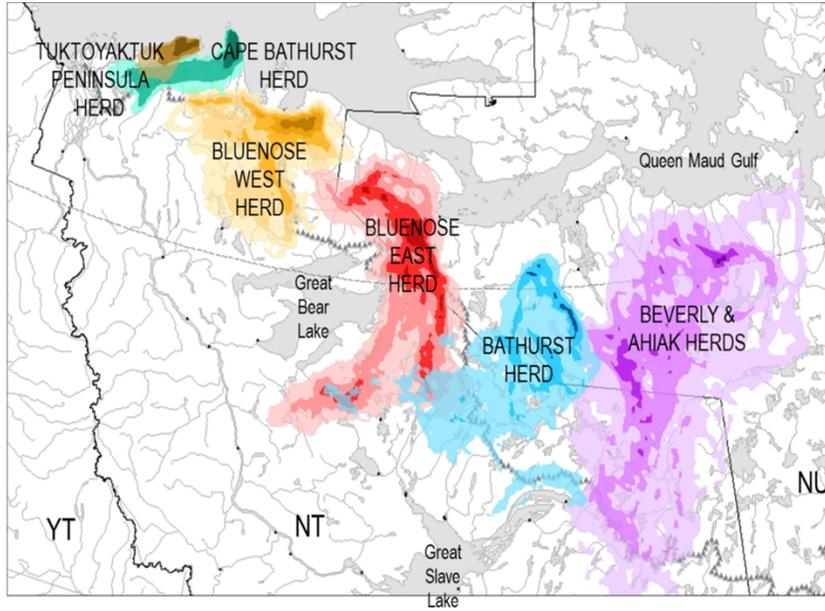
2009-2013*:

Monitors, officers, check-stations
Primarily zones RBC01 & SBC03

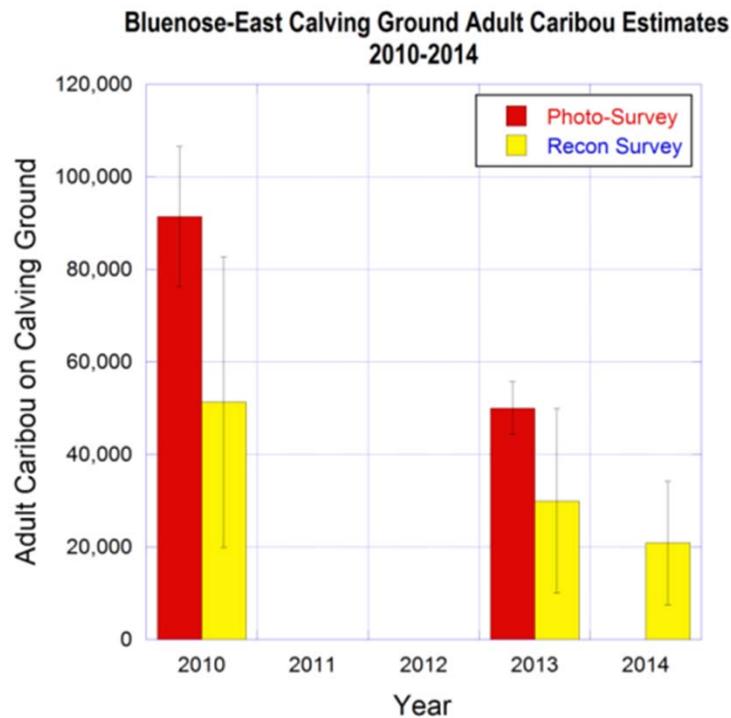
Year	Estimated	% cows
2009-2010	3,466	65
2010-2011	2,918	65
2011-2012	1,766	65
2012-2013	2,562	65
Average	2,678	65

* Considered under-reported

Bluenose-East & Bathurst Herds: Movement to Other Ranges?



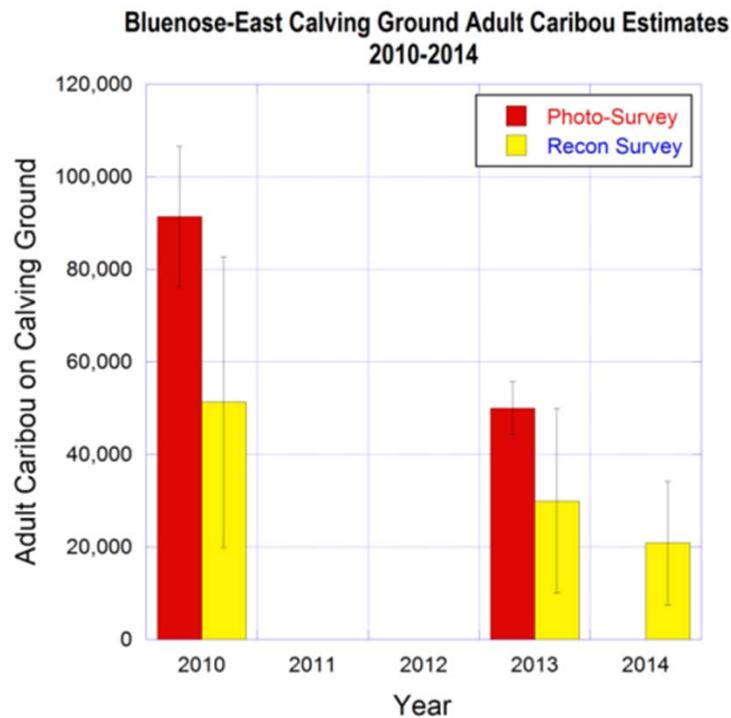
Bluenose-East Herd Recon Survey 2014: Possible Survey Issues



Potential Biases in June 2014 recon survey:

Issue	Likelihood
1. Low coverage, low precision: Inaccurate estimates	Possible
2. Low pregnancy rate, fewer cows on calving ground	Low
3. Low sightability on survey, caribou missed	Low
4. Breeding cows outside main calving ground, missed	Low

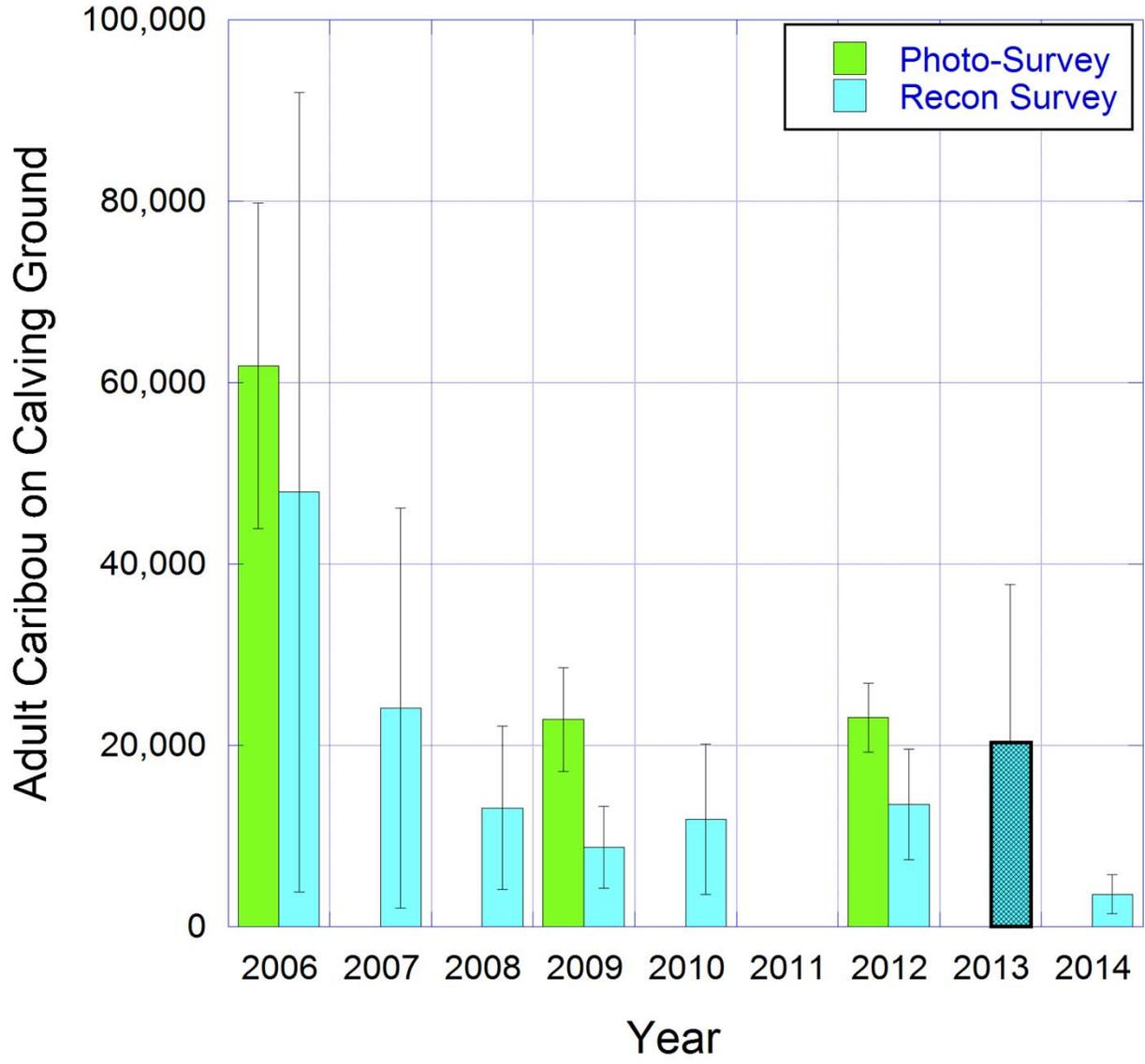
Bluenose-East Herd Recon Survey 2014: Possible Biological Factors



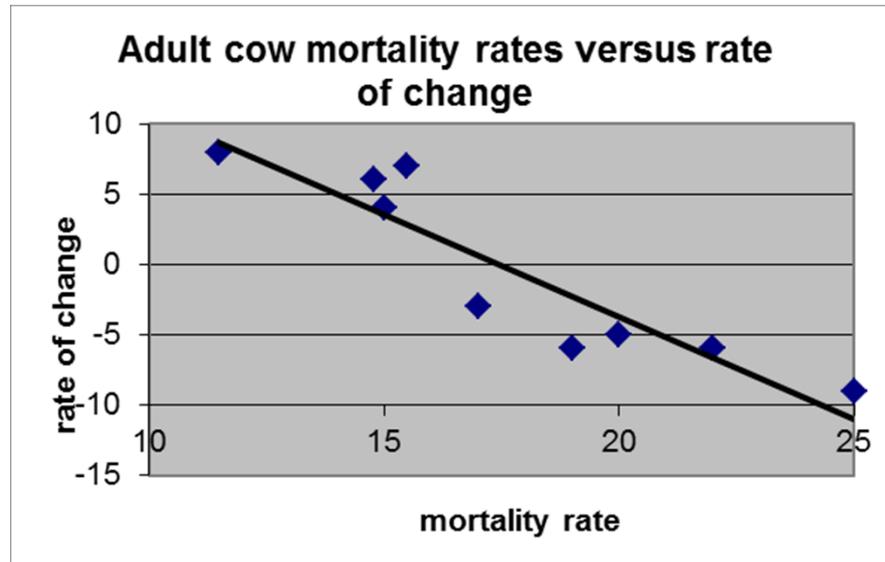
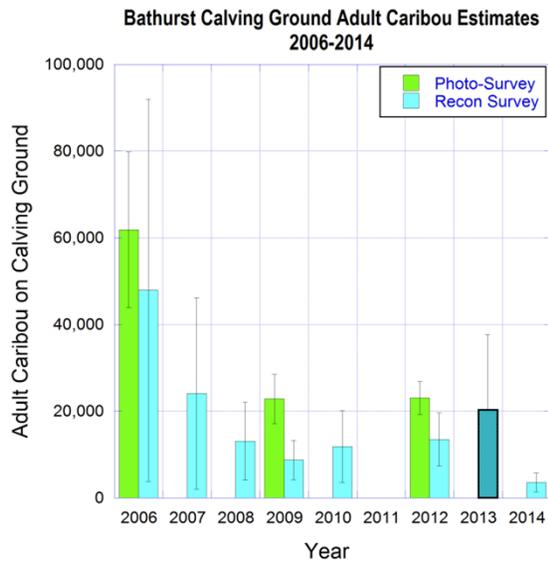
Biological Reasons for Lower Caribou Numbers:

Issue	Likelihood
1. Low overall cow survival rate:	Probable
2. Low natural cow survival rate:	Probable
3. Harvest mortality decreased overall cow survival rate further	Probable
4. Low pregnancy rate in 2 years linked to low calf survival	Possible
5. Reduced calf recruitment 2012-2013 affected survey	Possible
6. Large-scale movement to other ranges	Low

Bathurst Calving Ground Adult Caribou Estimates 2006-2014



Bathurst Herd: Demographic Indicators: Cow Survival Rate

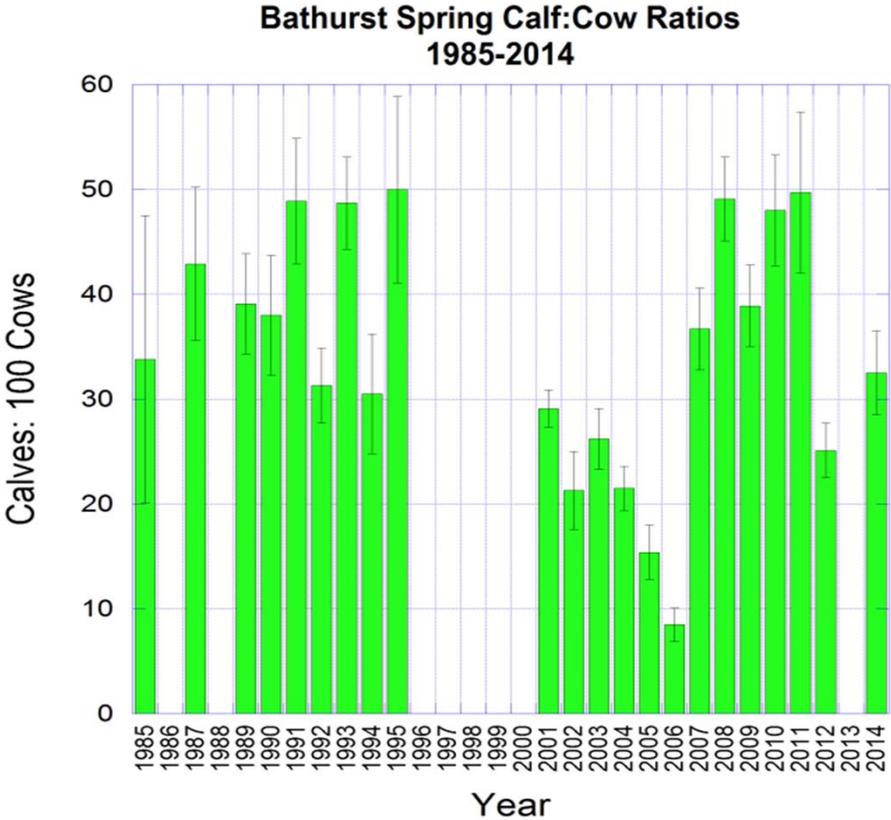
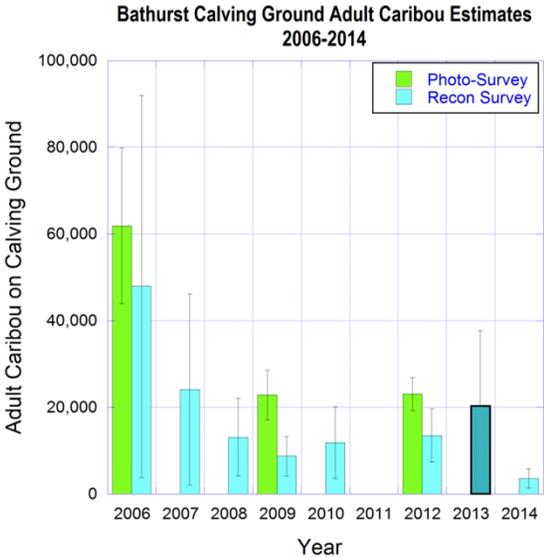


Adult cow caribou mortality rate compared to population rate of change in barren-ground caribou herds (courtesy of D. Russell, pers. comm. 2009)

Bathurst Herd: Estimated Cow Survival Rates 1985-2012:

1985: 86%
2007-2008: 73%
2009: 67%
2009-2012: 78-79%

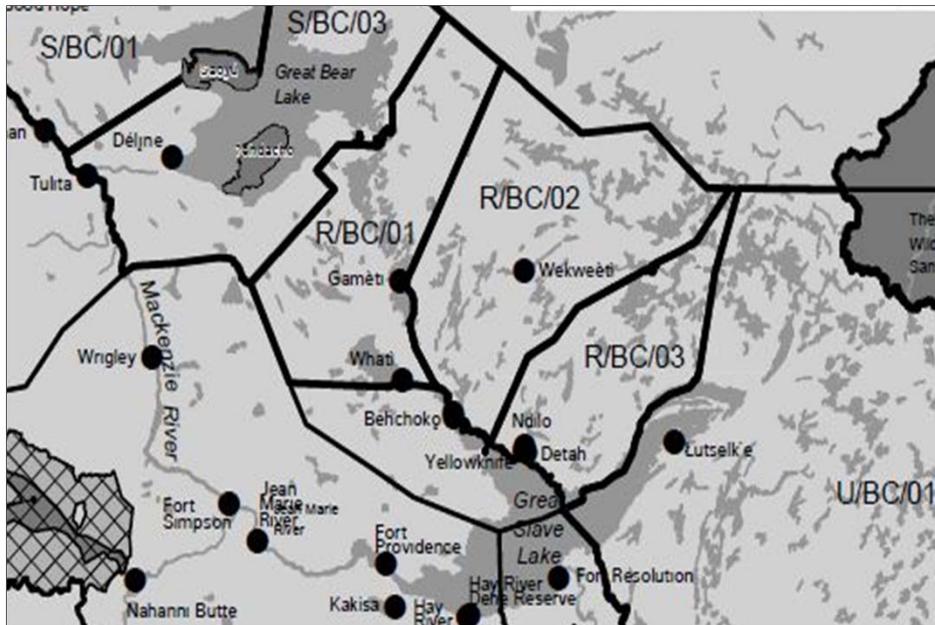
Bathurst Herd: Demographic Indicators: Spring Calf: Cow Ratios



Bathurst Herd: Demographic Indicators: Pregnancy

Date	Hunter kits/Collections	Collaring	Combined
March 2014	n/a	9/13	
March 2013	Adult Cows: 5/5		
March 2012	n/a	13/14	
February 2011	Adult Cows: 20/25 (80%)	12/14	32/39 (82.0%)
March 2010	Adult Cows: 10/14 (71.43%)	12/14	22/28 (78.6%)
April 2009	Adult Cows: 25/28 (89.29%)		
March 2008	Adult Cows: 26/26 (100%)		
March 2005	Adult Cows: 95/150 (63.33%)		
March 1995	Adult Cows: 10/13 (76.92%)		
March 1994	Adult Cows: 107/116 (92.24%)		
March 1992	Adult Cows: 11/14 (78.57%)		
March 1991	Adult Cows: 6/10 (60%)		
March 1990	Adult Cows: 10/10 (100%)		

Bathurst Herd: Harvest Estimates 2007-2009 and 2010-2013



Bathurst Harvest Estimates

2007-2009:

4000-6000/year, mostly cows

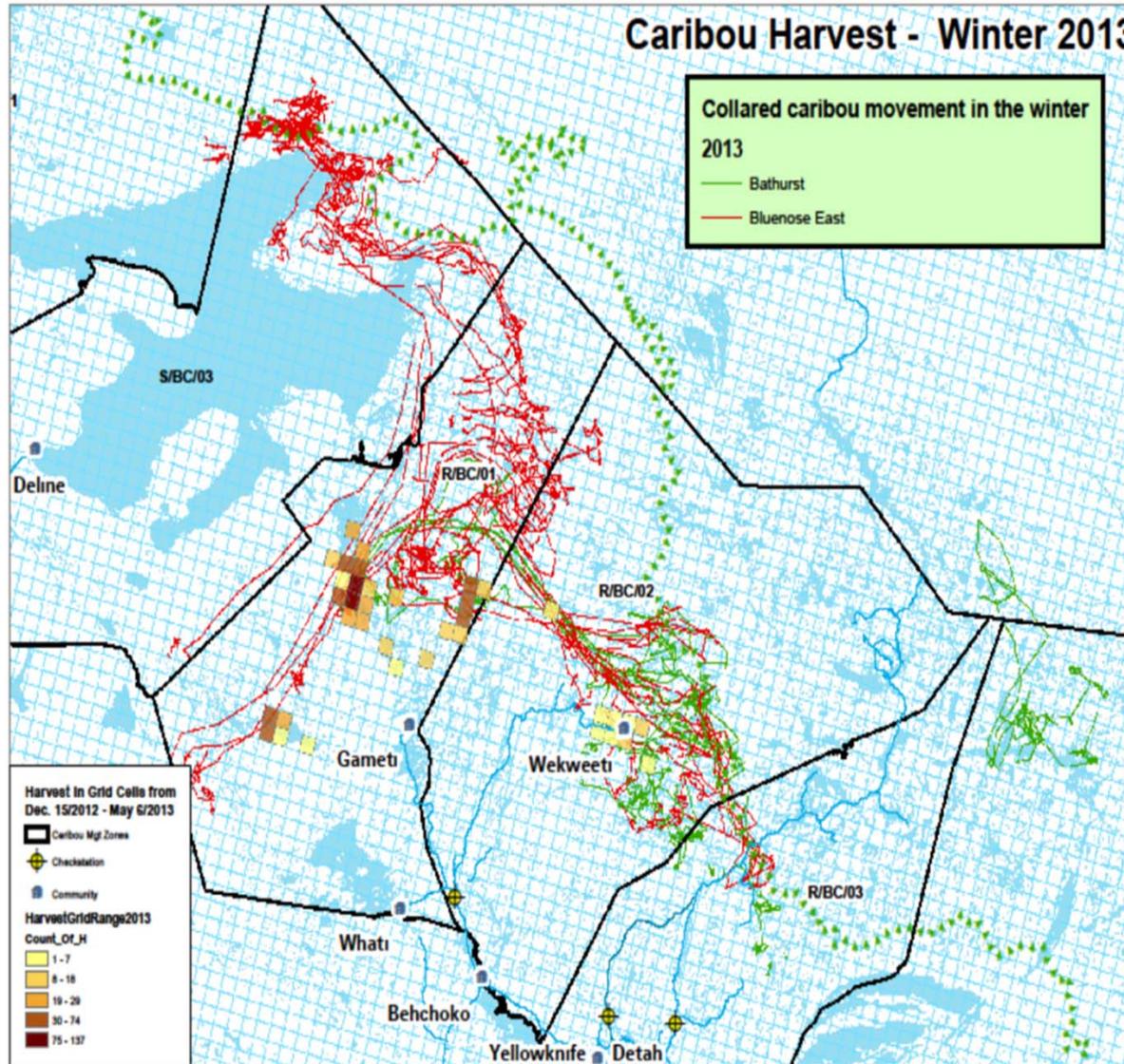
2009-2013*:

Monitors, officers, check-stations

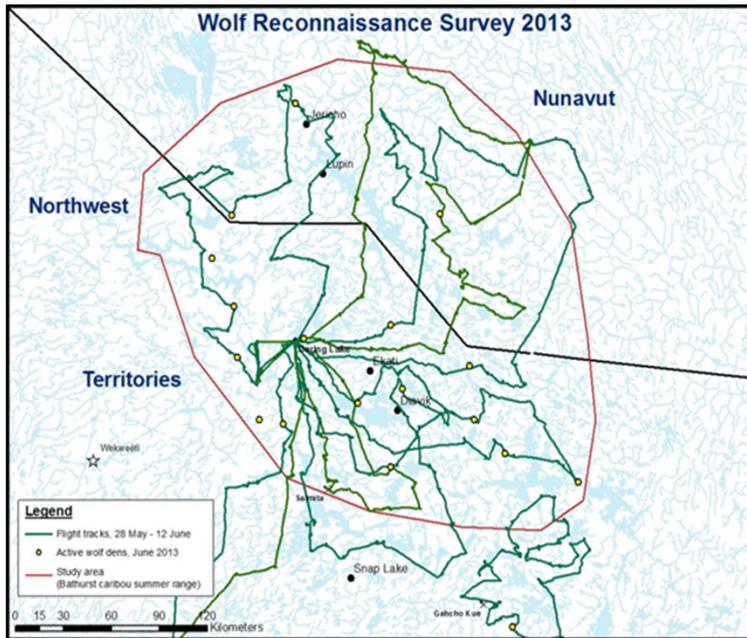
Year	Estimated	% cows
2009-2010	300	65
2010-2011	213	58
2011-2012	87	82
2012-2013	166	42
Average	191	62

* As reported for RBC02 and RBC03;
total harvest may be under-reported

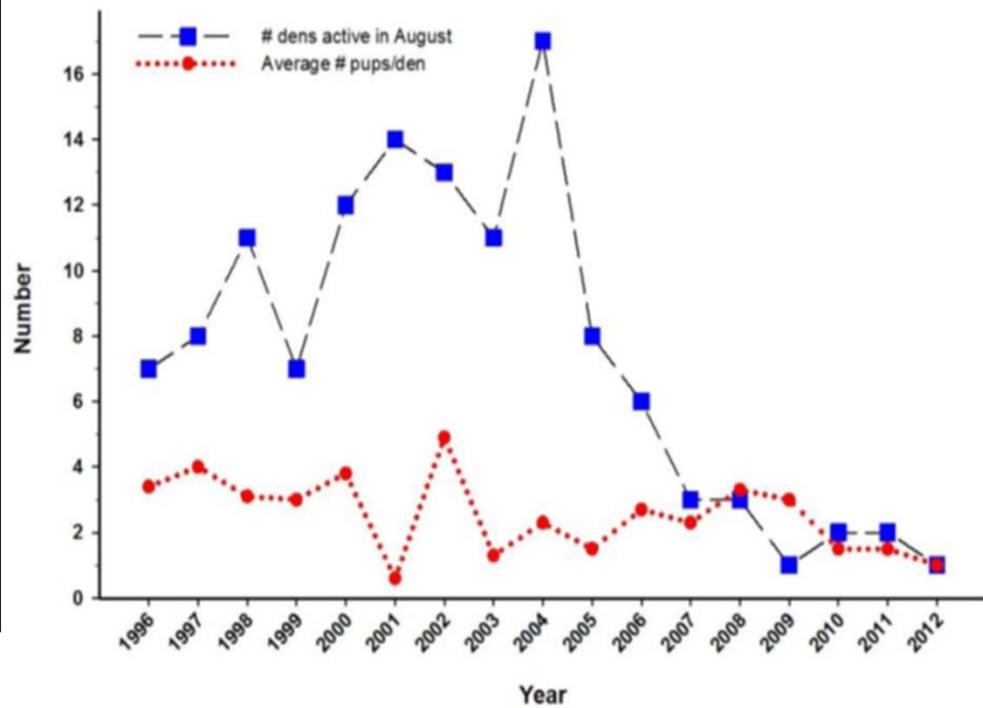
Bathurst & Bluenose-East Collared Caribou and Harvest, Winter 2013



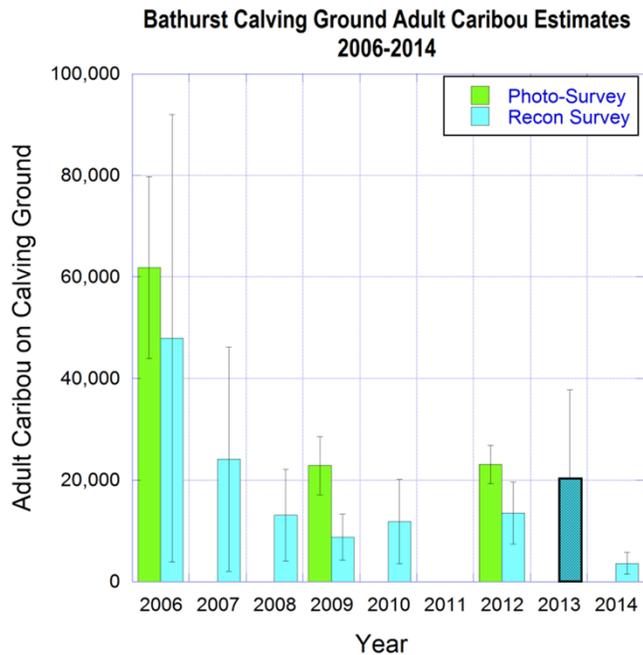
Wolf Monitoring in Bathurst Caribou Range 1996-2012



Average pup counts for wolf den sites active in August



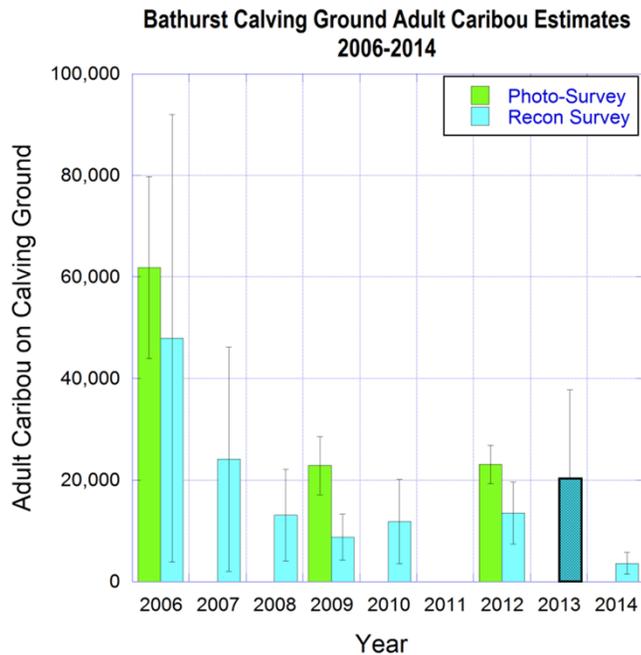
Bathurst Herd Recon Survey 2014: Possible Survey Issues



Potential Biases in June 2014 recon survey:

Issue	Likelihood
1. Low coverage, low precision: Inaccurate estimates	Possible
2. Low pregnancy rate, fewer cows on calving ground	Low
3. Low sightability on survey, caribou missed	Low
4. Breeding cows outside main calving ground, missed	Low

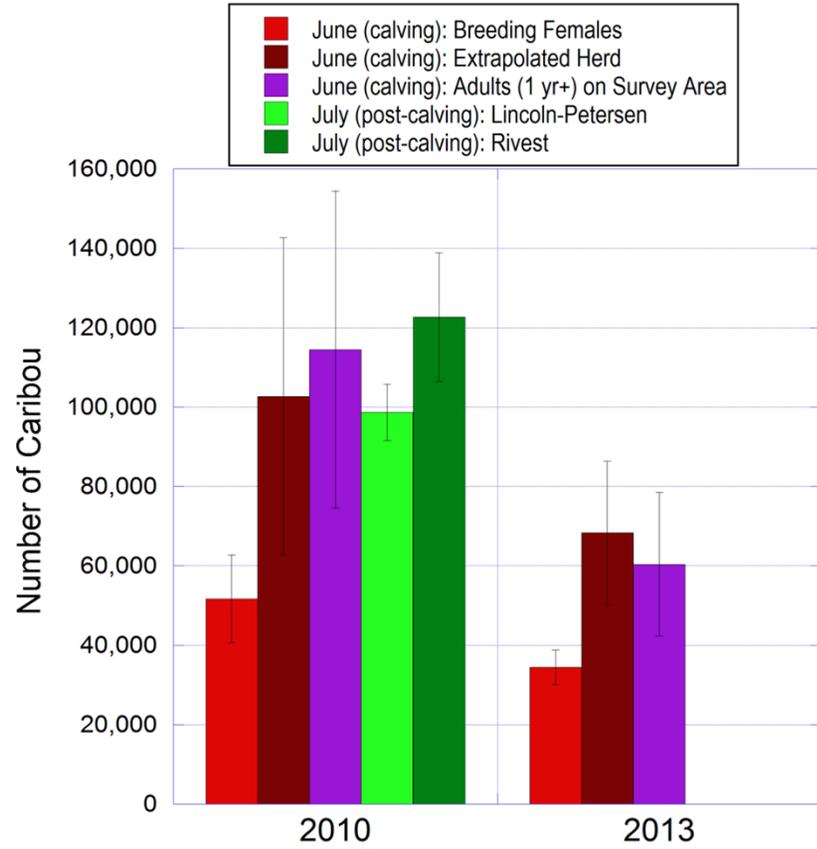
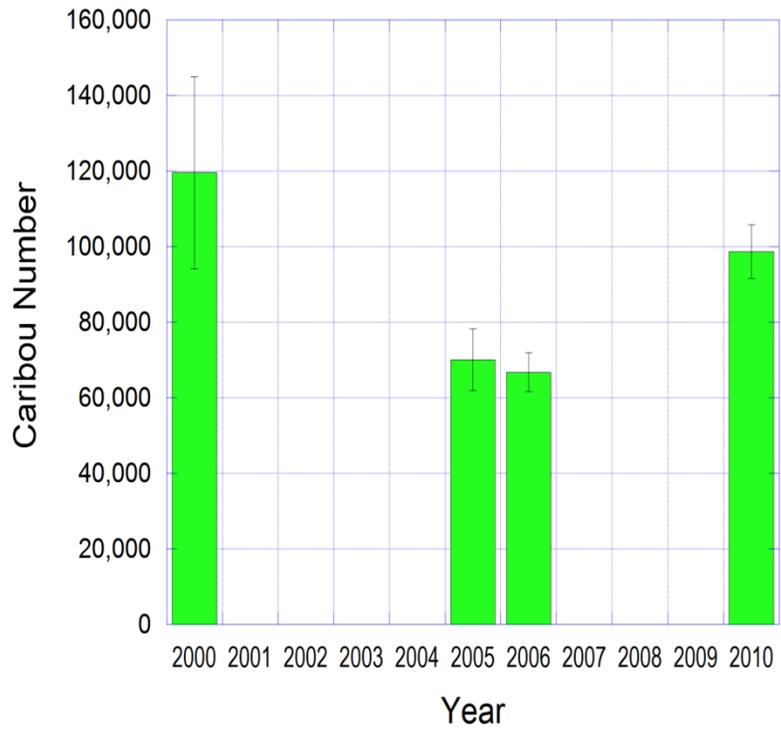
Bathurst Herd Recon Survey 2014: Possible Biological Factors



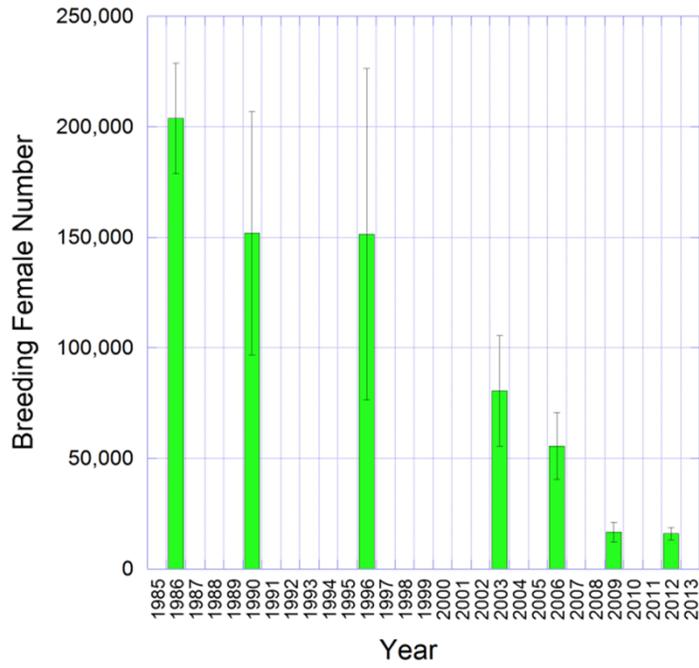
Biological Reasons for Lower Caribou Numbers:

Issue	Likelihood
1. Low overall cow survival rate:	Probable
2. Low natural cow survival rate:	Probable
3. Harvest mortality decreased overall cow survival rate further	Possible
4. Low pregnancy rate linked to low calf survival	Possible
5. Reduced calf recruitment 2012-2013 affected survey	Possible
6. Large-scale movement to other ranges	Low

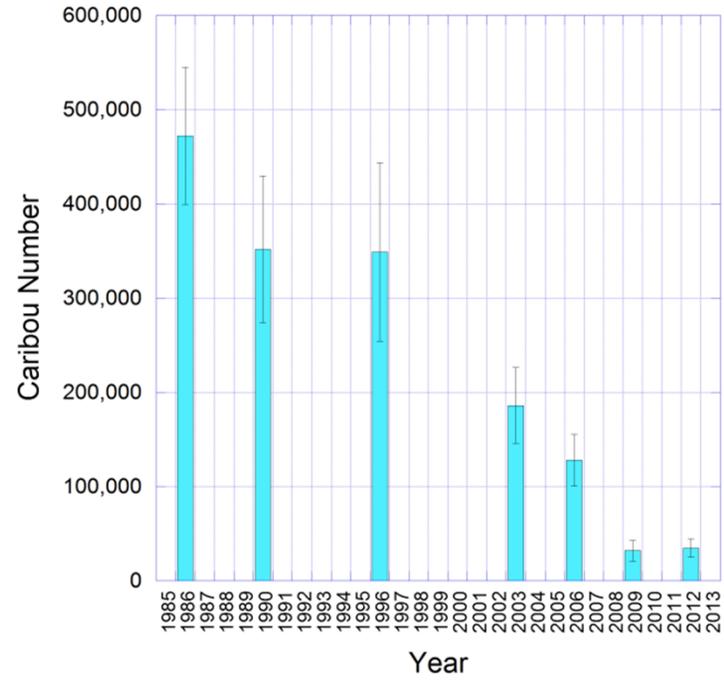
**Bluenose-East Post-Calving Estimates 2000-2010
(Lincoln-Petersen Estimator)**



**Bathurst Caribou Herd Breeding Female Estimates
1986-2012**



**Bathurst Caribou Herd Size Estimates
1986-2012**



NWT Fires 2014 and earlier: August 2014

