Western Arctic Caribou Herd

Jim Dau

This Presentation

- **List of management activities for the WAH**
- **WAH Working Group**
- **Seasonal distribution & movements**
- **Population size**
- **Trends in recruitment and adult mortality: factors that may be driving these trends**
- **Management criteria: Population & Harvest Objectives, Amount Necessary for Subsistence**
- **Seasons & bag limits**
- **Harvest patterns in space & time**

WAH Management Activities

- **Calving surveys**
  - **June, annually**
  - **calf production and delineate calving area**

- **Photocensus**
  - **July every 2 years**
  - **estimate population size**

- **Collaring project**
  - **September, annually on the Kobuk River**
  - **deploy radio collars**
  - **collect blood samples – disease and genetic work**
  - **collect jaws**
  - **involve students from 2 schools each year**

- **Jaw collection**
  - **year round; rely on hunter participation**
  - **age, body condition, size of caribou**

Management Activities (cont.)

- **Spring & Fall range-wide telemetry surveys**
  - **distribution & movements**
  - **monitor adult mortality**

- **Fall sex/age composition surveys**
  - **October-November every other year**
  - **proportion of bulls, cows & calves in the population**

- **Monitor harvests**
  - **people living within range of WAH - community harvest assessments**
    - **Div. of Subsistence**
    - **cooperative efforts with local nonprofit organizations**
  - **hunters who live outside the range of the WAH - statewide harvest ticket system**

Management Activities (cont.)

- **Recruitment surveys**
  - **April-May annually**
  - **estimate calf survival through 1st winter**

- **Satellite collars – monitor distribution & movement**
  - **ADF&G, NPS, BLM & FWS**
  - **PTT and GPS collars**

- **Health assessment**
  - **every 2-3 years**
  - **fall (Onion Portage) & spring (Red Dog)**
  - **collect 10-15 caribou to necropsy and collect tissue samples**
  - **extensive lab work following the field work**

Management Activities (cont.)

- **The WAH is one of the most comprehensively monitored caribou herds in the world**

- **Besides covering a broad suite of population indicators, some of our data sets go back in time well over 20 years**

- **Since the 1980s the department WAH monitoring program has been predicated on having public support for our programs**

    - **This has influenced both what we do and how we do it**

WAH Working Group

• Beginning in 1995, the Department took the lead in creating the WAH Working Group

• The WG is comprised of 20 voting chairs that represent:

- **villages within the range of the herd**
- **guides**
- **transporters**
- **conservationists**
- **ANC & FAI Advisory Committees**
- **agencies (1 liaison chair for ADF&G, BLM, FWS & BLM)**

• The ultimate purpose of the WG is to help conserve the WAH for all users into the future

• It attempts to do this by facilitating the exchange of information among users, agency staff and regulatory boards regarding the status and management of the WAH

WAH Cooperative Management Plan

• In 2003, a subcommittee of the WG updated the "WAH Strategic Management Plan" the Department had developed in 1984

• There are 7 sections in the 2003 plan:

1. **Cooperation**
2. **Population management**
3. **Habitat**
4. **Regulations**
5. **Reindeer**
6. **Knowledge**
7. **Cooperation**

- **The WG is in the process of updating the 2003 Management Plan – we hope to finalize a new version next month**

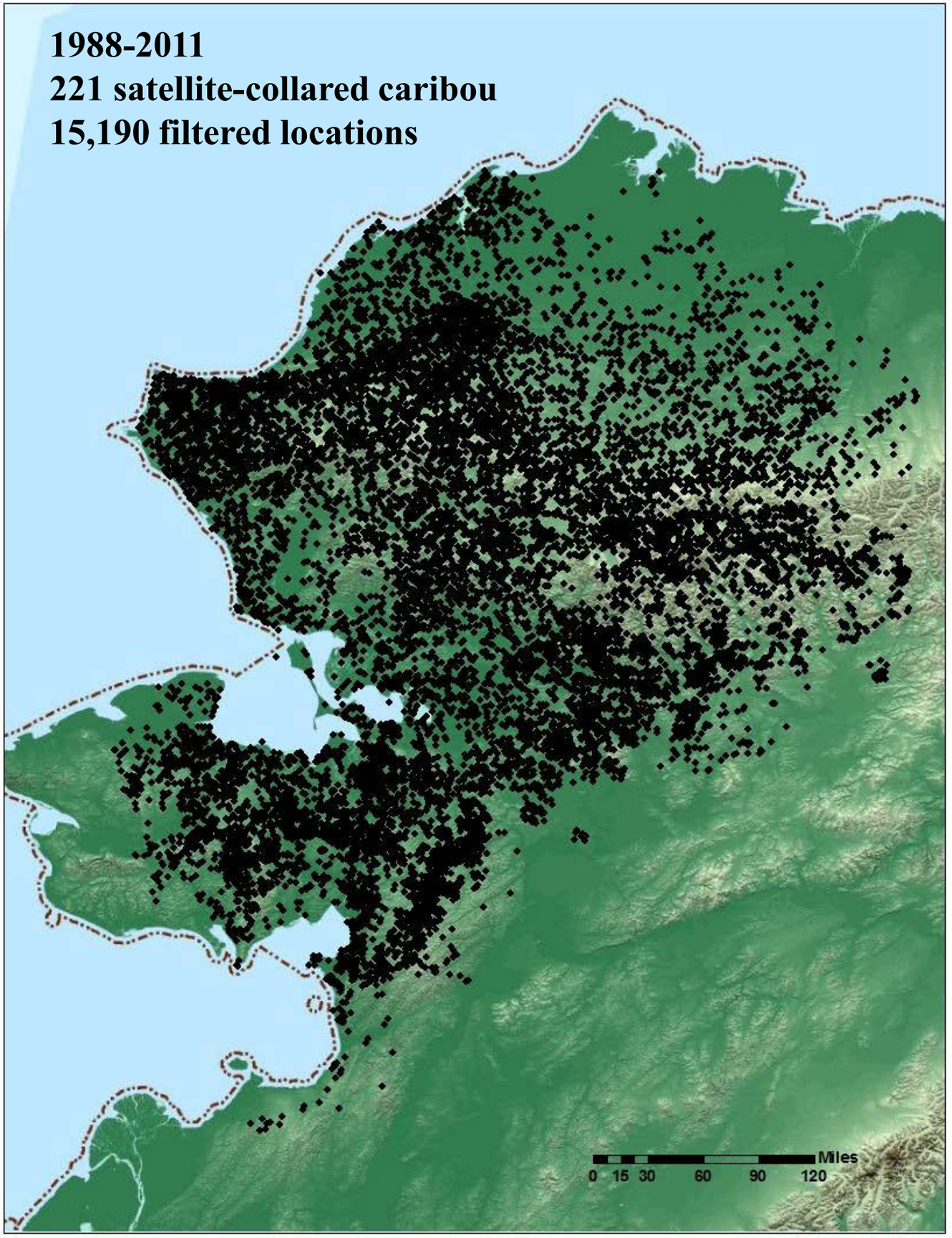
WAH Distribution & Movements

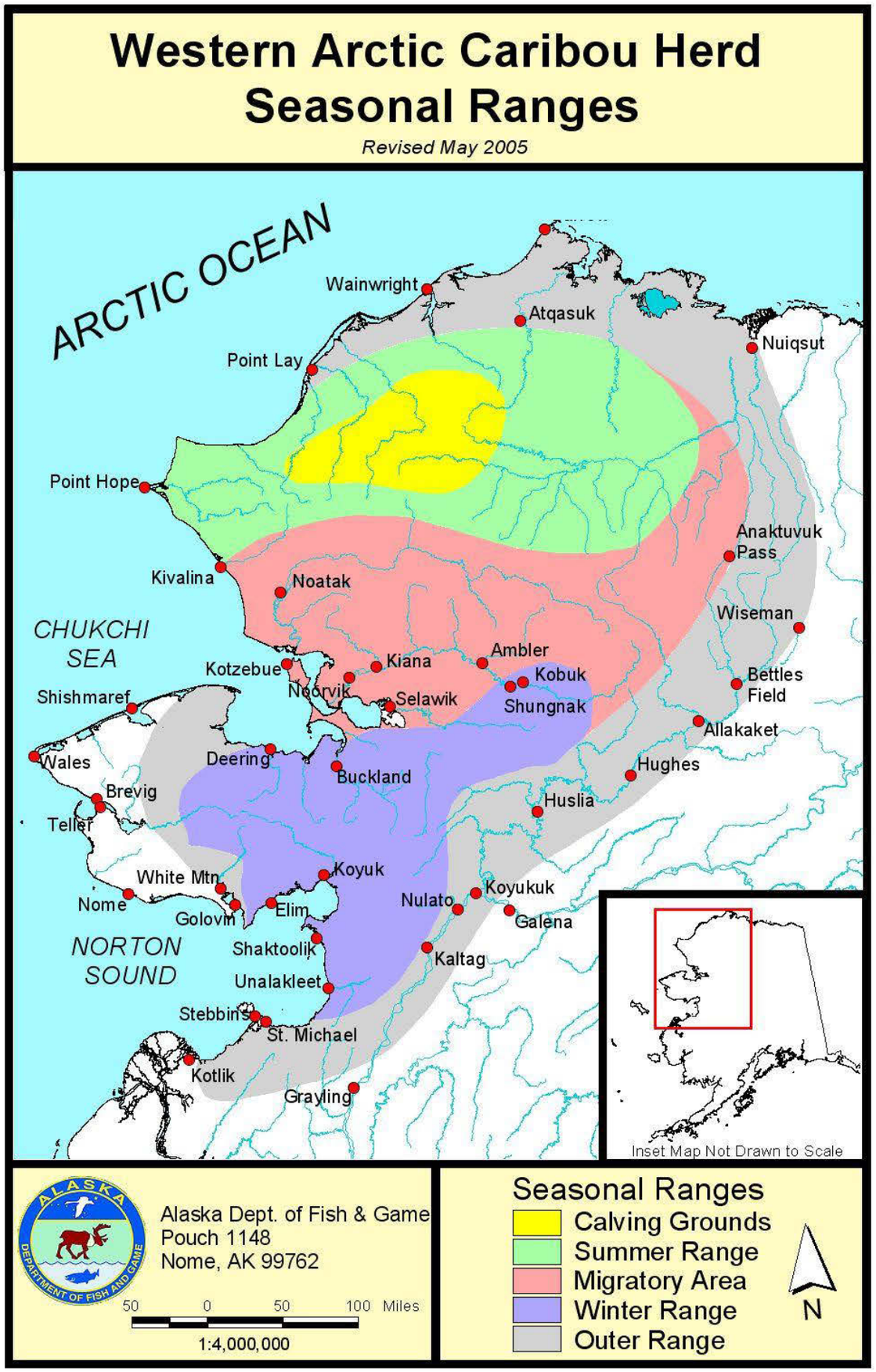
For the next series of slides I've used the following conventions:

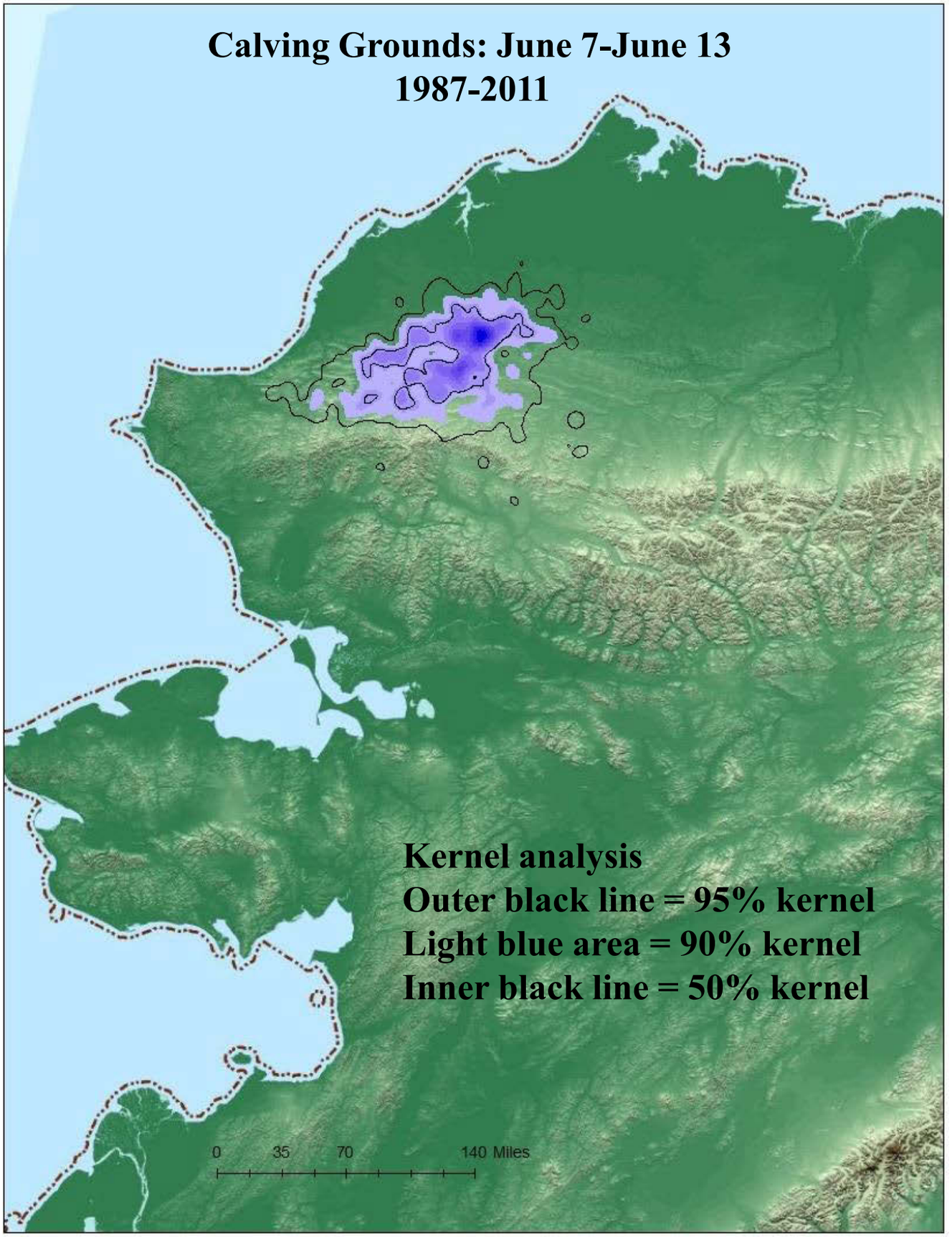
• Where I've used black symbols I've not distinguished sex

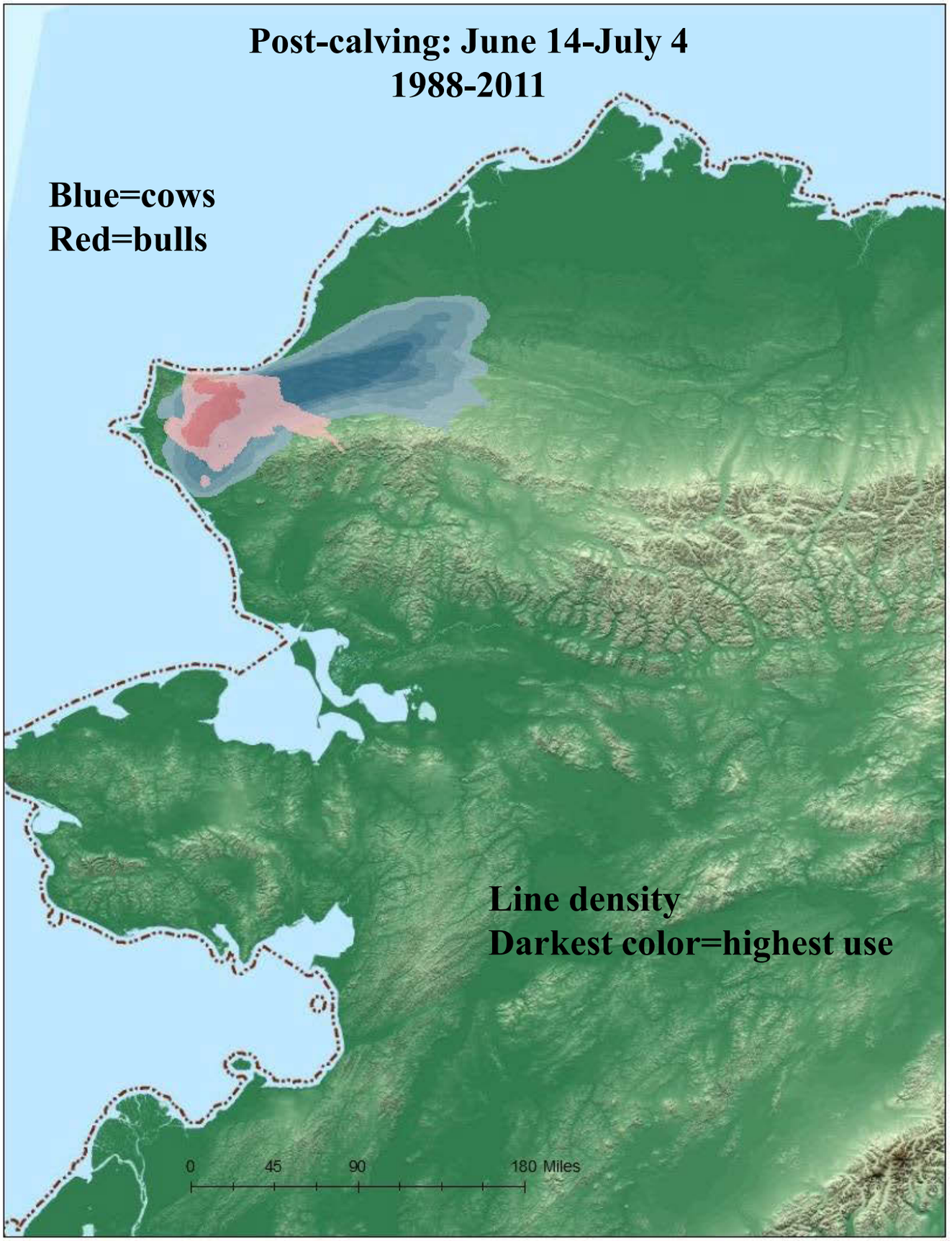
• For kernel & line density maps, blue areas = cows, red areas = bulls, and all caribou (bulls & cows) = yellow/brown

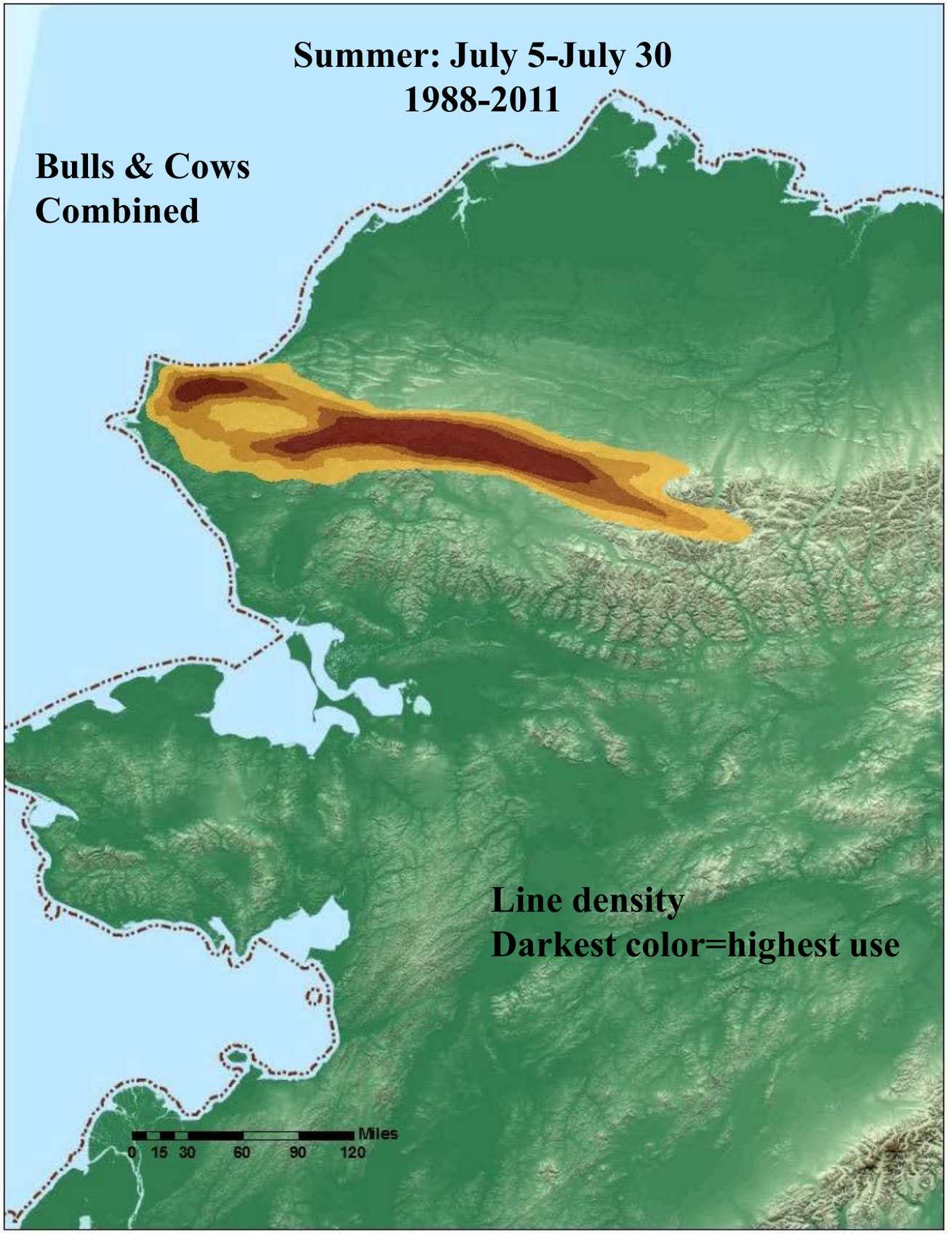
• For both kernel and line density depictions, darkest areas = highest use

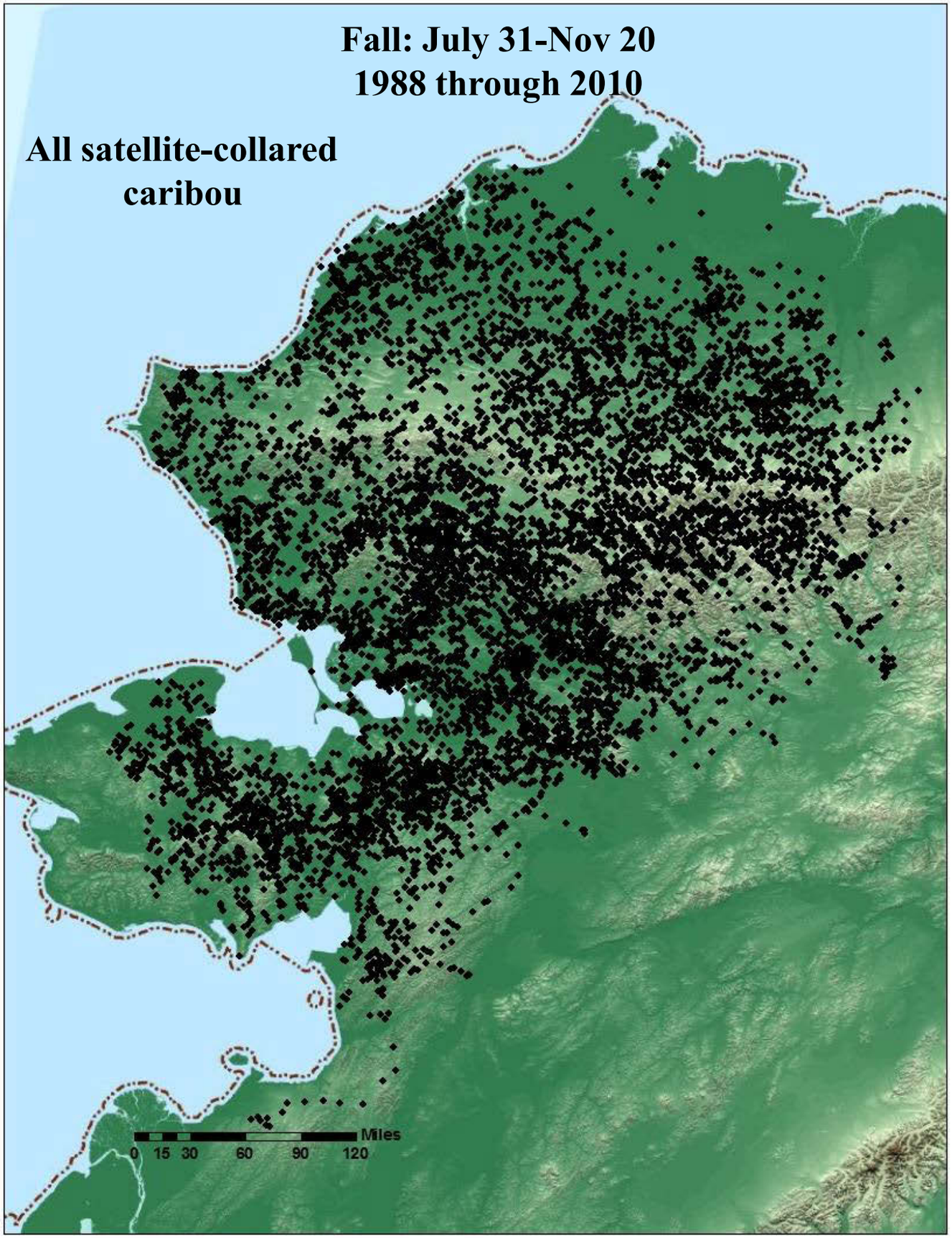

1988-2011
221 satellite-collared caribou
15,190 filtered locations
Miles
0 15 30 60 90 120

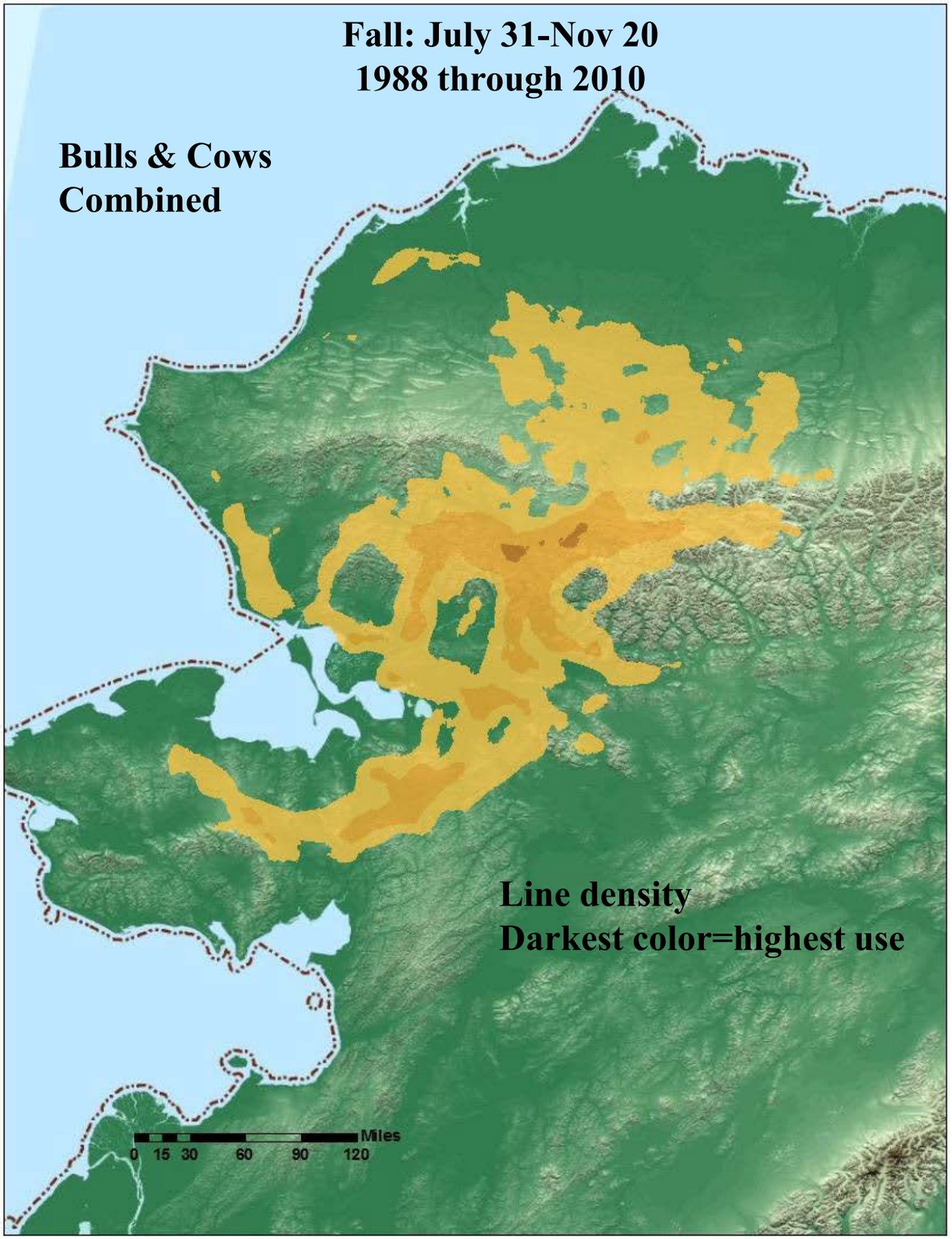

Western Arctic Caribou Herd
Seasonal Ranges
Revised May 2005
ARCTIC OCEAN
Wainwright
Atqasuk
Nuiqsut
Point Lay
Point Hope
Anaktuvuk Pass
Kivalina
Noatak
Wiseman
CHUKCHI SEA
Ambler
Kiana
Kotzebue
Kobuk
Bettles Field
Noorvik
Selawik
Shungnak
Shishmaref
Allakaket
Deering
Hughes
Wales
Buckland
Brevig
Huslia
Teller
Koyuk
White Mtn
Koyukuk
Nulato
Nome
Elim
Galena
Golovin
NORTON SOUND
Shaktoolik
Kaltag
Unalakleet
Stebbins
St. Michael
Kotlik
Grayling
Inset Map Not Drawn to Scale
Alaska Dept. of Fish & Game
Pouch 1148
Nome, AK 99762
50 0 50 100 Miles
1:4,000,000
Seasonal Ranges
Calving Grounds
Summer Range
Migratory Area
Winter Range
Outer Range
N

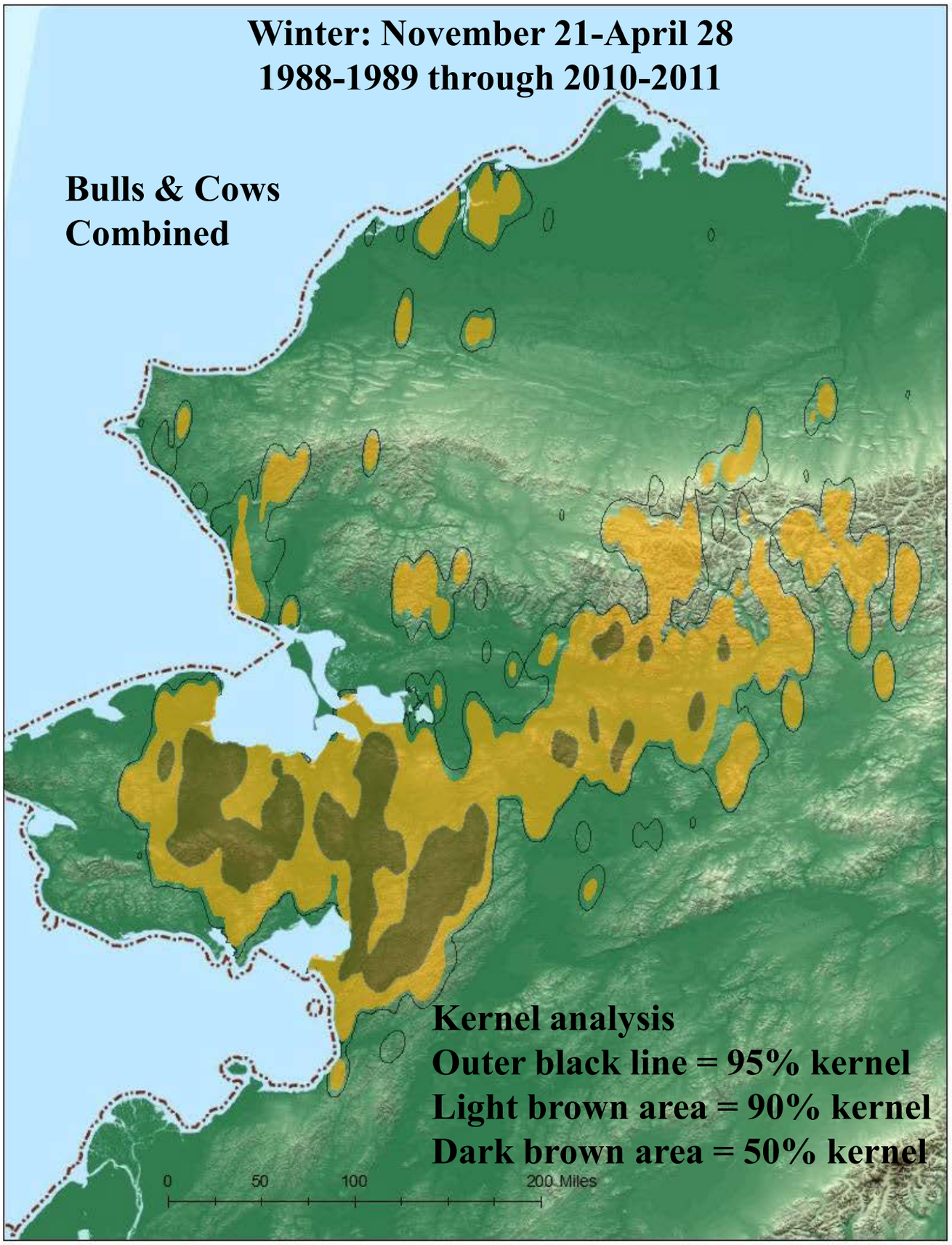

Calving Grounds: June 7-June 13
1987-2011
Kernel analysis
Outer black line = 95% kernel
Light blue area = 90% kernel
Inner black line = 50% kernel
0
35
70
140 Miles

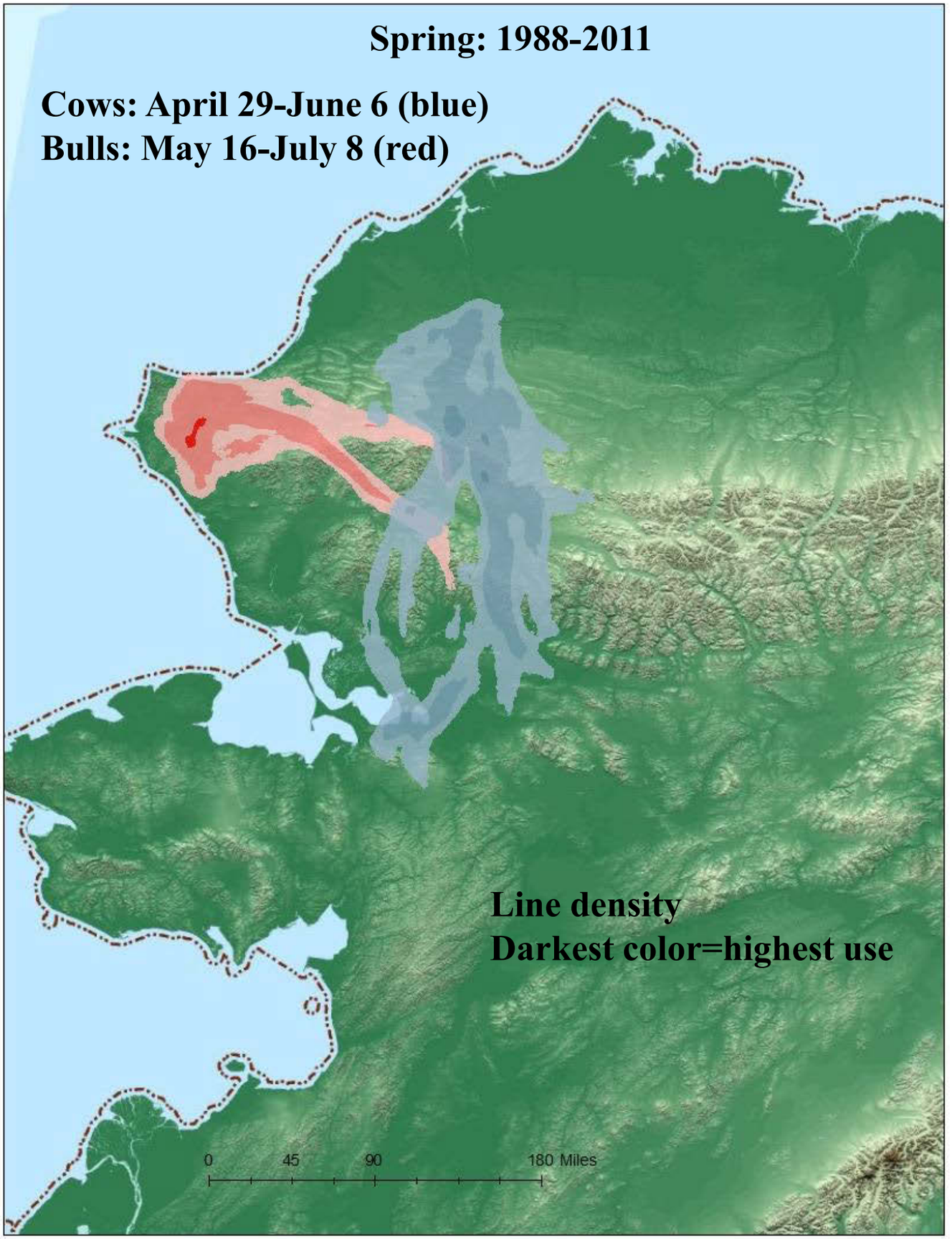

Post-calving: June 14-July 4
1988-2011
Blue=cows
Red=bulls
Line density
Darkest color=highest use
0
45
90
180 Miles


Summer: July 5-July 30
1988-2011
Bulls & Cows
Combined
Line density
Darkest color=highest use
Miles
0 15 30 60 90 120

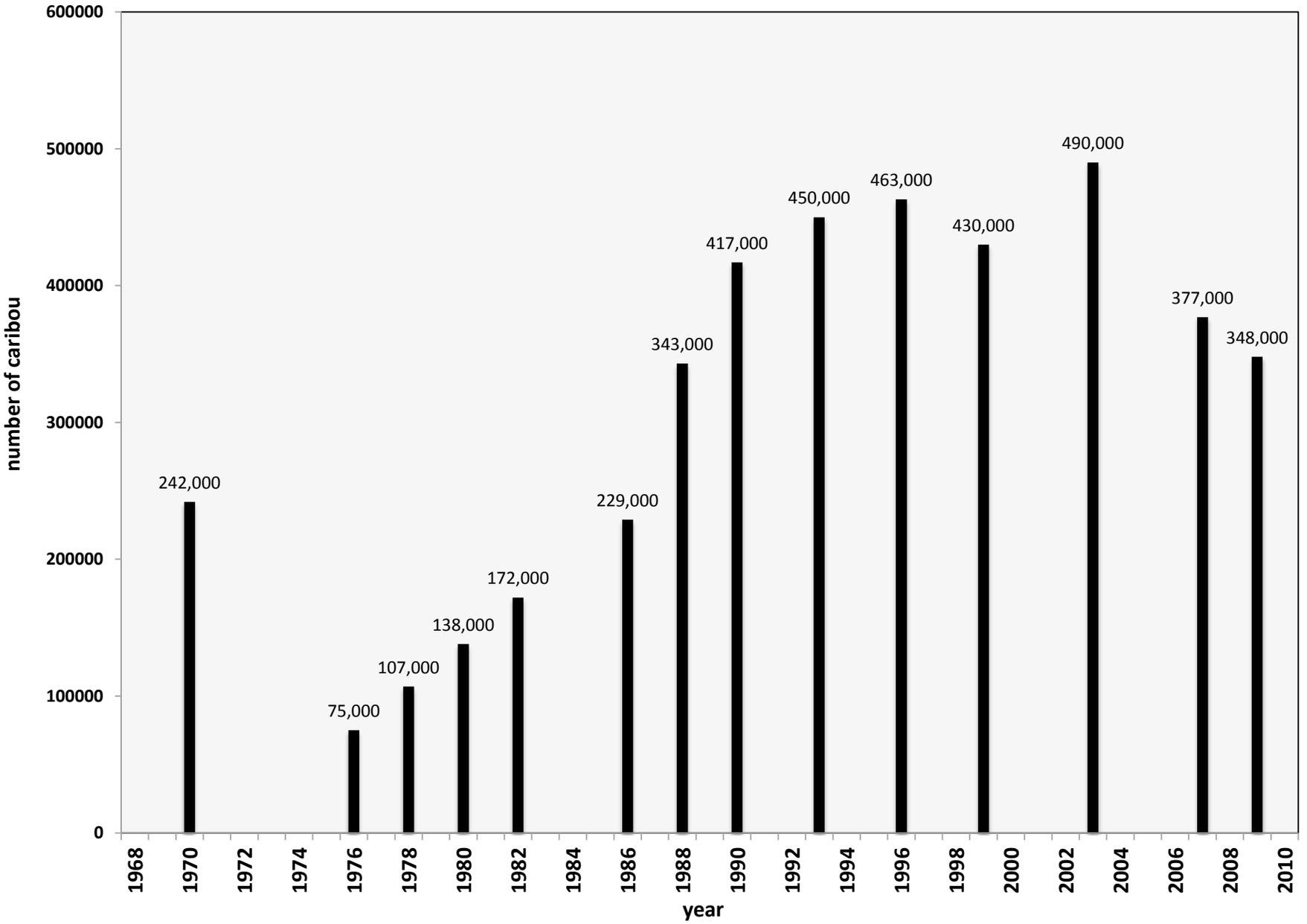

Fall: July 31-Nov 20
1988 through 2010
All satellite-collared caribou
Miles
0 15 30 60 90 120

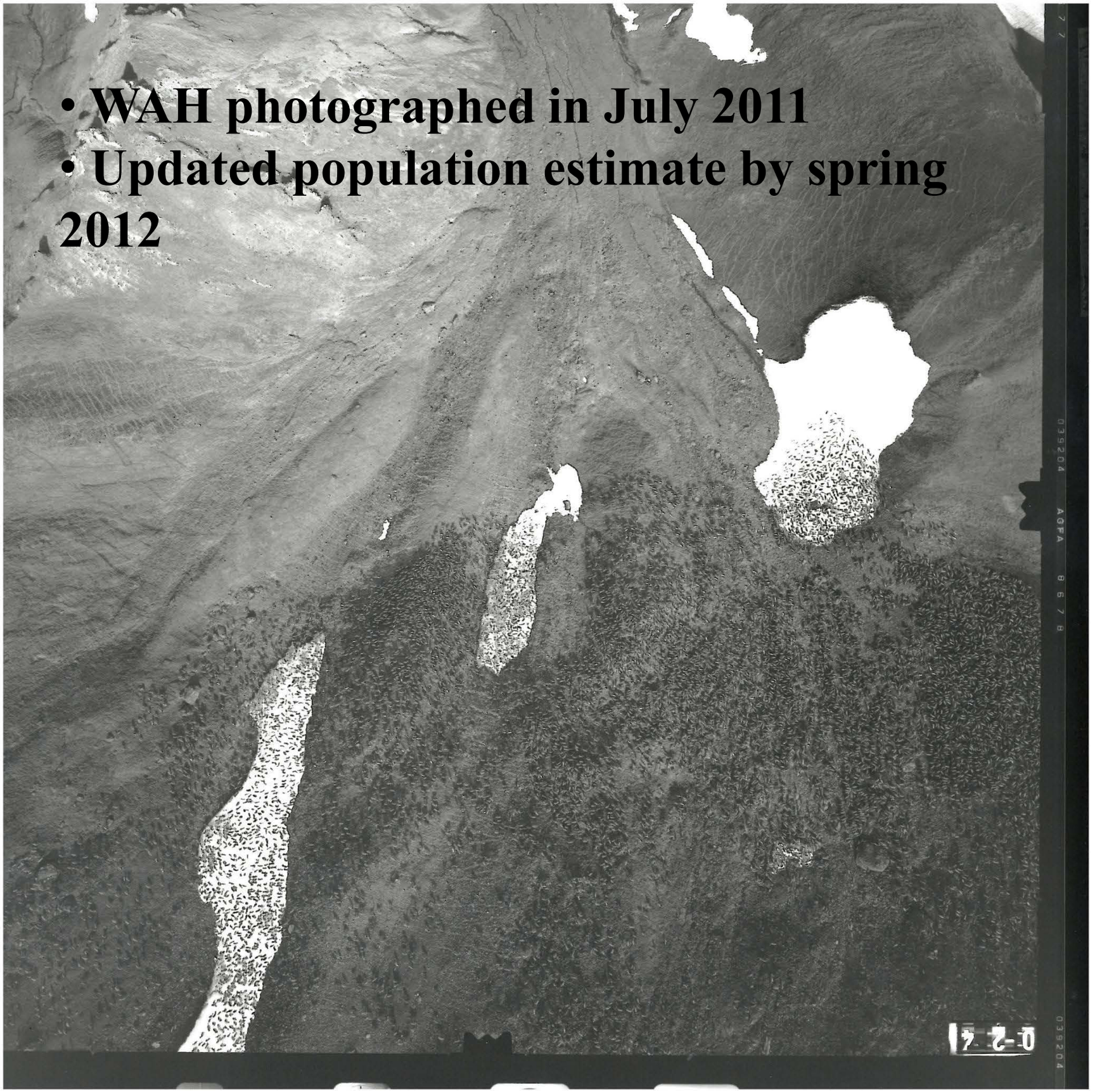

Fall: July 31-Nov 20
1988 through 2010
Bulls & Cows
Combined
Line density
Darkest color=highest use
Miles
0 15 30 60 90 120


Winter: November 21-April 28
1988-1989 through 2010-2011
Bulls & Cows
Combined
Kernel analysis
Outer black line = 95% kernel
Light brown area = 90% kernel
Dark brown area = 50% kernel
0
50
100
200 Miles

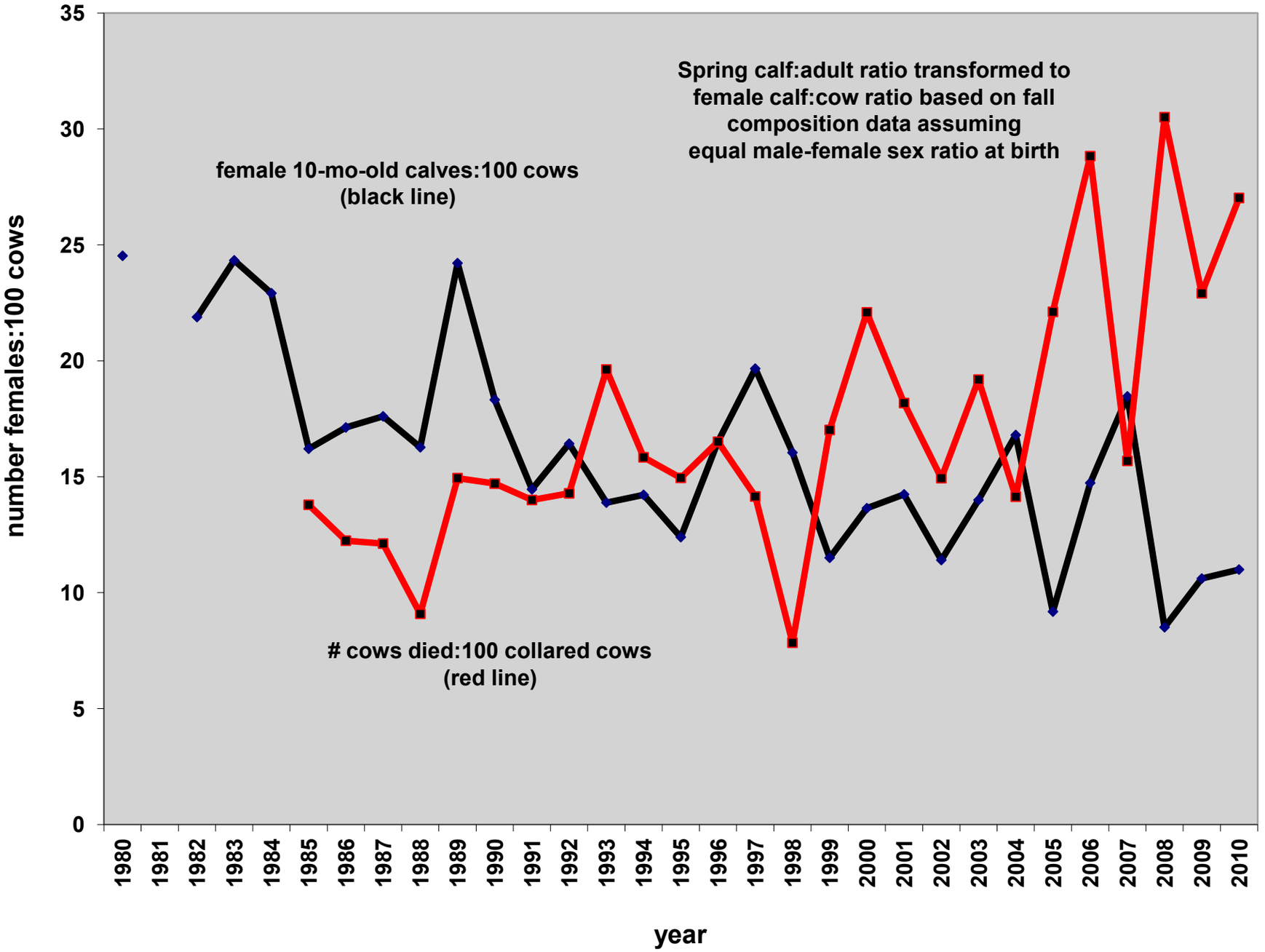

Spring: 1988-2011
Cows: April 29-June 6 (blue)
Bulls: May 16-July 8 (red)
Line density
Darkest color=highest use
0
45
90
180 Miles

Western Arctic Herd: Census Results

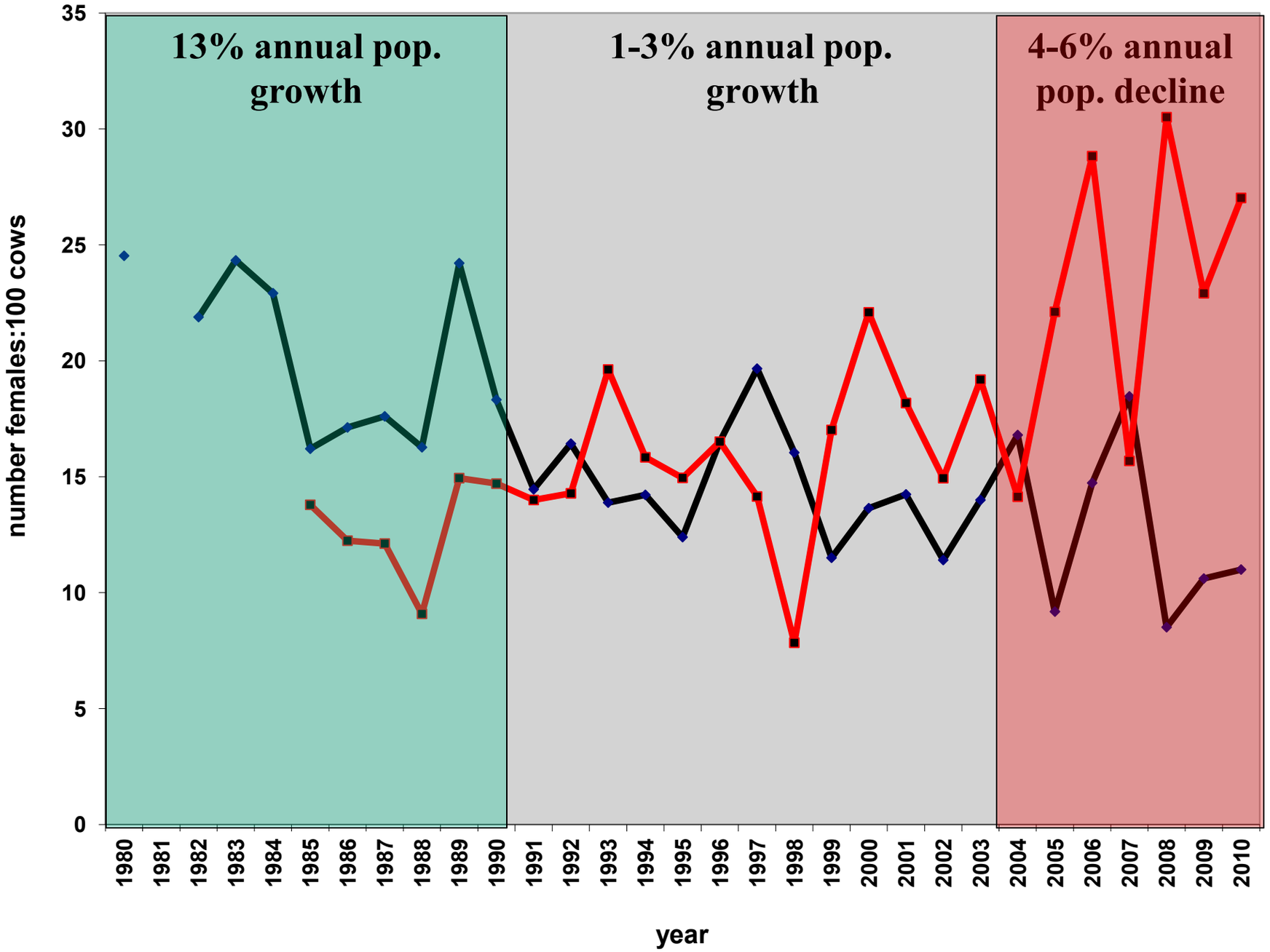



• WAH photographed in July 2011
• Updated population estimate by spring 2012

Western Arctic Herd: Female Recruitment vs. Adult Cow Mortality

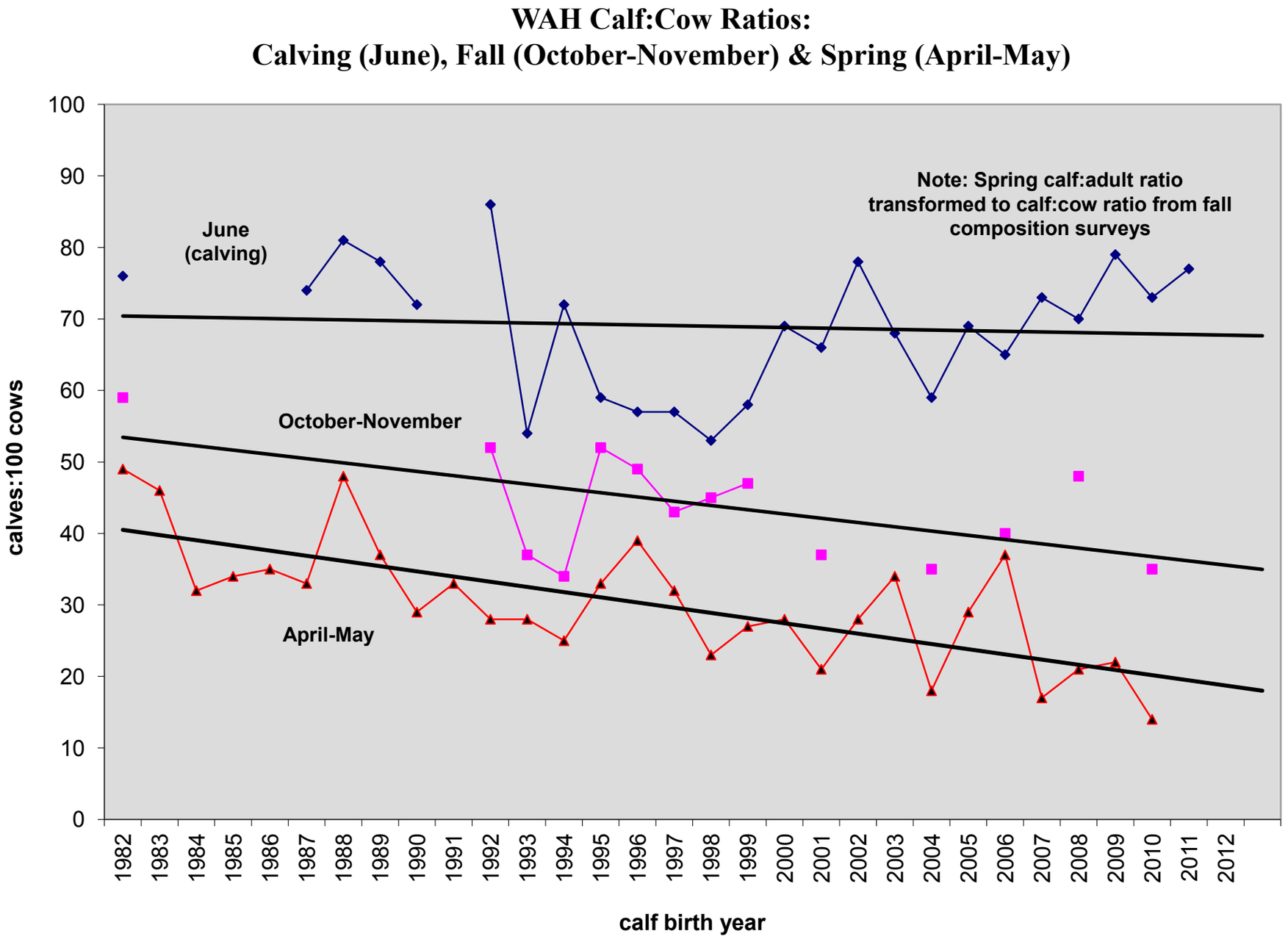


Western Arctic Herd: Female Recruitment vs. Adult Cow Mortality



Possible Factors Driving Recruitment & Mortality

- **Females are producing calves: productivity isn't the problem**
- **Calf survival is declining especially during 1st summer**
- **No change in calf survival from fall to spring**

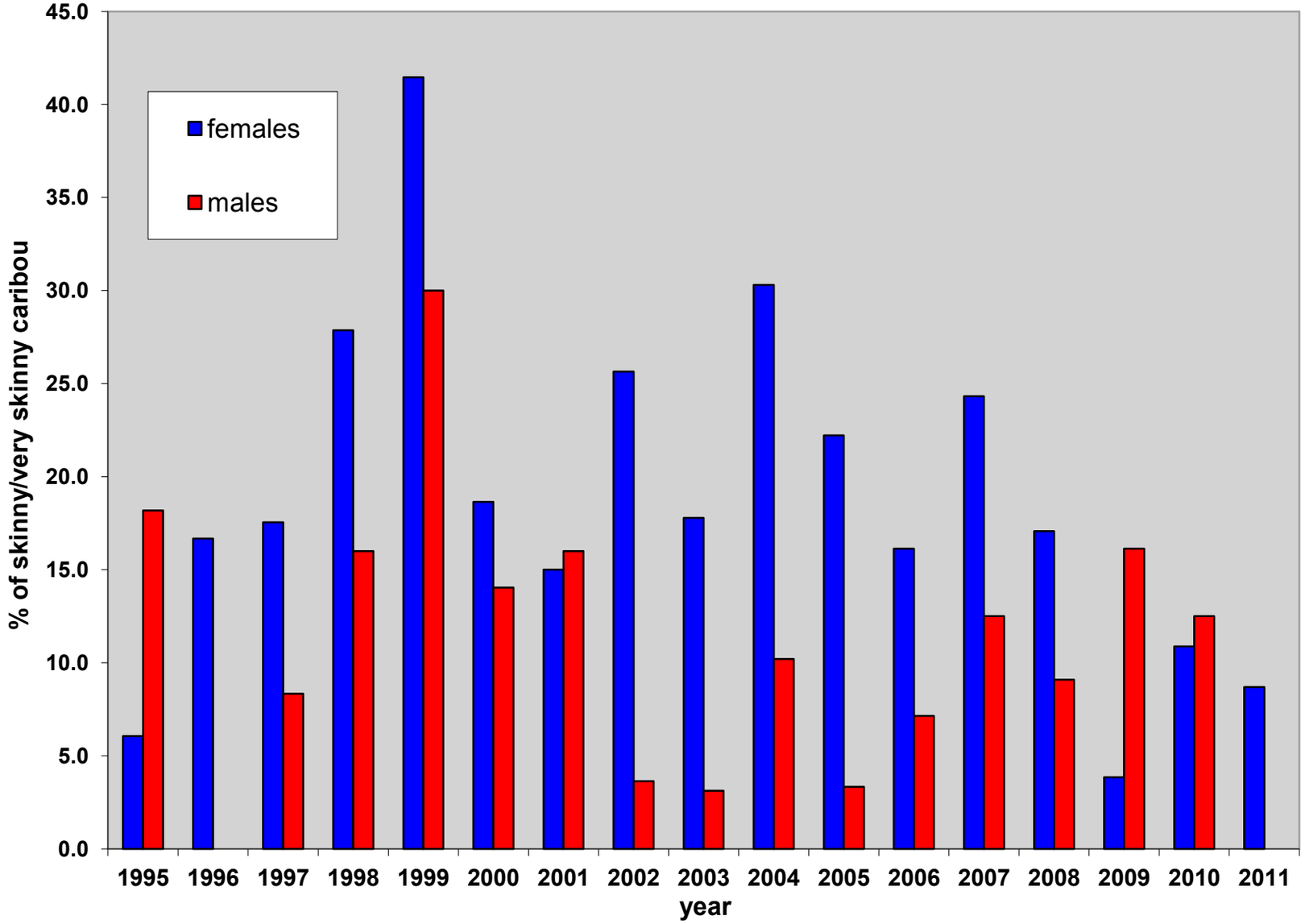


• **WAH has not exceeded its carrying capacity & impacted its range causing mortality to increase**

• **From 1981-2005 BLM documented 14% decrease in lichen cover with corresponding increase in grasses/shrubs on WAH winter range; these changes in range have also been reflected in caribou fecal analyses**

• **However, changes in range condition have not been reflected in the body condition of WAH caribou**

Percentage of Skinny Caribou: September

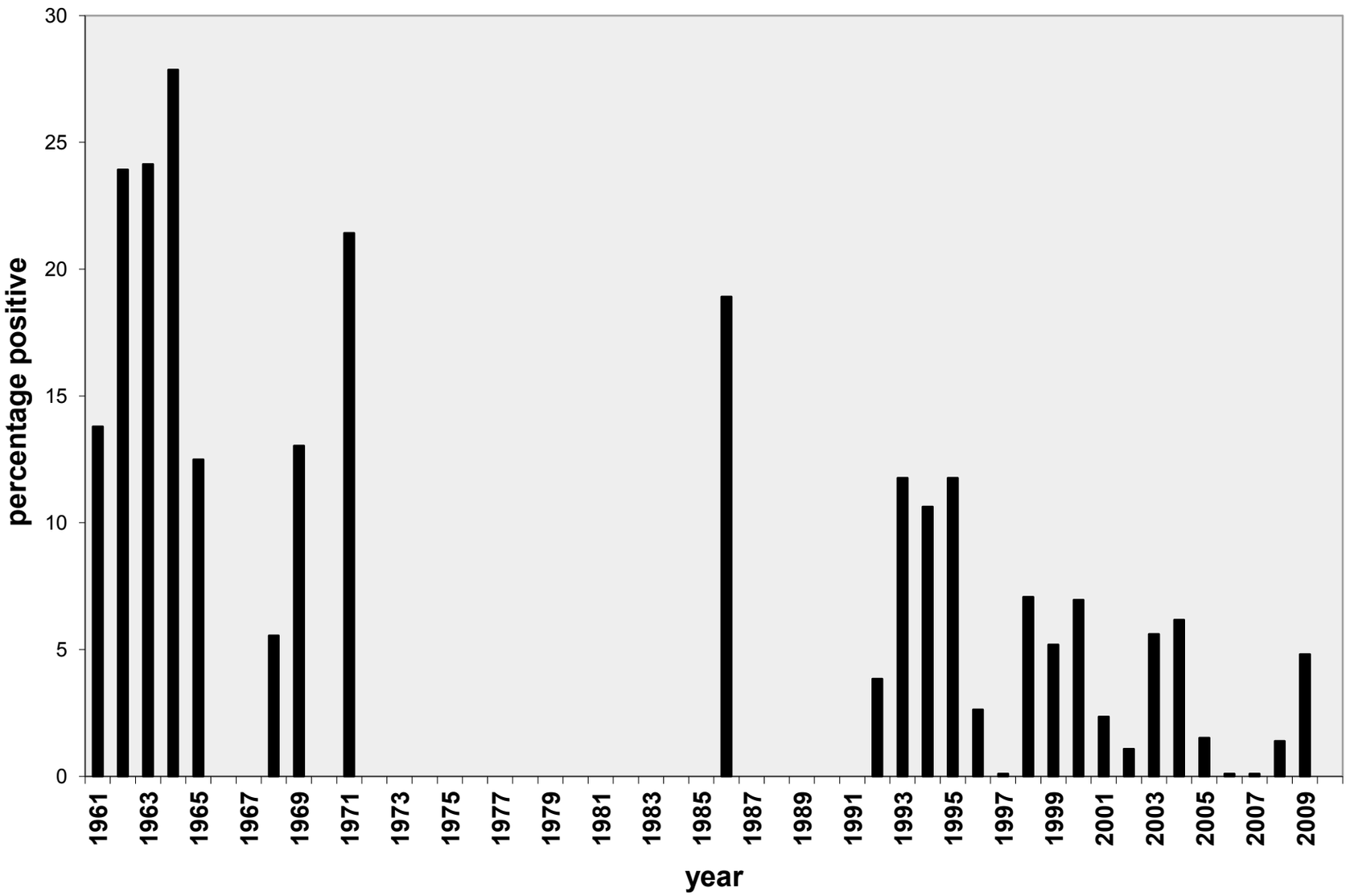


• **Although we're not seeing long term changes in caribou body condition, it appears that short term weather conditions are occasionally preventing caribou from accessing food that is present**

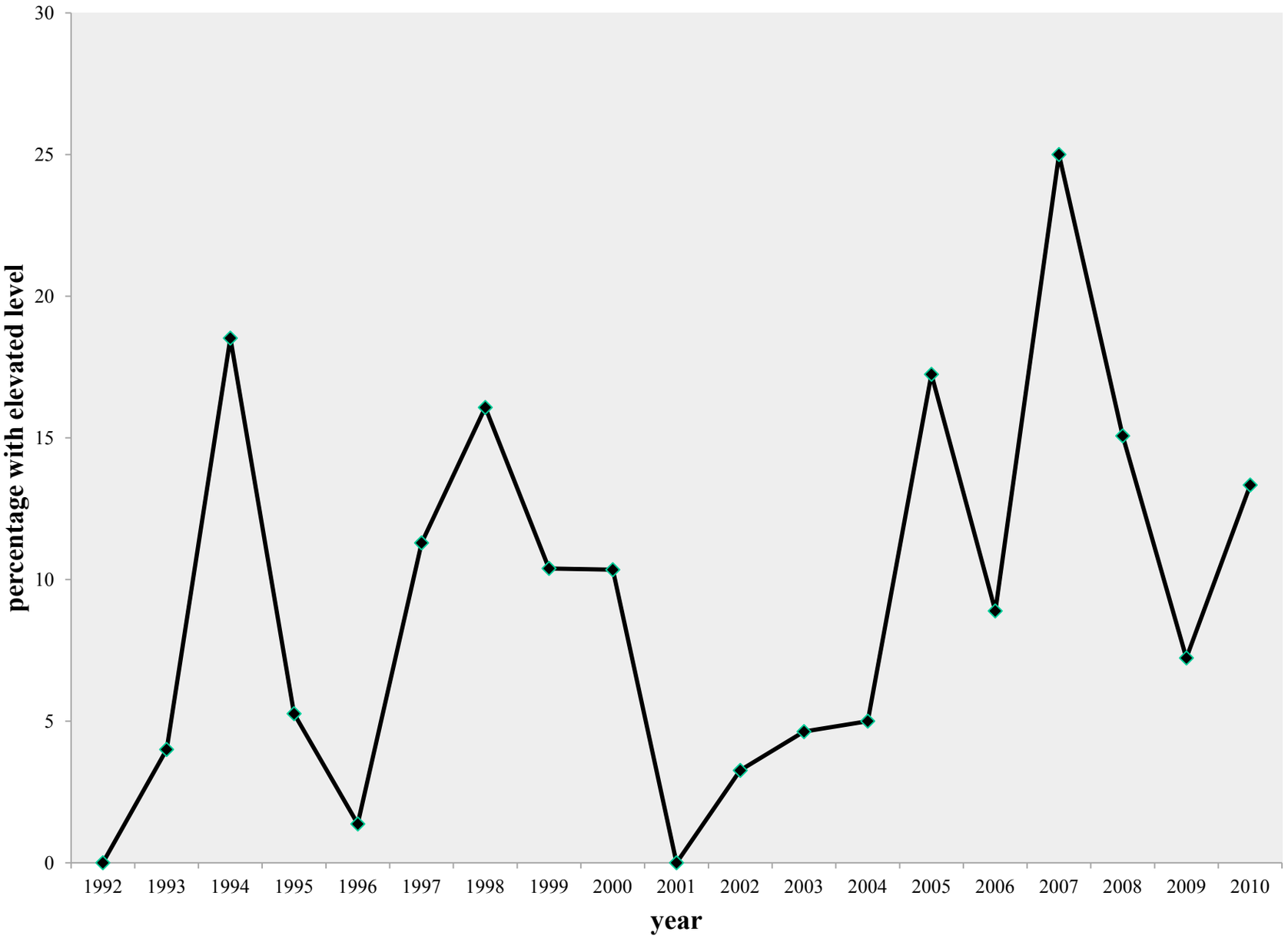
• **Mortality data & our field observations suggest this has happened several times since the mid 1990s**

- **Summer weather conditions have probably also affected caribou mortality**
  - **2 localized WAH mortality events near Cape Thompson: 1994-1995 and 1999-2000**

• **No evidence to suggest that diseases or parasites are increasing adult & calf mortality**



Haptoglobin Levels



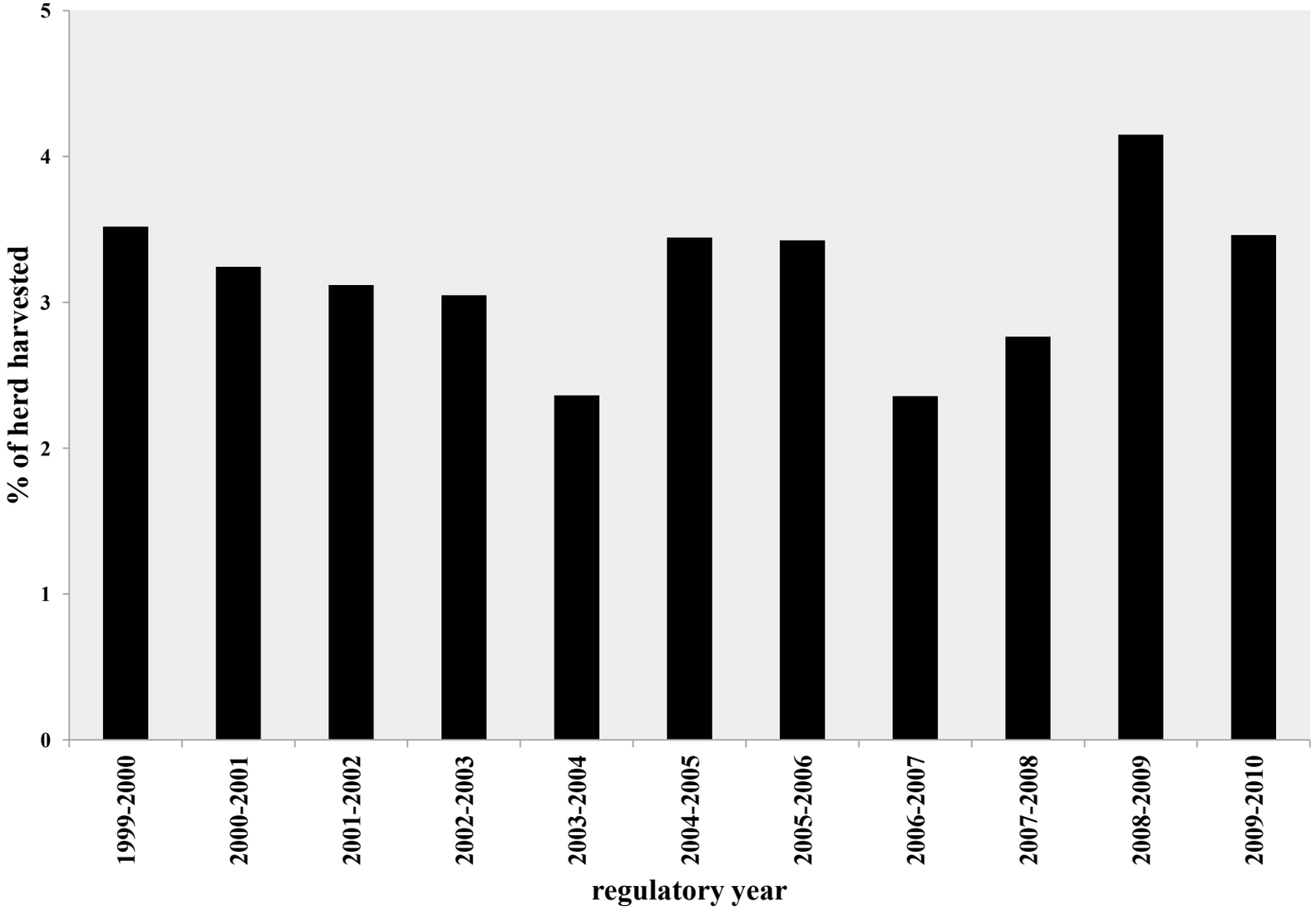
Haptoglobins are proteins that indicate inflammation from any source.

- **WAH health assessments: 2007 and 2010**

  - **Dr. Beckmen's impression was that WAH caribou are among the healthiest she's seen in the state**

  - **No red flags in any lab results from these tissue collections**

- **Harvests do not appear to be driving WAH numbers down**
  - **Harvests have ranged from 2-4% of WAH for >20 years**
  - **Demand is fairly stable and driven primarily by subsistence need**
  - **As herd declines, we will need to watch % of cows being harvested and bull:cow ratio**



• **Habitat fragmentation from resource development is not preventing caribou from reaching critical areas**

• **The WAH has one of the most intact total ranges of all large caribou herds in North America - Red Dog Mine is the only major development complex within its range**

• **Predators may be taking more WAH caribou now than 20 years ago – many qualifications:**

• **Little quantitative data regarding predator numbers in terms of population abundance or trends**

• **Little information regarding cause of death for collared caribou**

• **Numerous reports from the public, observations of Reg V staff , and very limited brown bear census data all suggest that bear numbers are relatively high now in Units 22, 23 & 26A: bears eat some caribou**

- **Wolves are the primary predator of caribou**

- **In Unit 22, wolf numbers appear higher now than 20 years ago but density is still modest compared to other portions of Alaska**

- **In Unit 23, my impression is that wolf numbers are higher now than anytime since 1988 – consistent with many reports from the public**

- **In Unit 26A where wolves have been counted, density increased from 2.2 to 4.4 wolves/1000 km^2 during 1998-2008; since then, hunters have reduced wolf density in some areas**

Summary: Population Dynamics

• Long-term, density dependent effects of predation are probably affecting caribou mortality

• Long-term, density dependent impacts to winter range are occurring but are probably not yet limiting WAH numbers

• Short-term, density independent effects of summer and winter weather appear to be causing spikes of high mortality – these spikes have become more frequent in recent years

• Harvests are probably not affecting WAH numbers now but could do so in the future if this herd continues to decline

Harvest Information

WAH Population & Harvest Objectives

C&T Finding: Positive

Population objective: >200,000 caribou

Harvest objective: 12,000-20,000 caribou

Amount Necessary for Subsistence (ANS): 8,000-12,000 caribou

At a population size of 200,000 caribou, the harvest objective would take 6-10% of the population – that's probably not sustainable

The harvest objective is simplistic: it does not consider proportion of cows in the total harvest

Limited community harvest data indicates 33% of subsistence harvest is cows, 67% is bulls (Subsistence Division data)

(Kiana 1999; Shaktoolik 1998 & 1999; Shishmaref 2000 & 2005)

WAH Seasons & Bag Limits

STATE REGULATIONS:

Resident hunters (Units 21D, 22, 23, 24 & 26A)**:**

Bag limit: 5 caribou/day
Bulls No closed season
Cows Season closed May 15-June 30

Nonresident hunters:

Season dates same as for resident hunters
Units 21D, 22, 24 & 26A - Bag limit 5 caribou/yr
Unit 23 – Bag limit 2 caribou/yr

FEDERAL REGULATIONS:

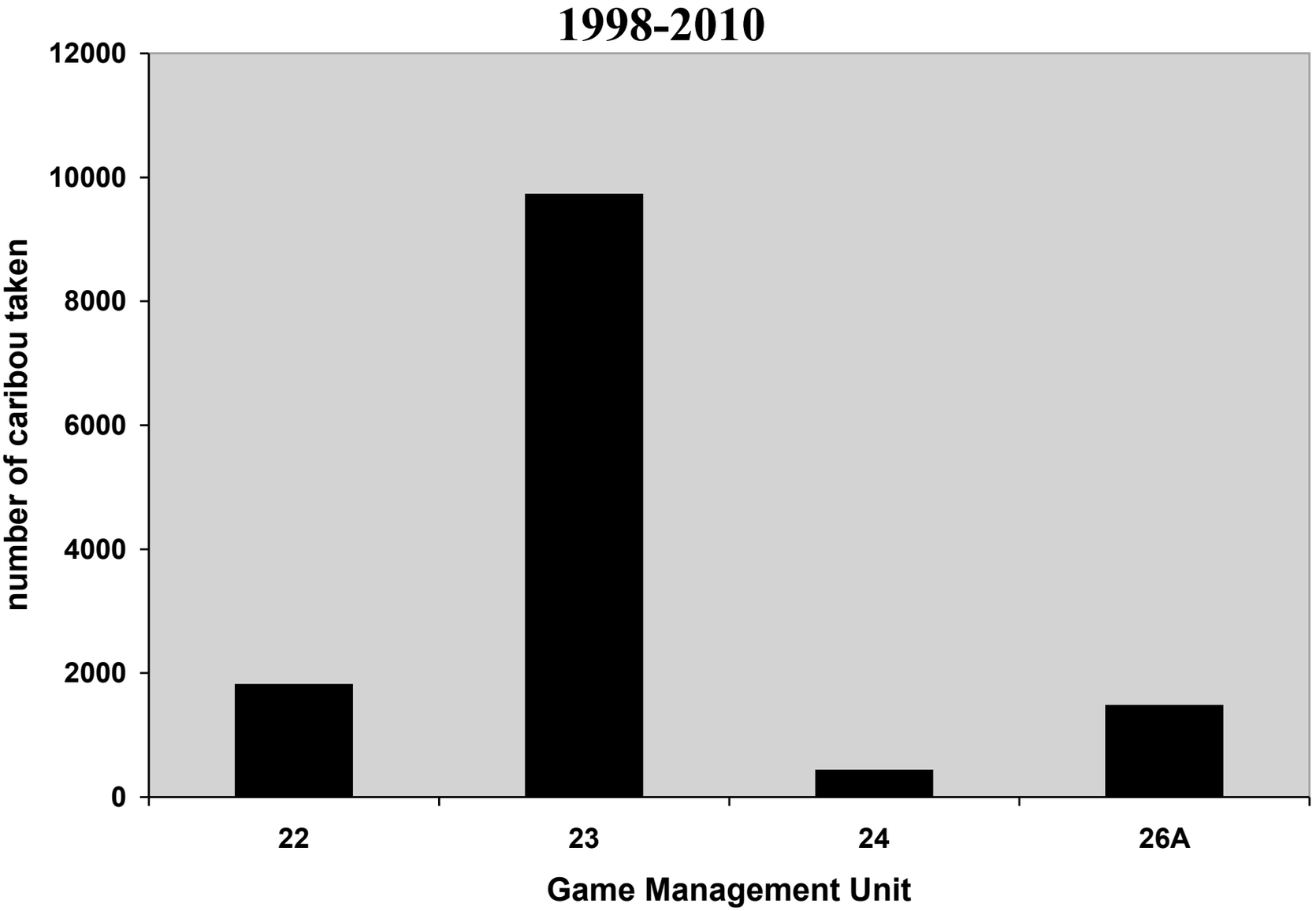
Season dates (bulls & cows) same as state regulations.
Bag limits:

Unit 21D 5 caribou/day
Unit 22 5 caribou/day
Unit 23 15 caribou/day
Unit 24 5 caribou/day
Unit 26A 10 caribou/day

WAH Management Plan: Draft Harvest Guidelines

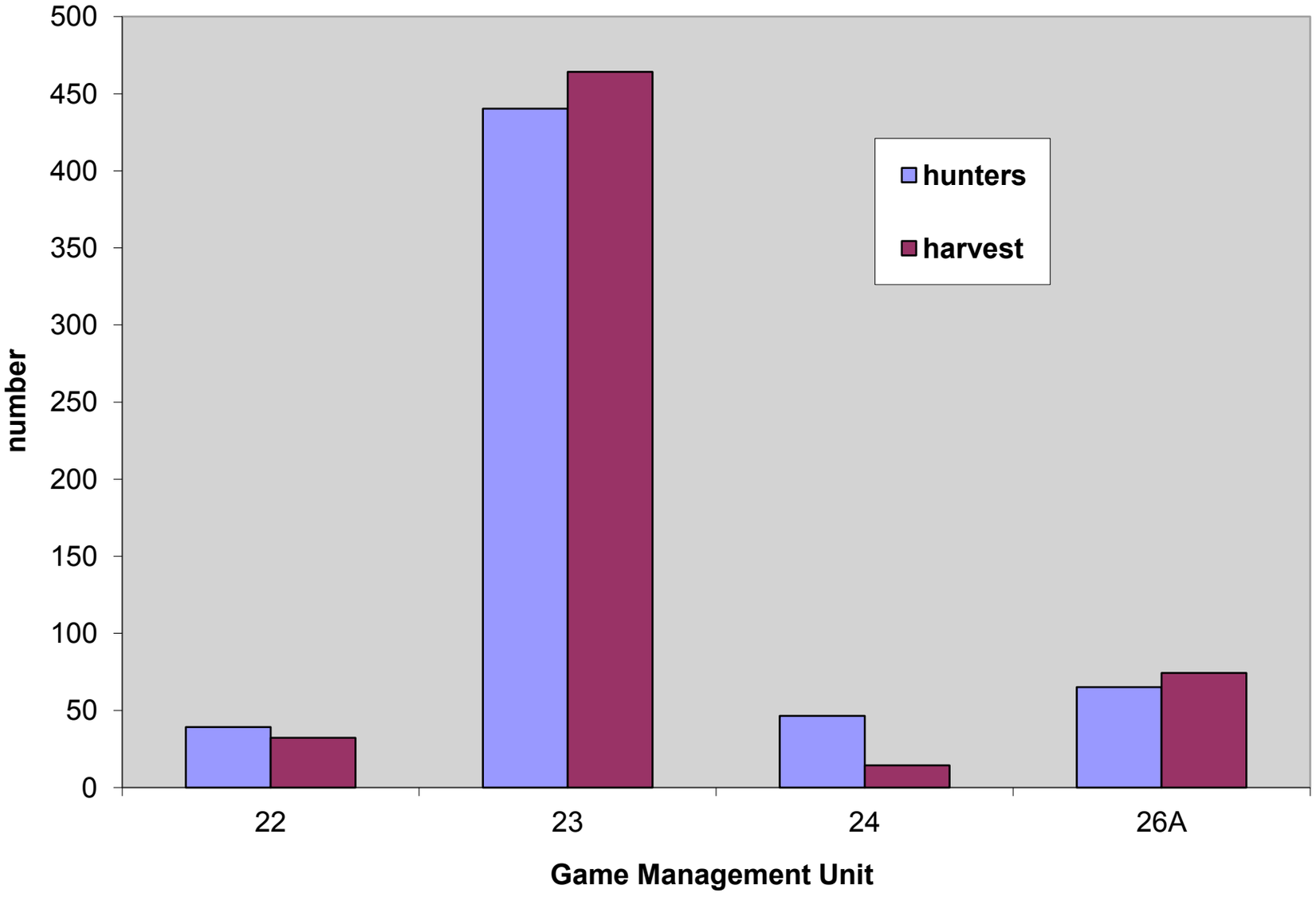
	Population Trend		
Management & Harvest Levels	Declining 6%	Stable 7%	Increasing 8%
Liberal	Pop: 265,000+ Harvest: 18,550-24,850	Pop: 230,000+ Harvest: 16,100-21,700	Pop: 200,000+ Harvest: 16,000-21,600
Conservative	Pop: 200,000-265,000 Harvest:14,000-18,550	Pop: 170,000-230,000 Harvest:11,900-16,100	Pop: 150,000-200,000 Harvest:12,000-16,000
Preservative	Pop:130,000-200,000 Harvest: 8,000-12,000	Pop: 115,000-170,000 Harvest:8,000-11,900	Pop:100,000-150,000 Harvest: 8,000-12,000
Critical	Pop: <130,000 Harvest: 6,000-8,000	Pop:<115,000 Harvest: 6,000-8,000	Pop: <100,000 Harvest: 6,000-8,000

Average Annual WAH Subsistence Harvest



* Numbers based on community harvest data; ~14,000 WAH caribou taken annually by people living within the range of the WAH (95-98% of total annual harvest)

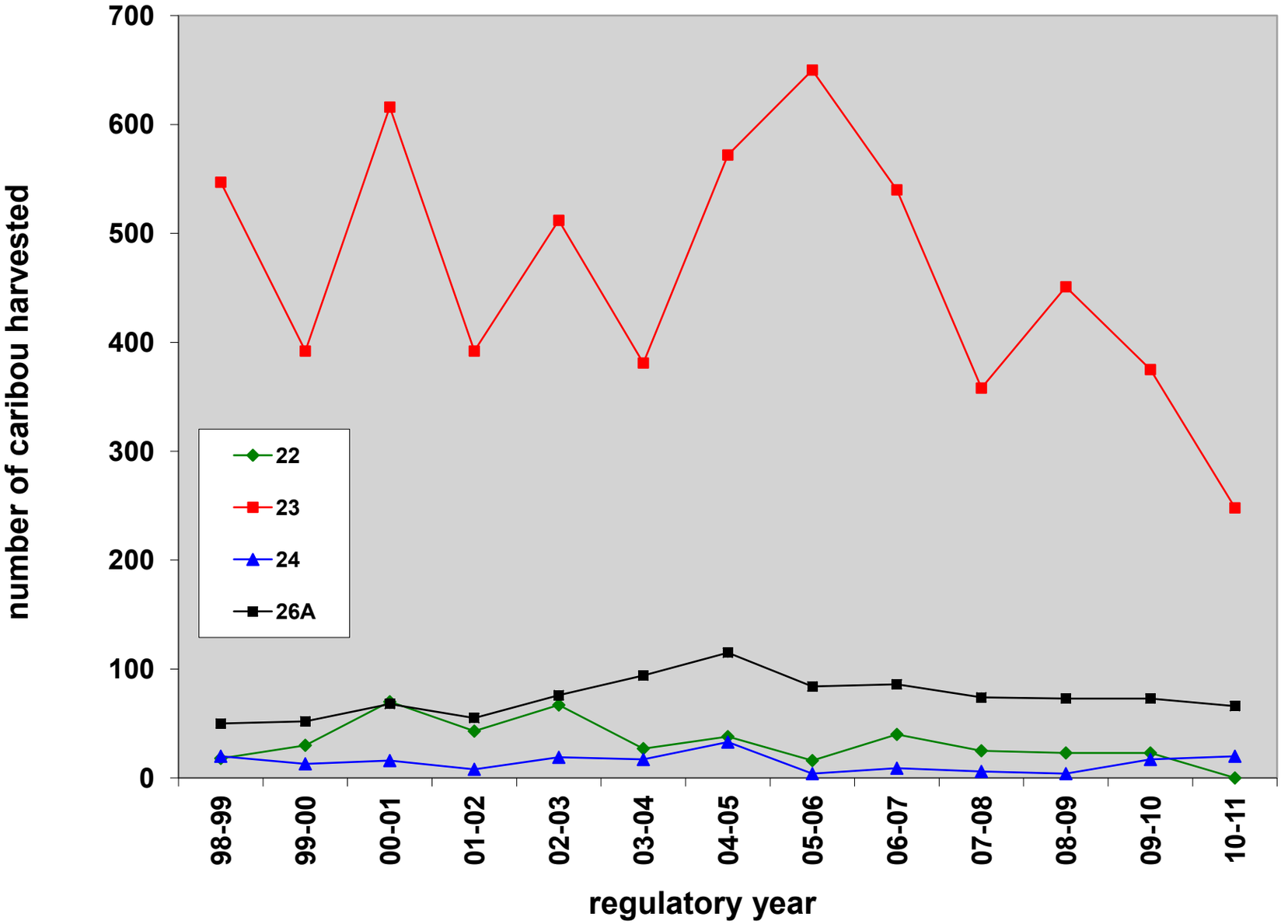
Average Annual WAH Visiting Hunters & Harvests



*** Numbers based on statewide caribou harvest report data; 1998-1999 through 2010-2011**

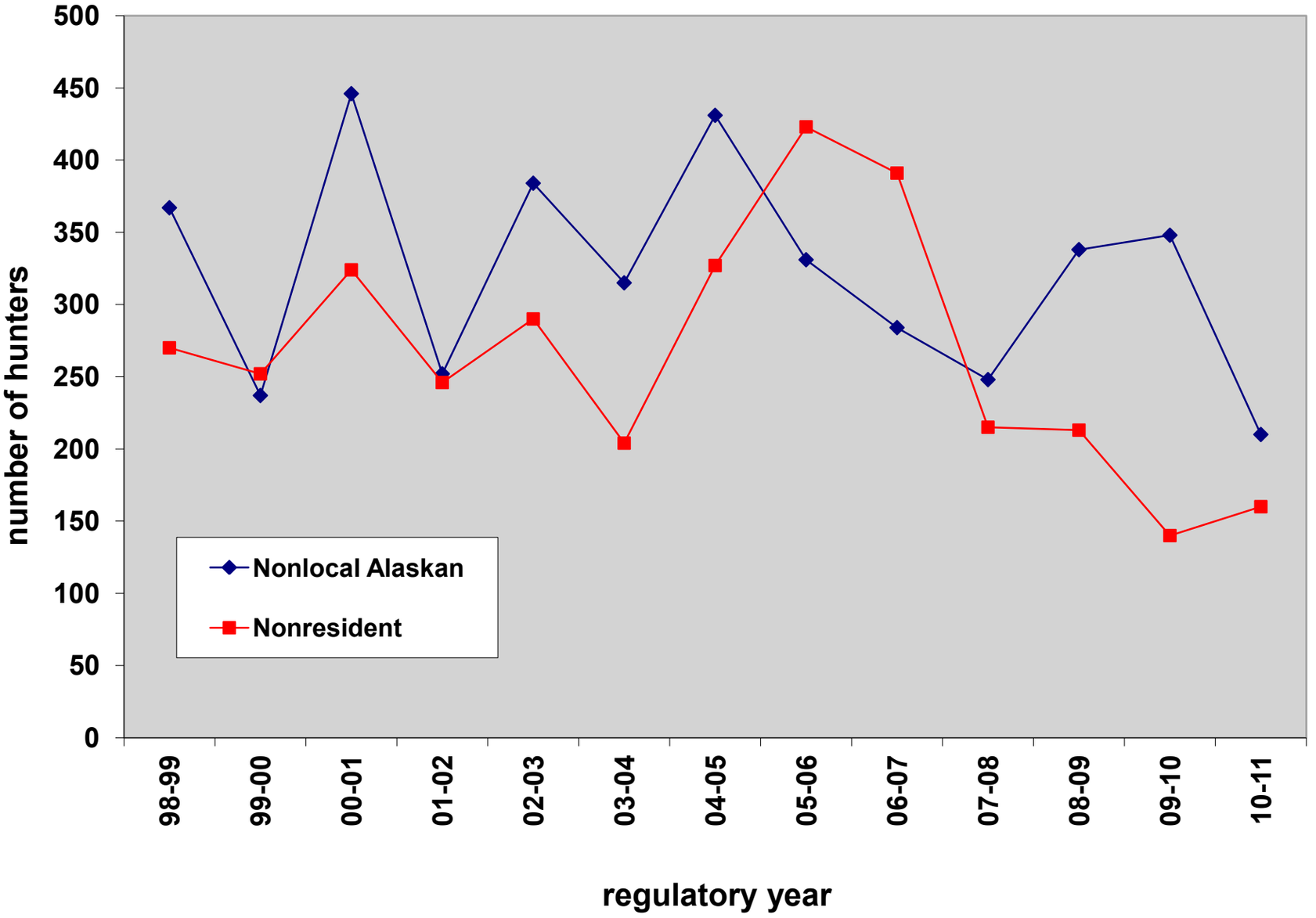
WAH Harvests by Visiting Hunters

(Resident and Nonresident Hunters Combined)



Data from statewide harvest ticket system

Numbers of Visiting WAH Hunters by Residence



Data from statewide harvest ticket system

There are no proposals for WAH caribou

Questions?