

# Kenai Peninsula Moose Research

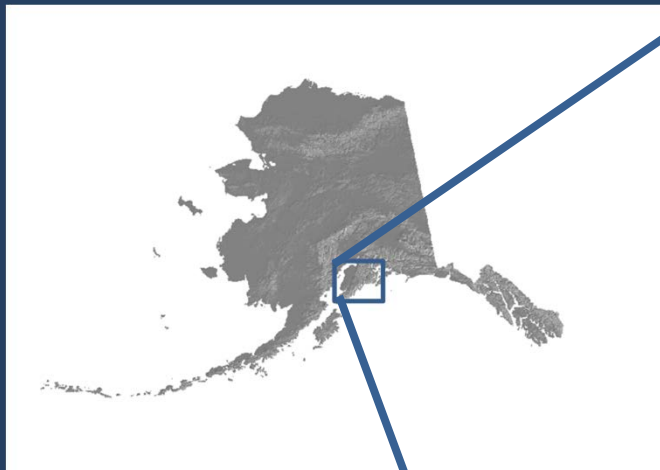
A photograph of a large adult moose with a bright orange collar and a smaller moose calf standing in a field of green vegetation. The adult moose is on the left, facing right, and has a thick coat of greyish-brown fur. The calf is on the right, also facing right, and has a smoother coat of brown fur. The background is filled with green grass and some bare branches.

Thomas McDonough, John Crouse, Jeff Selinger, Dan Thompson, and Ori Badajos  
Alaska Dept. of Fish and Game

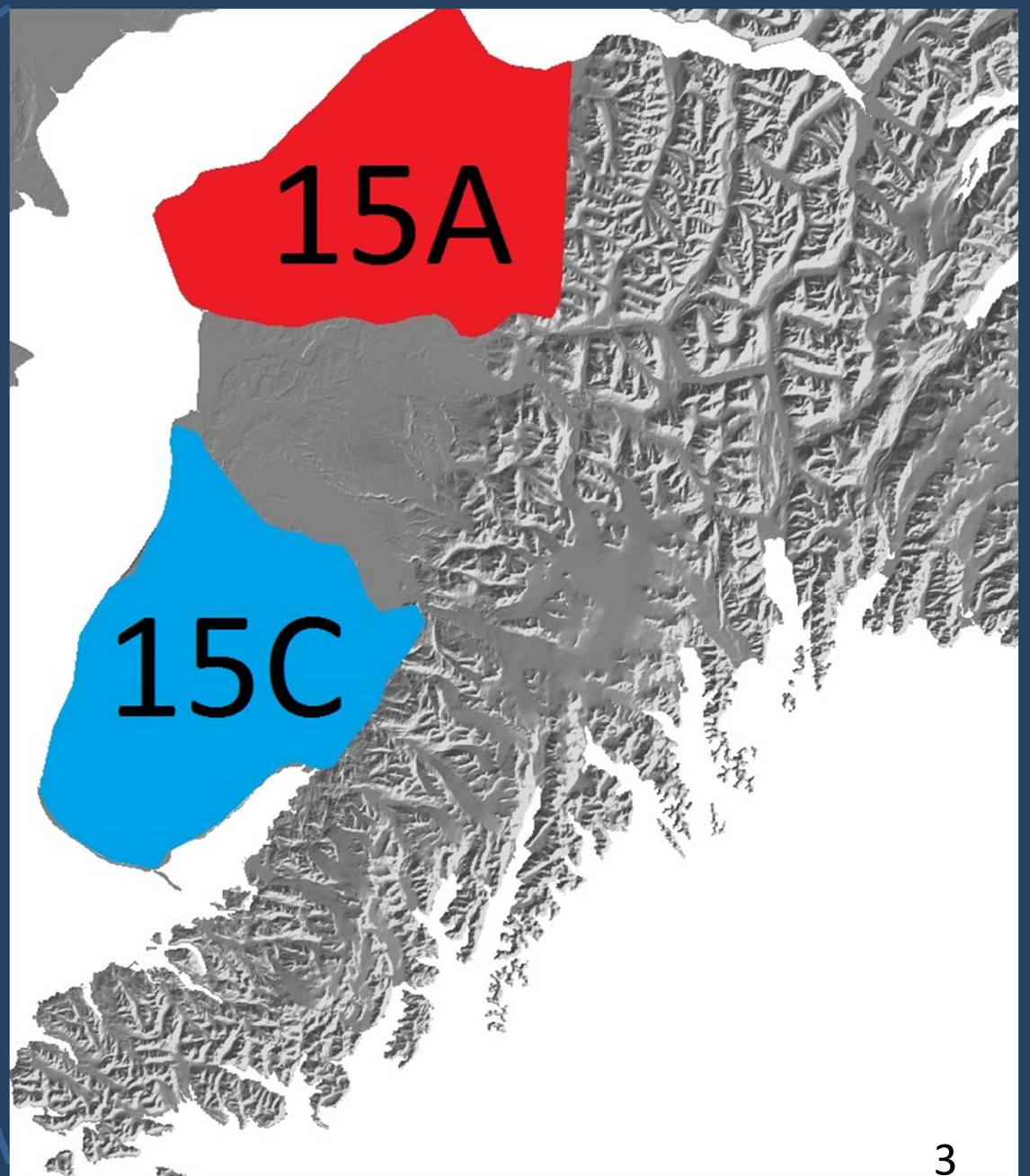


# Kenai Moose Presentation Summary

- History
  - habitat, snow depth, fire history, land ownership
  - status of IM objectives
- Current research findings
  - productivity
  - body condition
  - survival



# Kenai Peninsula







# 15A

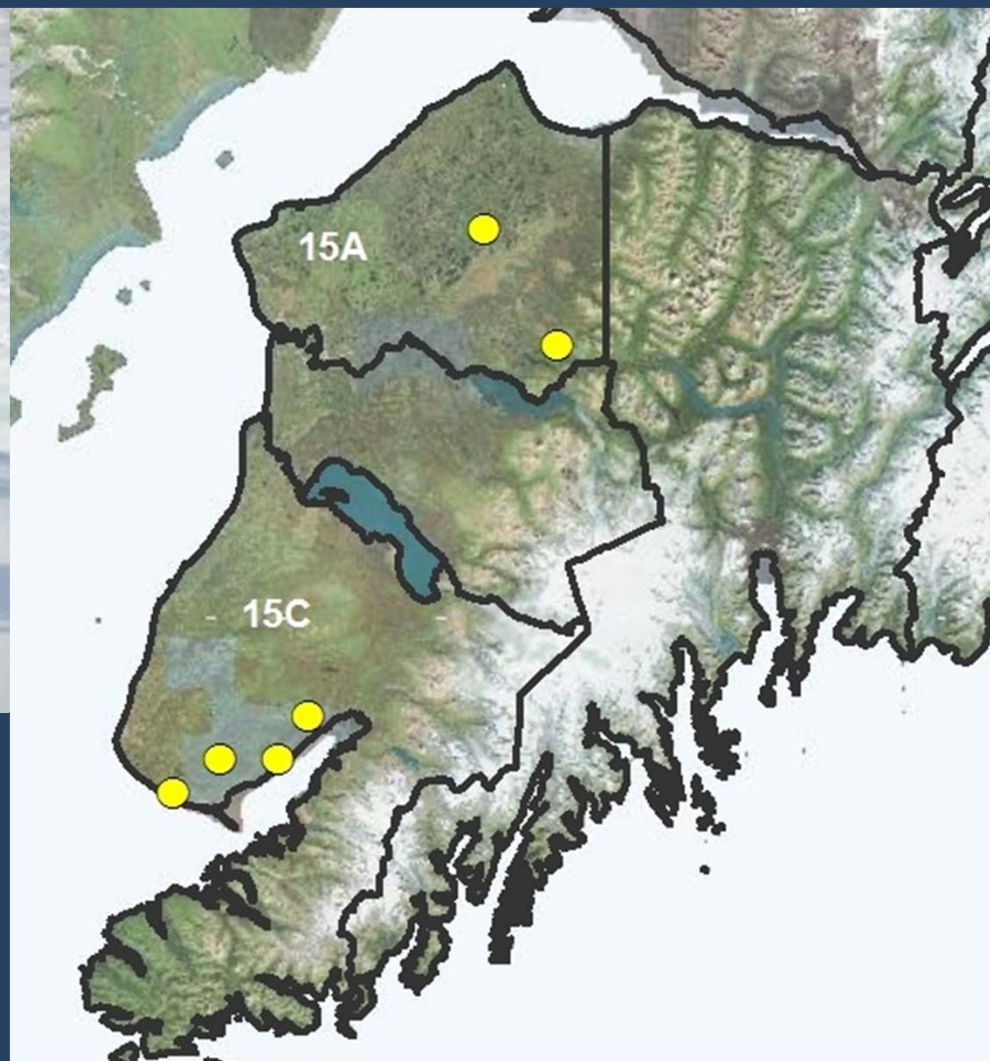


# 15C



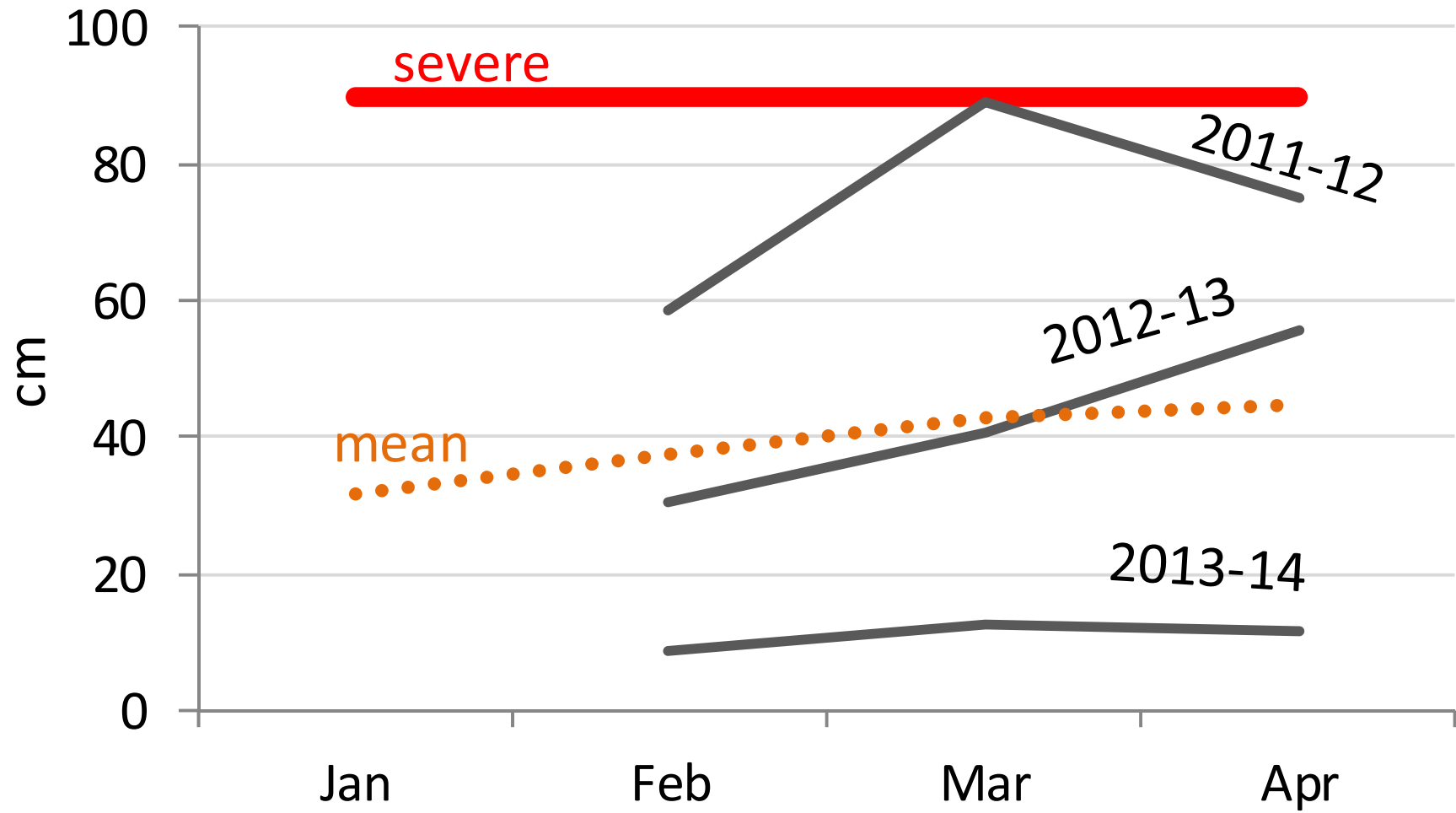


# Snow monitoring sites in GMUs 15A and 15C

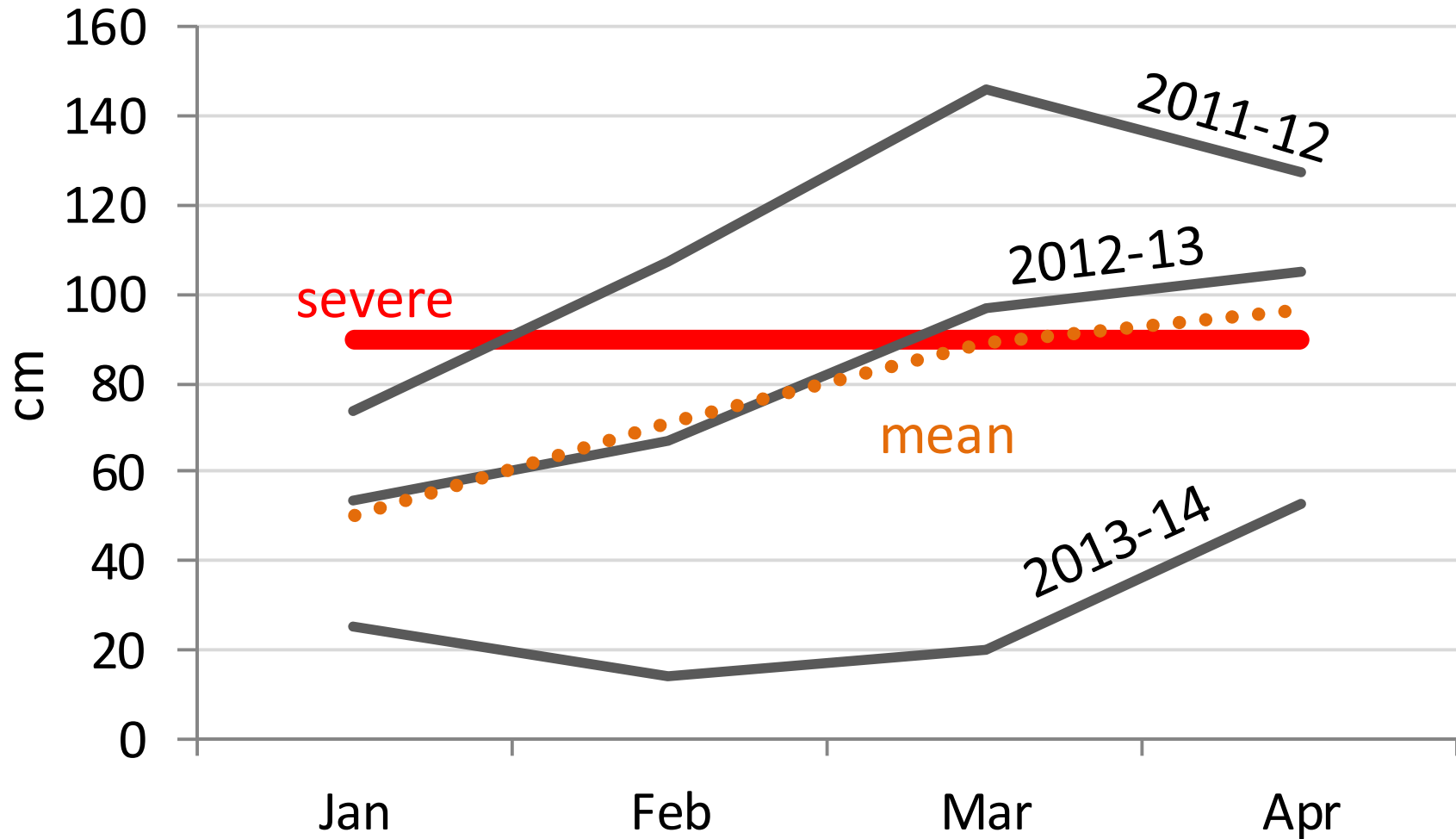




## Snow depth in 15A

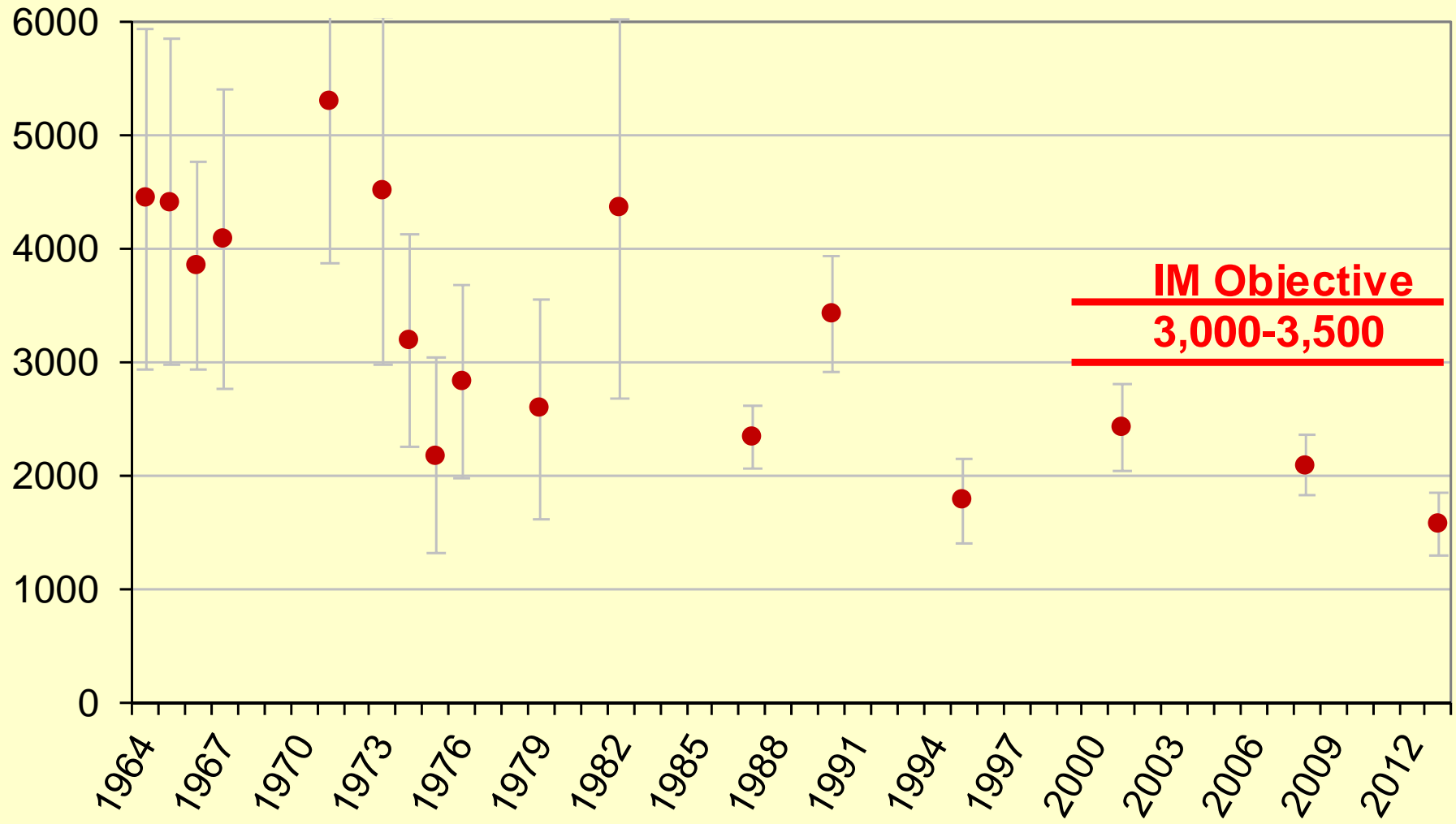


# Snow depth in 15C





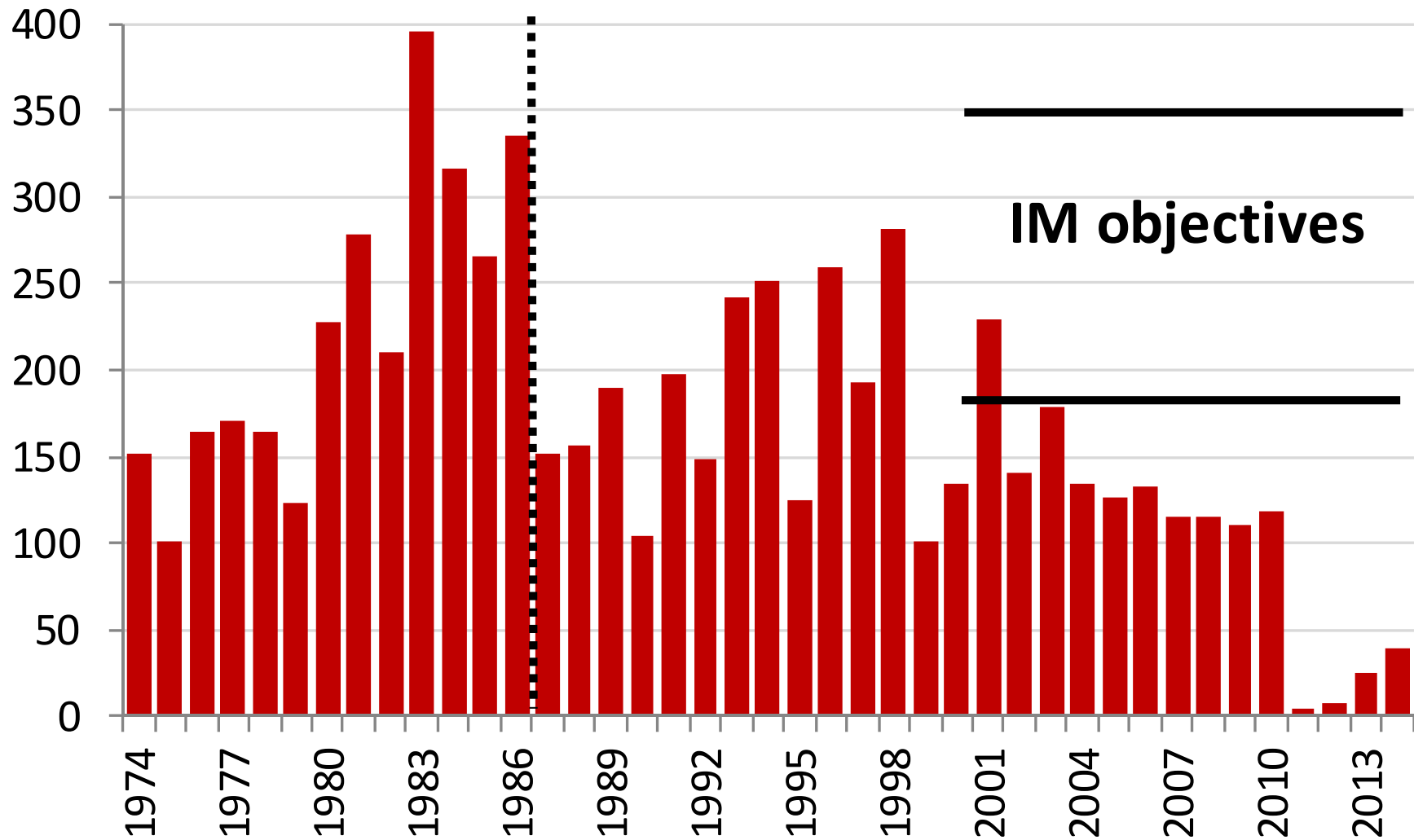
## Unit 15A moose population size estimates








# Moose harvest in unit 15A



# Landownership in 15A

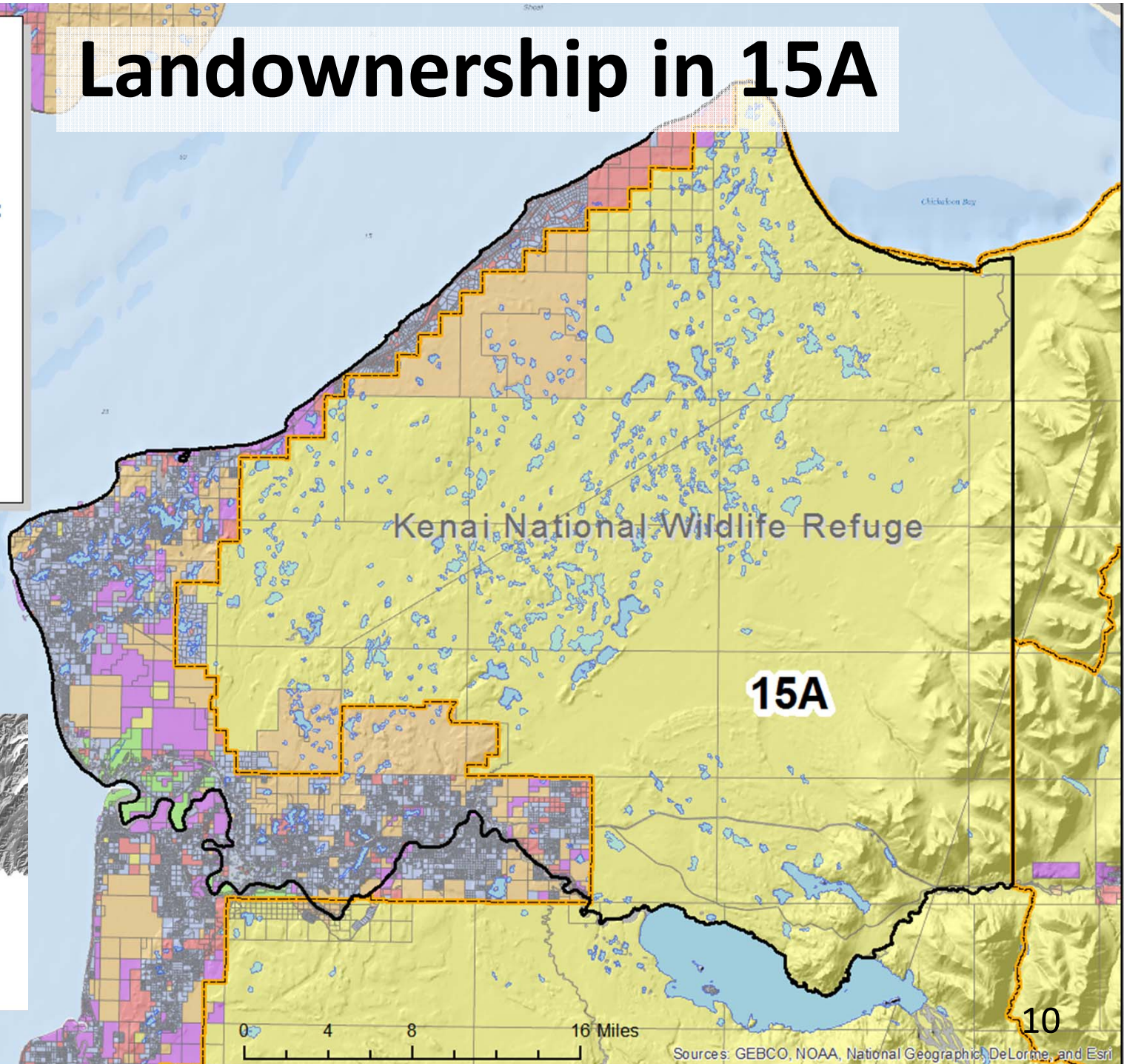
## Legend

-  GMU
-  Kenai Refuge

## Tax Parcels

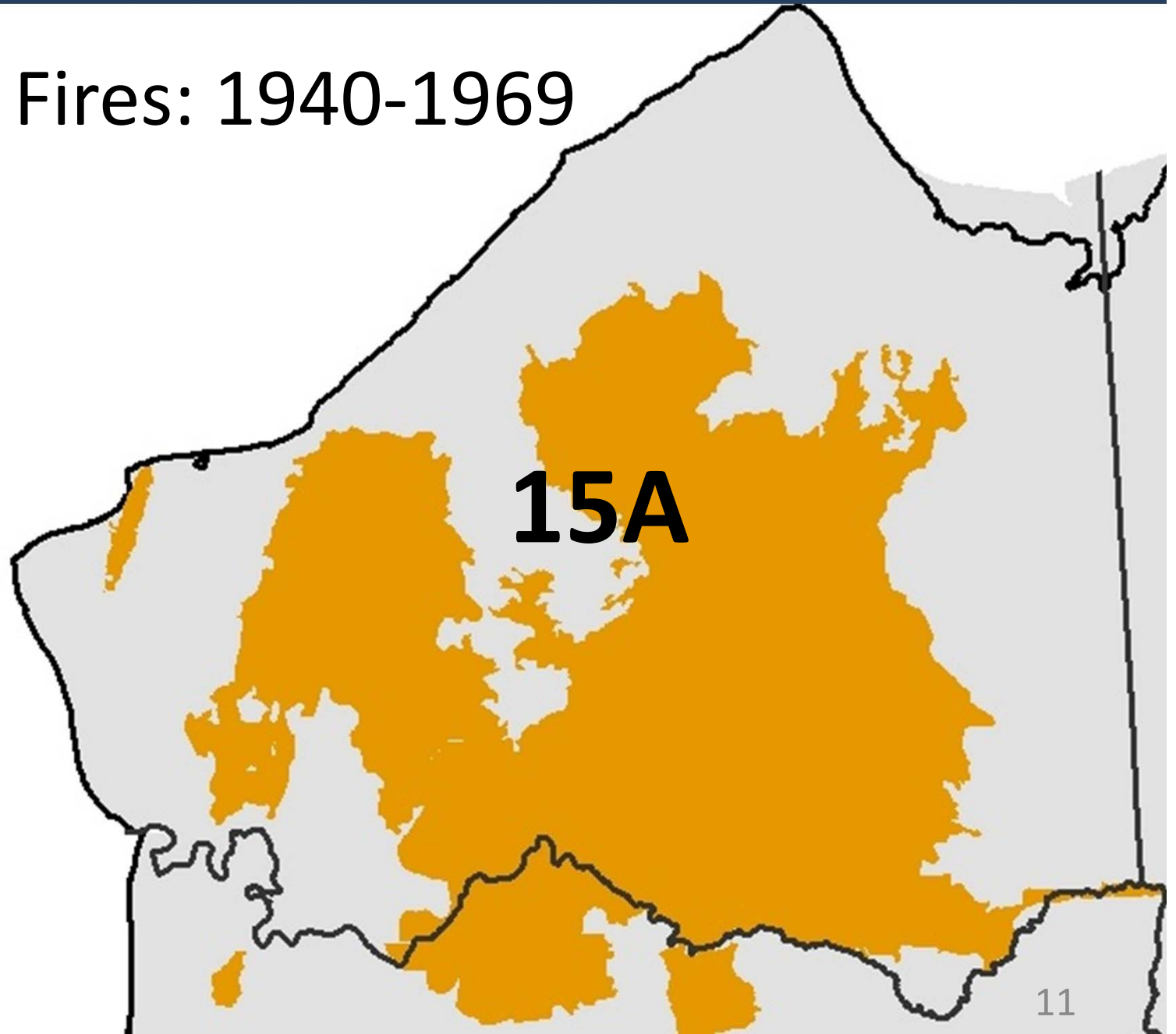
### OWNERSHIP TYPE:

-  Private
-  Federal
-  State
-  Borough
-  Municipal
-  Native
-  Native Allotment





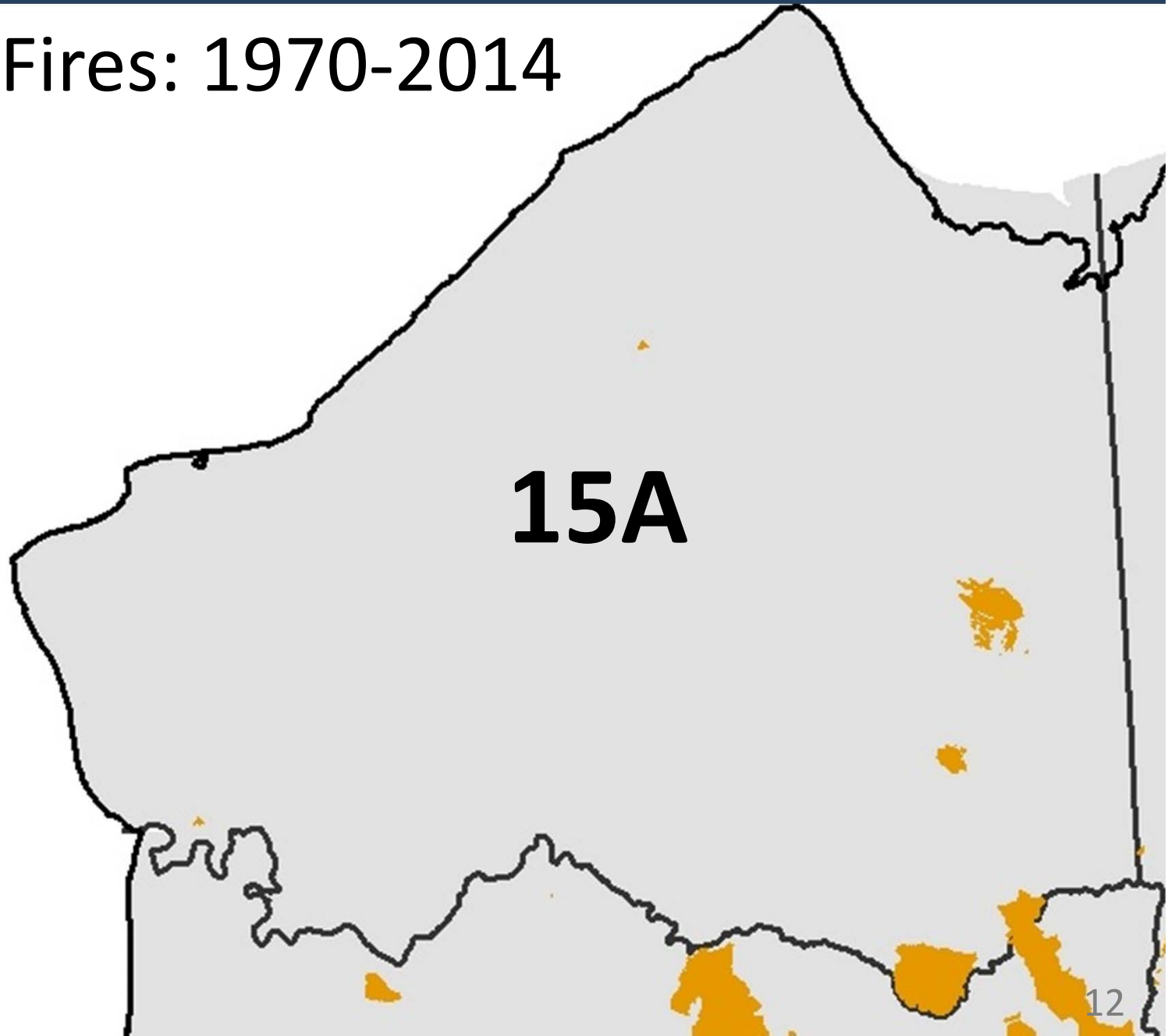
## Fires: 1940-1969

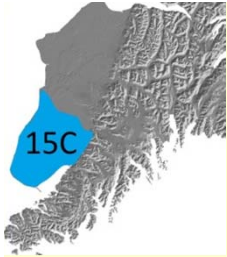




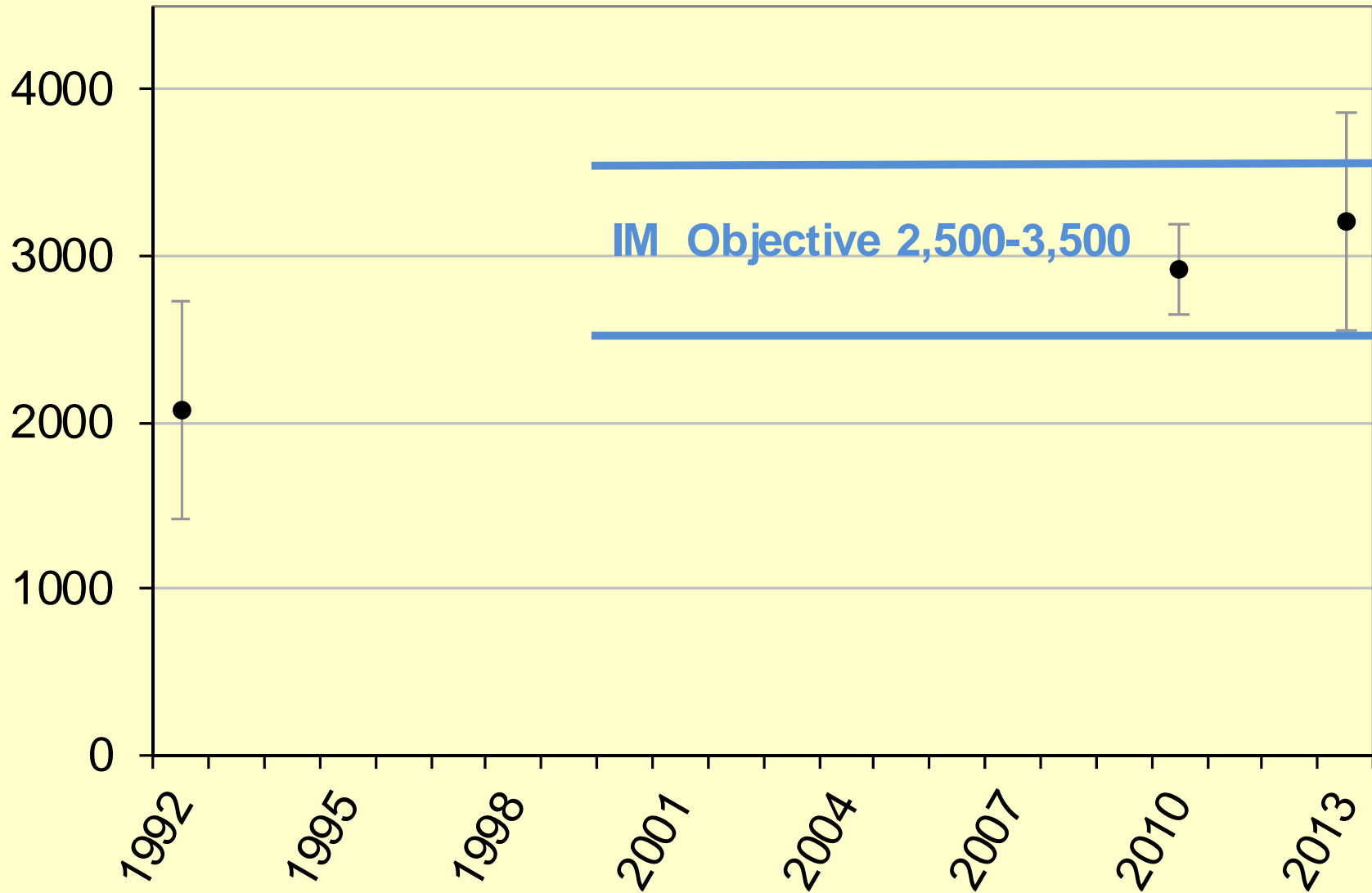


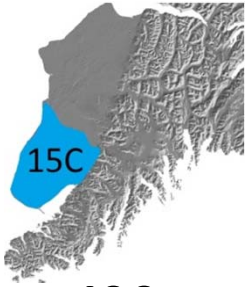
# Fires: 1970-2014



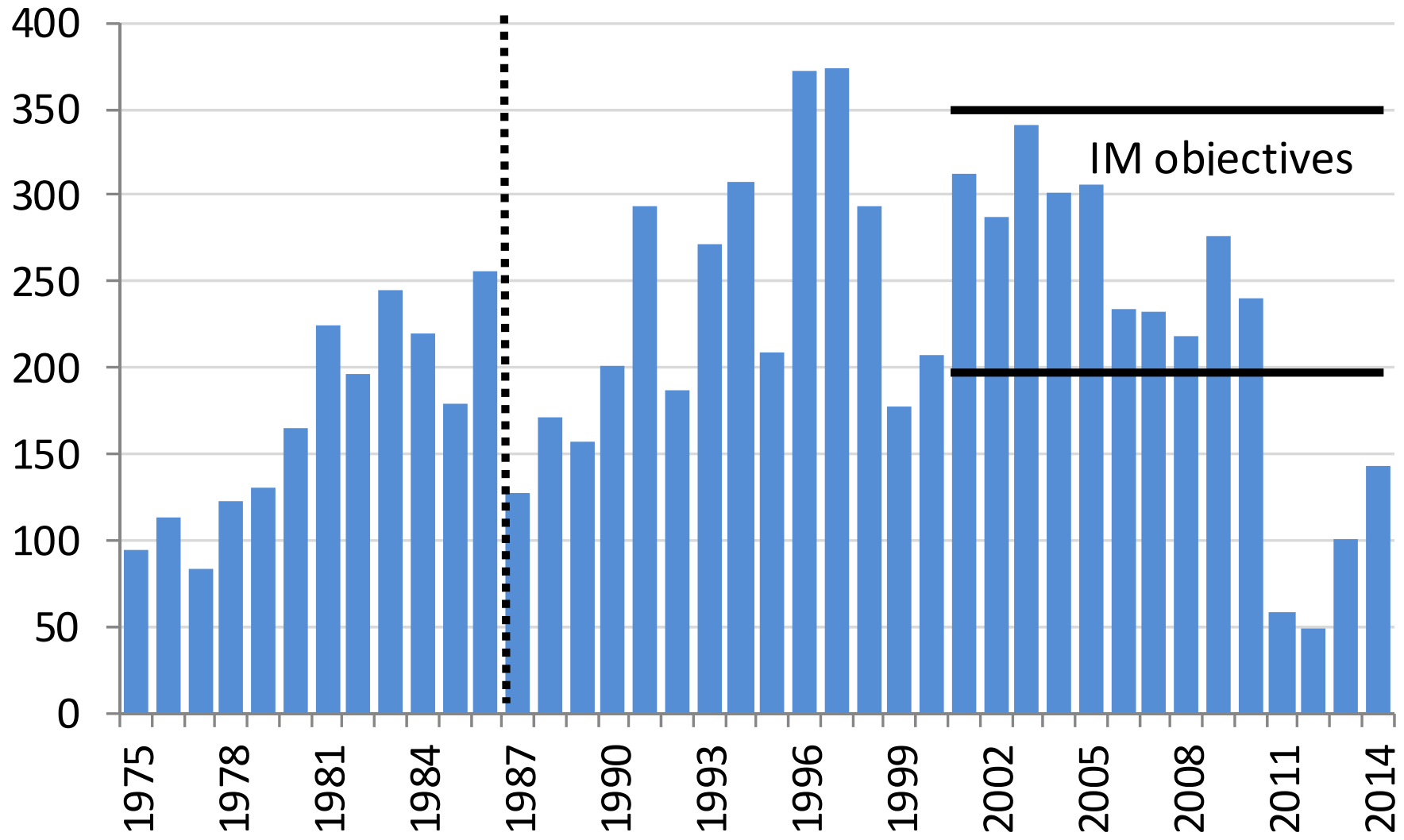


## Unit 15C Moose Population Size Estimates





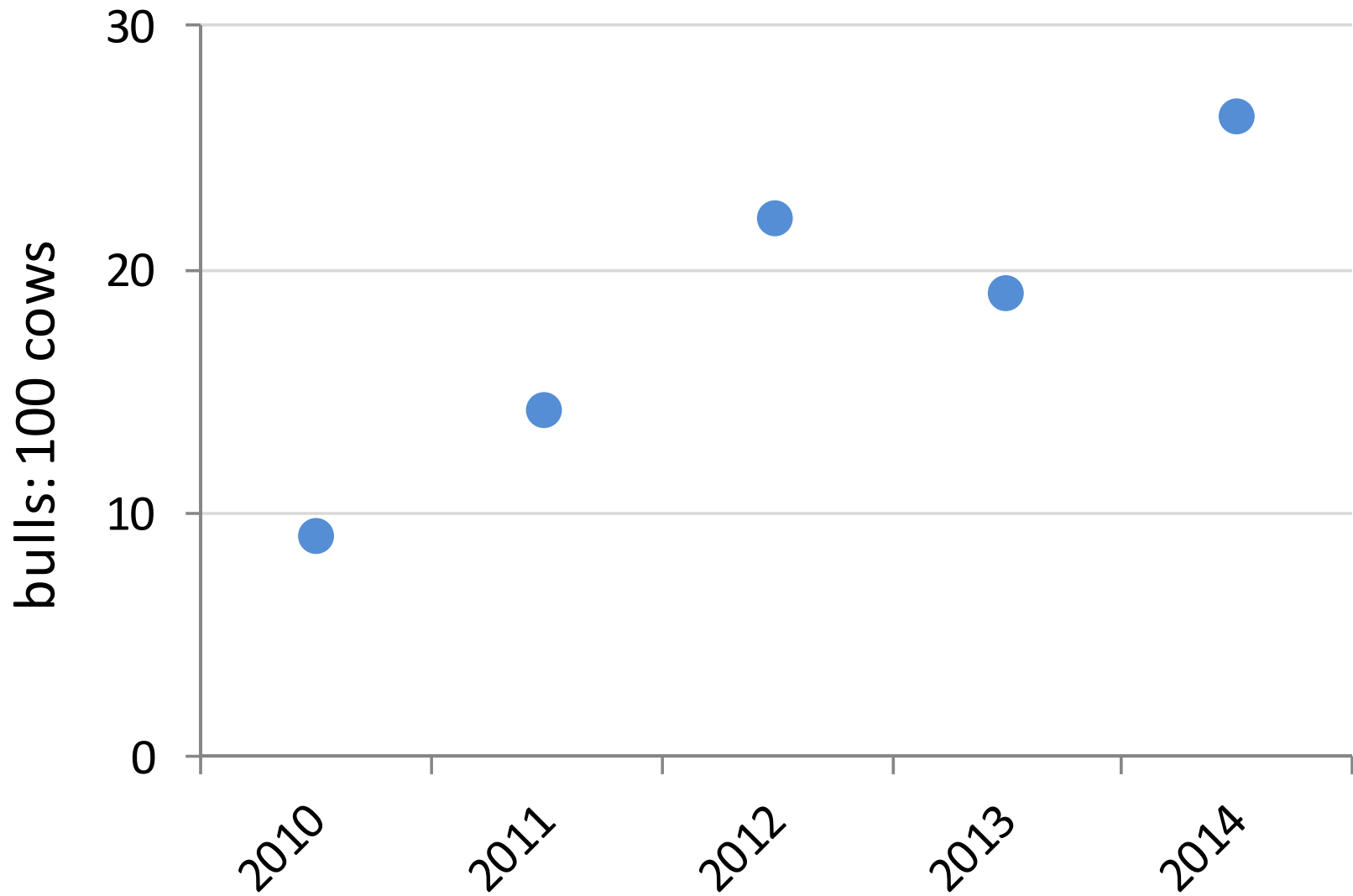
# Moose harvest in unit 15C







### Ratio of bulls : 100 cows in 15C (CAs 20,21,24)



# Landownership in 15C

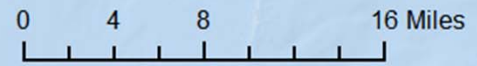
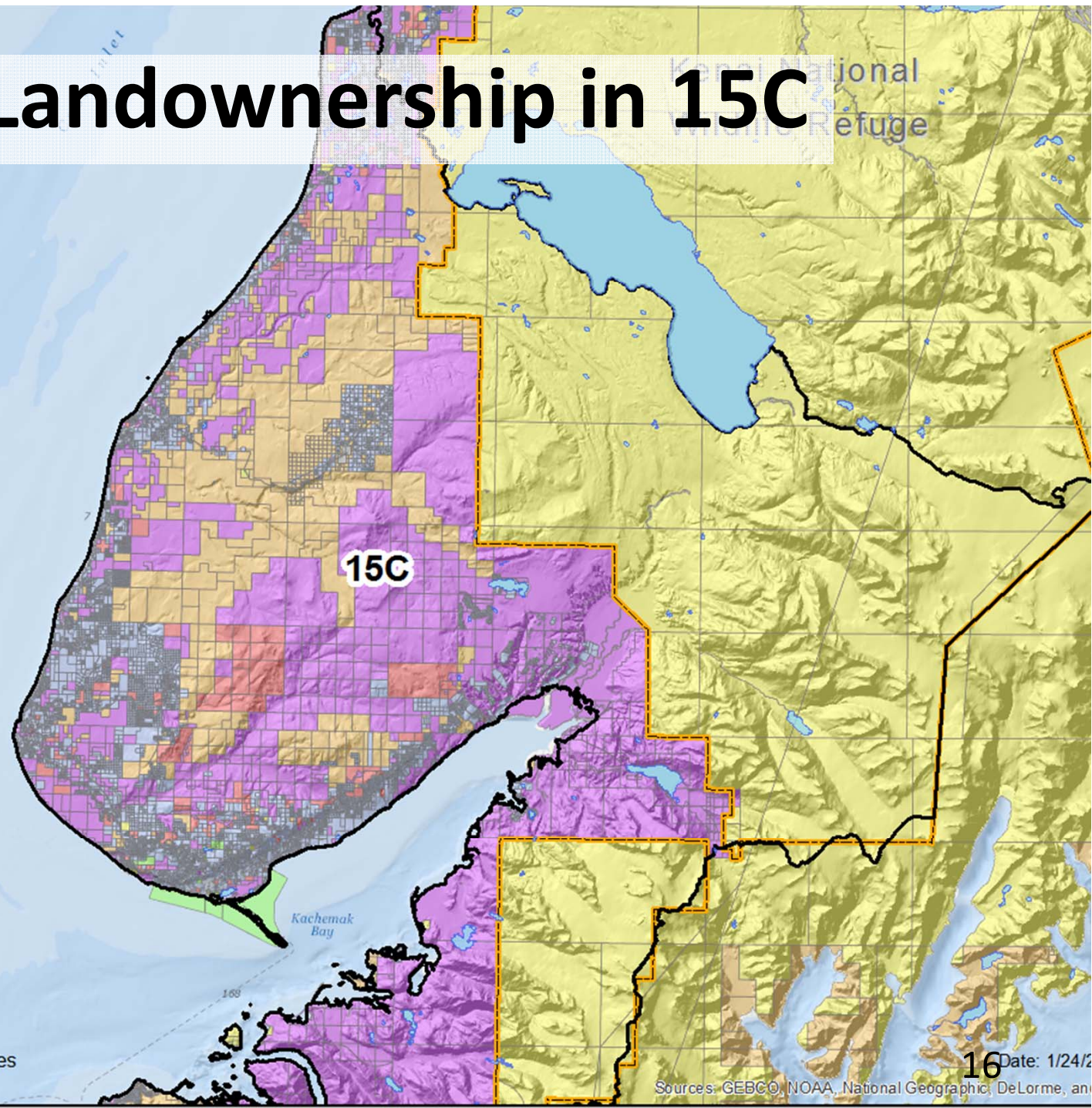
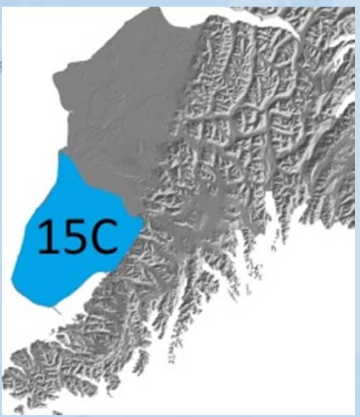
**Legend**

- GMU
- Kenai Refuge

**Tax Parcels**

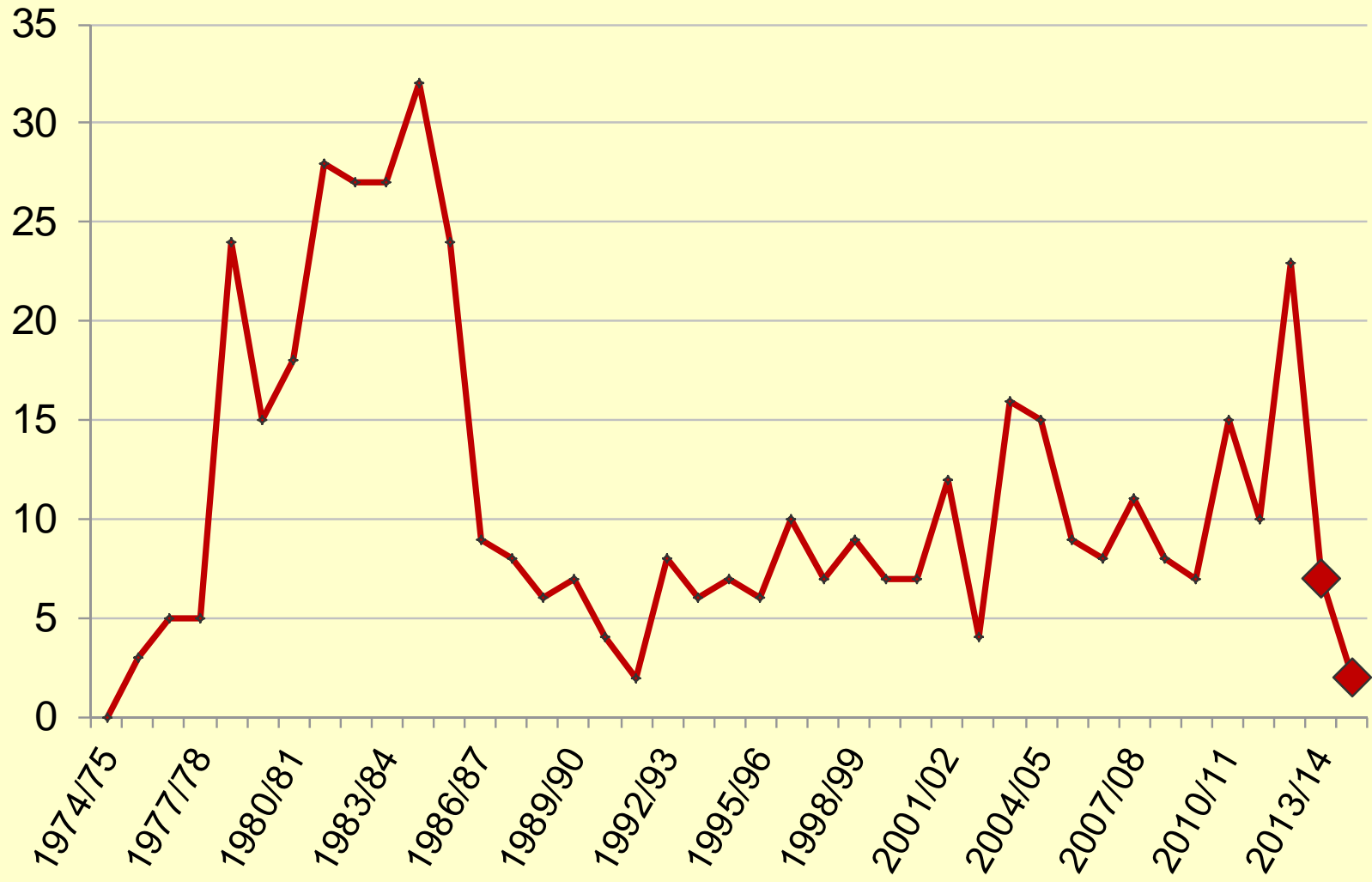
**OWNERSHIP TYPE:**

- Private
- Federal
- State
- Borough
- Municipal
- Native
- Native Allotment

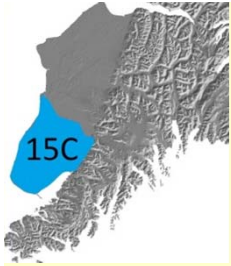




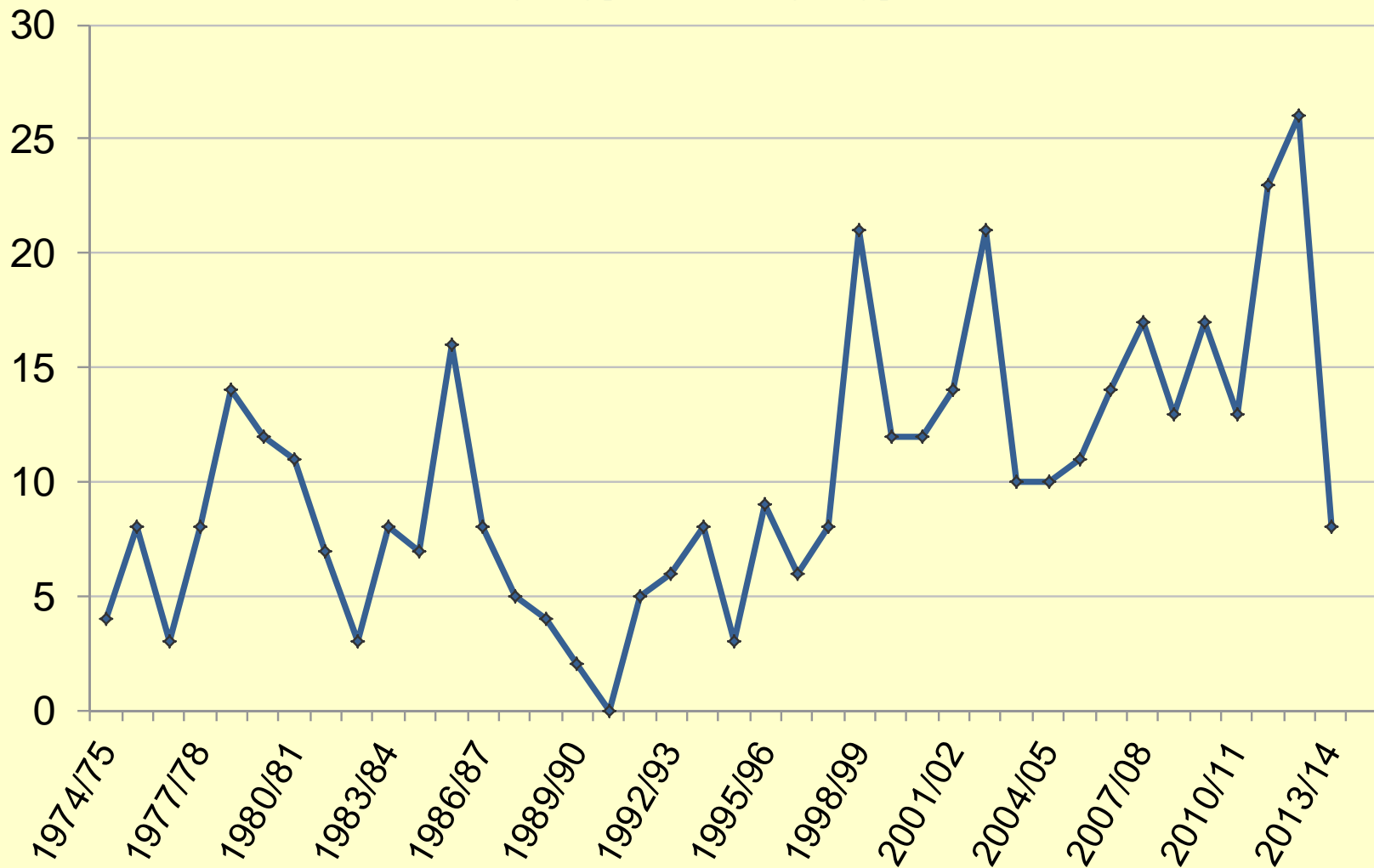
## Wolf Harvest in GMU 15A 1973/74 - 2014/15







## Wolf Harvest in GMU 15C 1973/74 - 2013/14



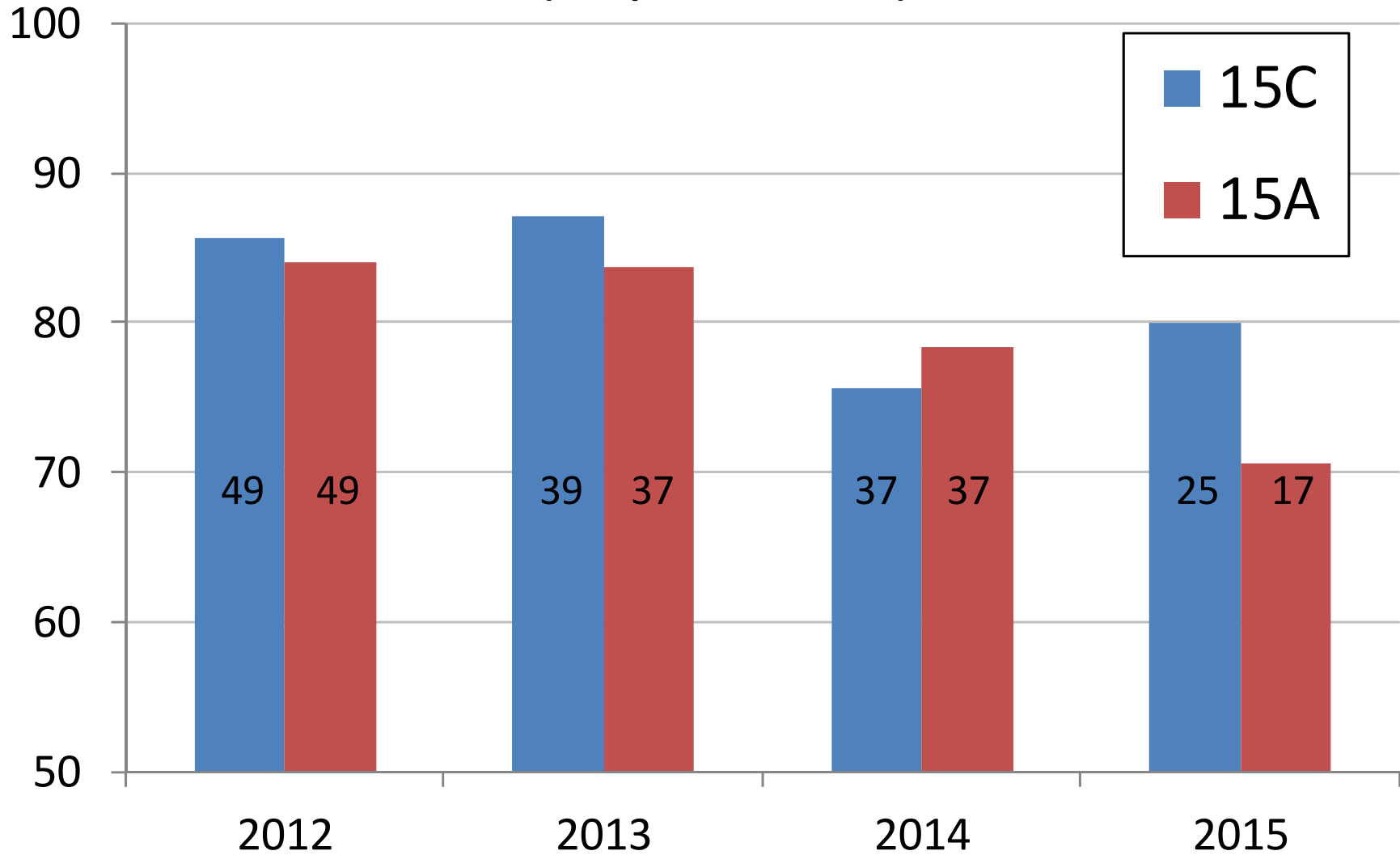
# Productivity

- pregnancy
- parturition
- twinning
- reproductive pauses



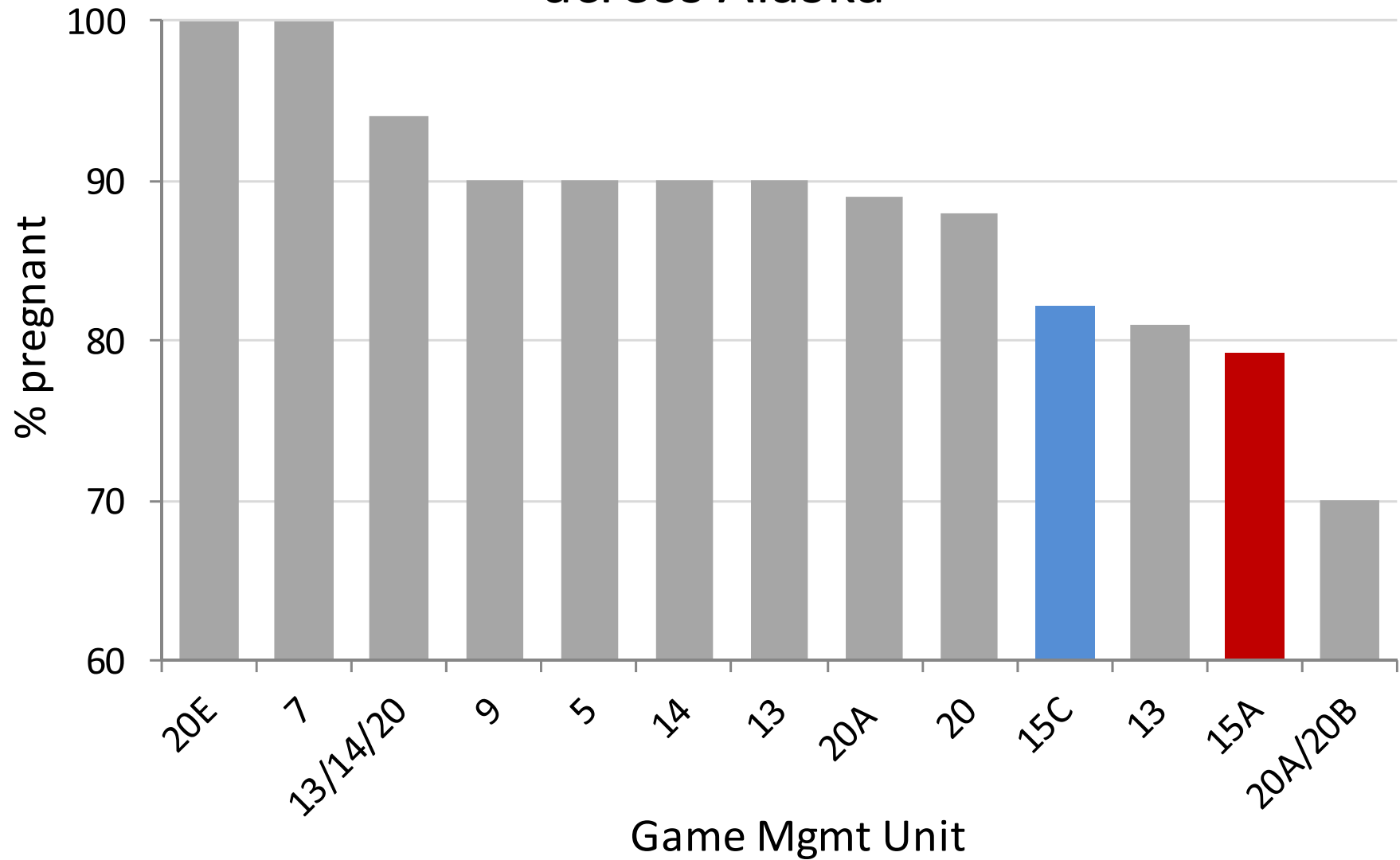
# % Pregnancy of adult cows > 2 years old

(sample size shown)

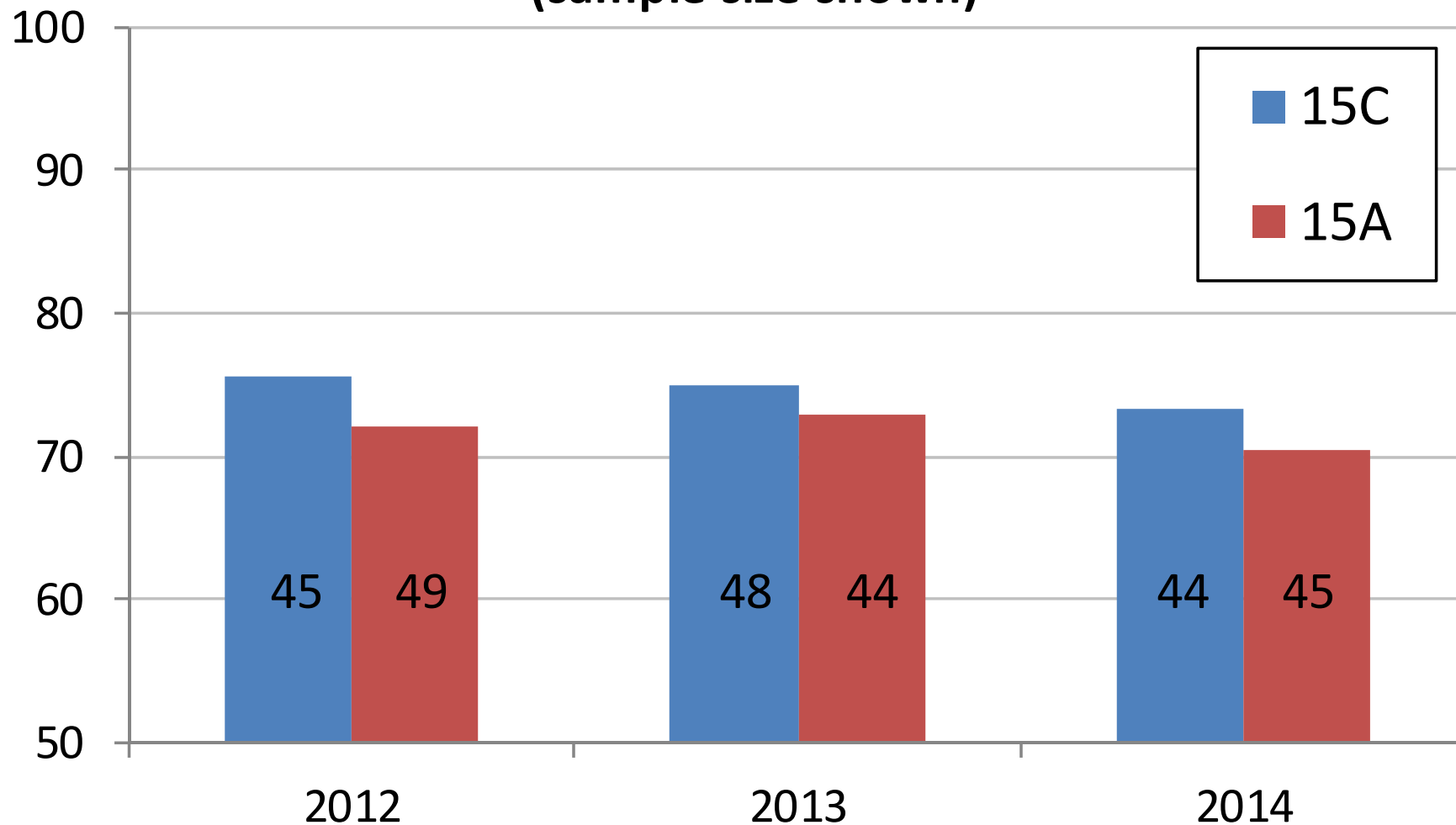




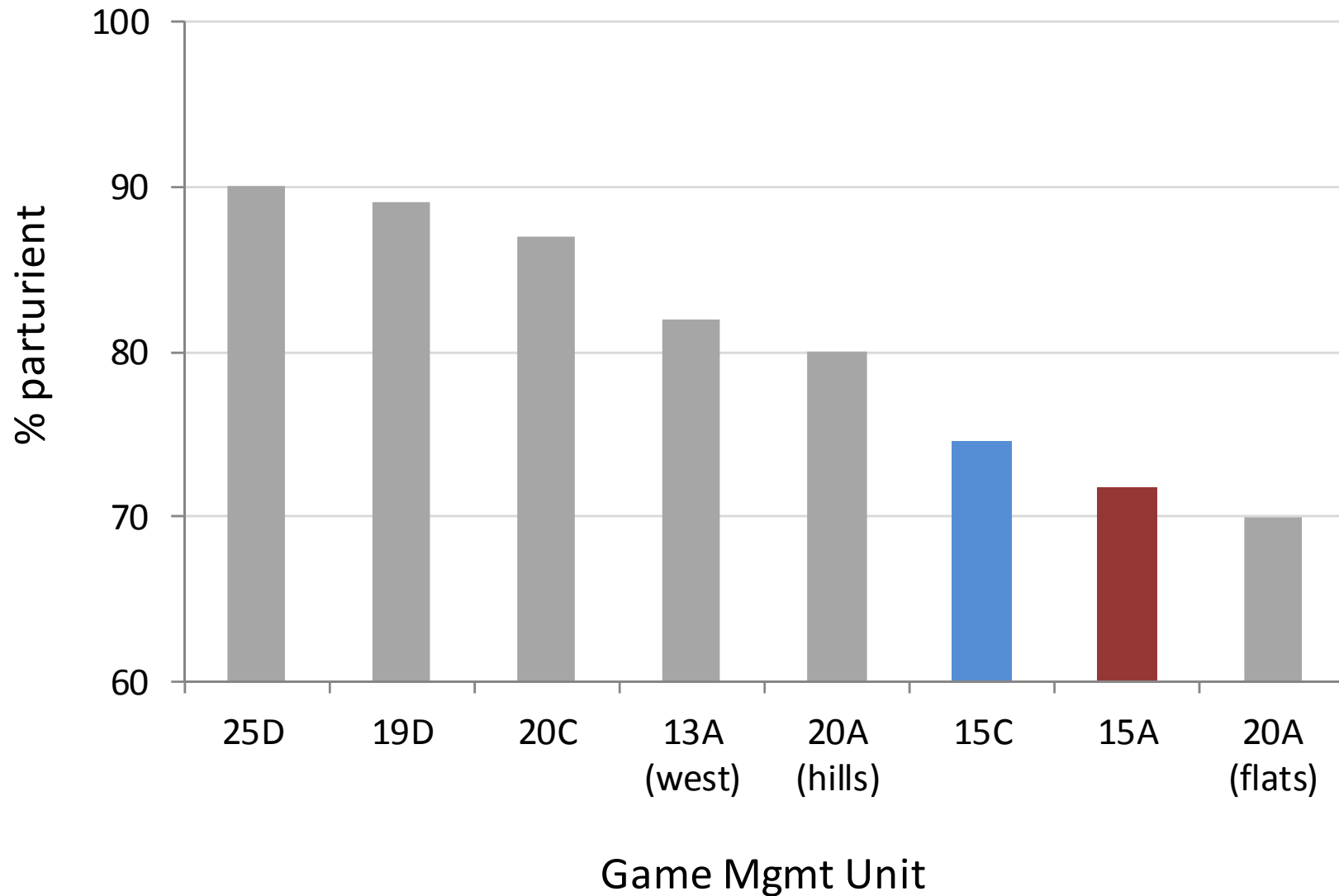
# Mean pregnancy (%) of adult female moose across Alaska



## % Parturition of adult cows > 2 years old (sample size shown)

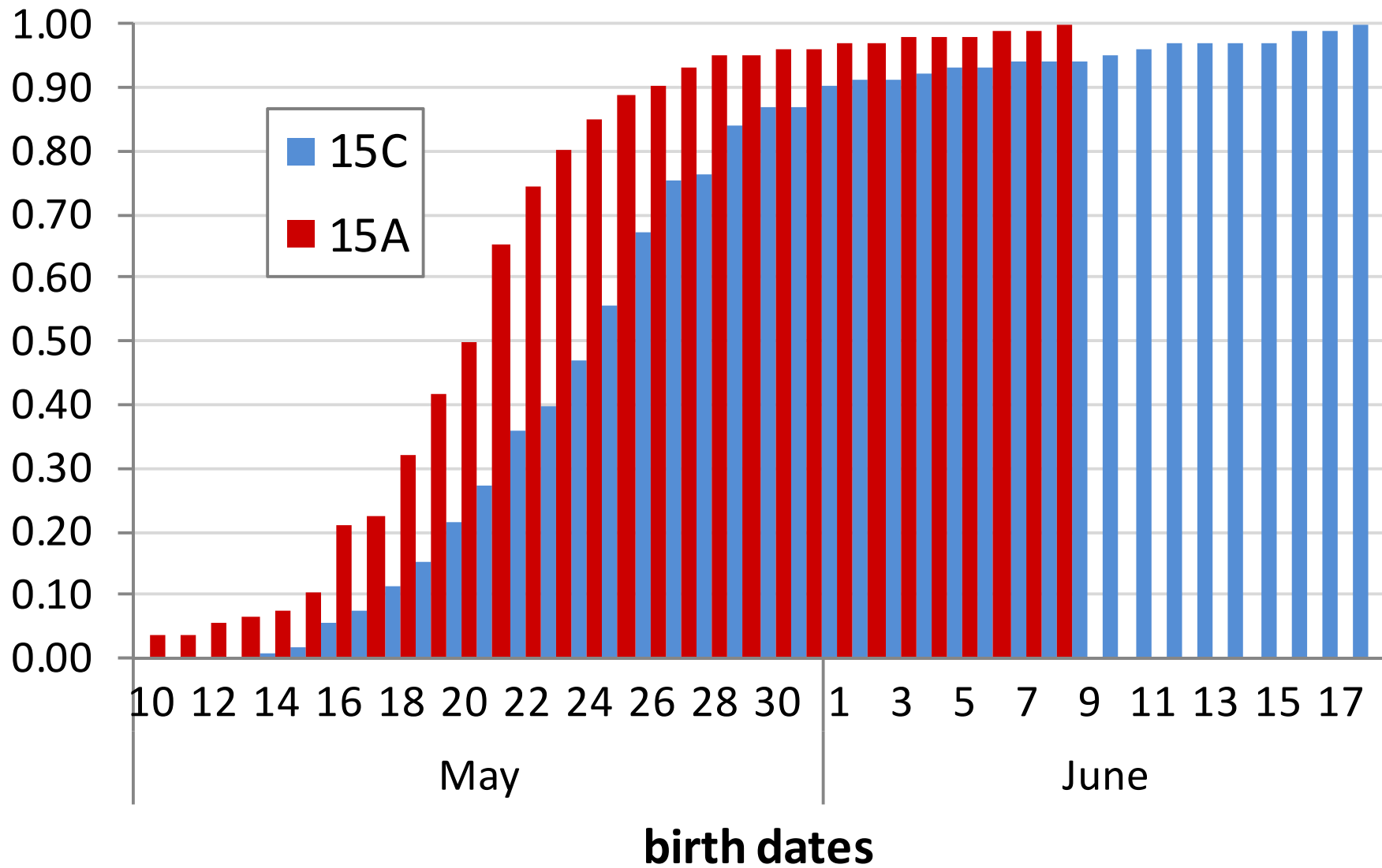


# Mean parturition (%) of adult female moose across Alaska

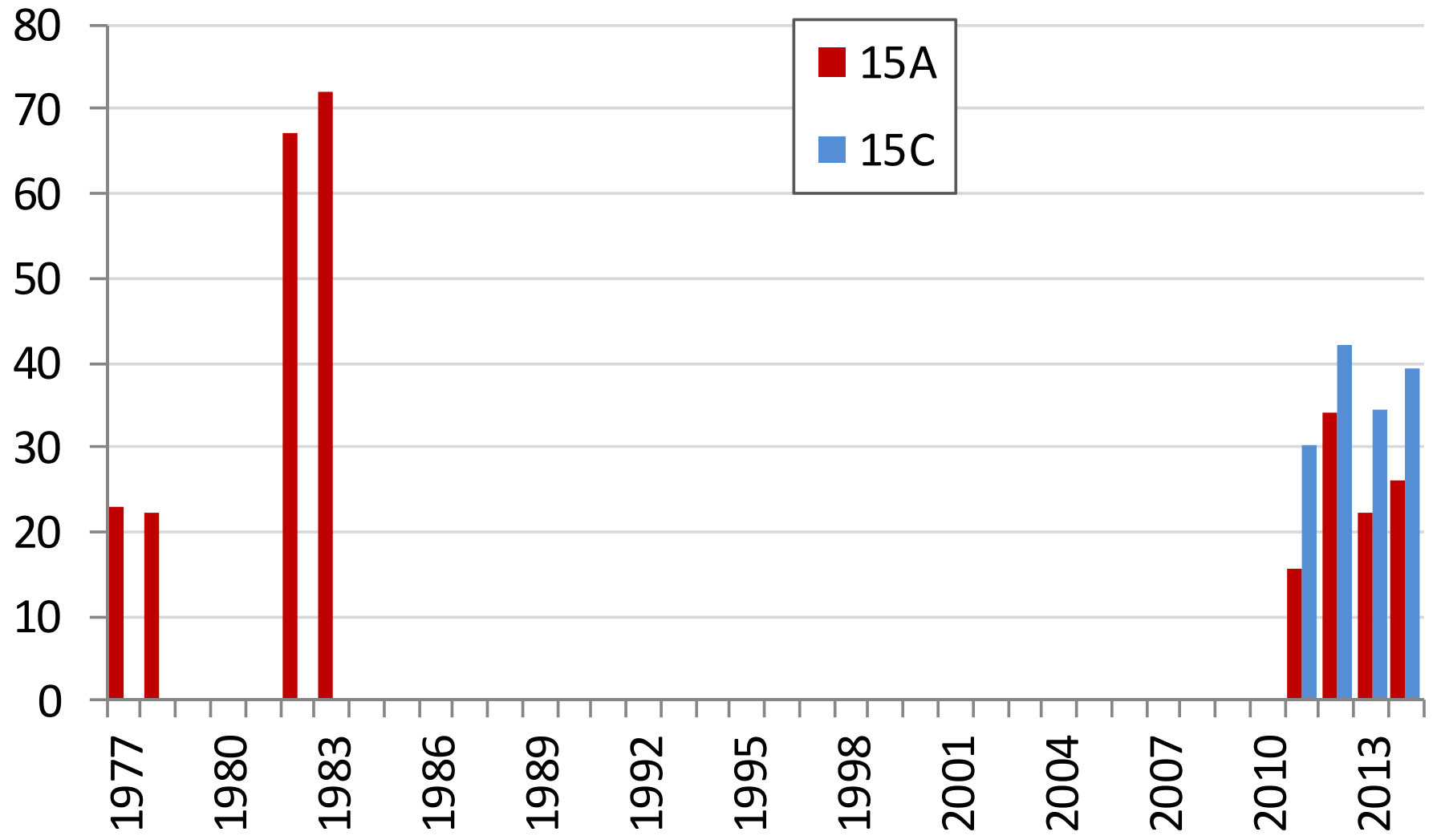




# Cumulative parturition 2012-2014

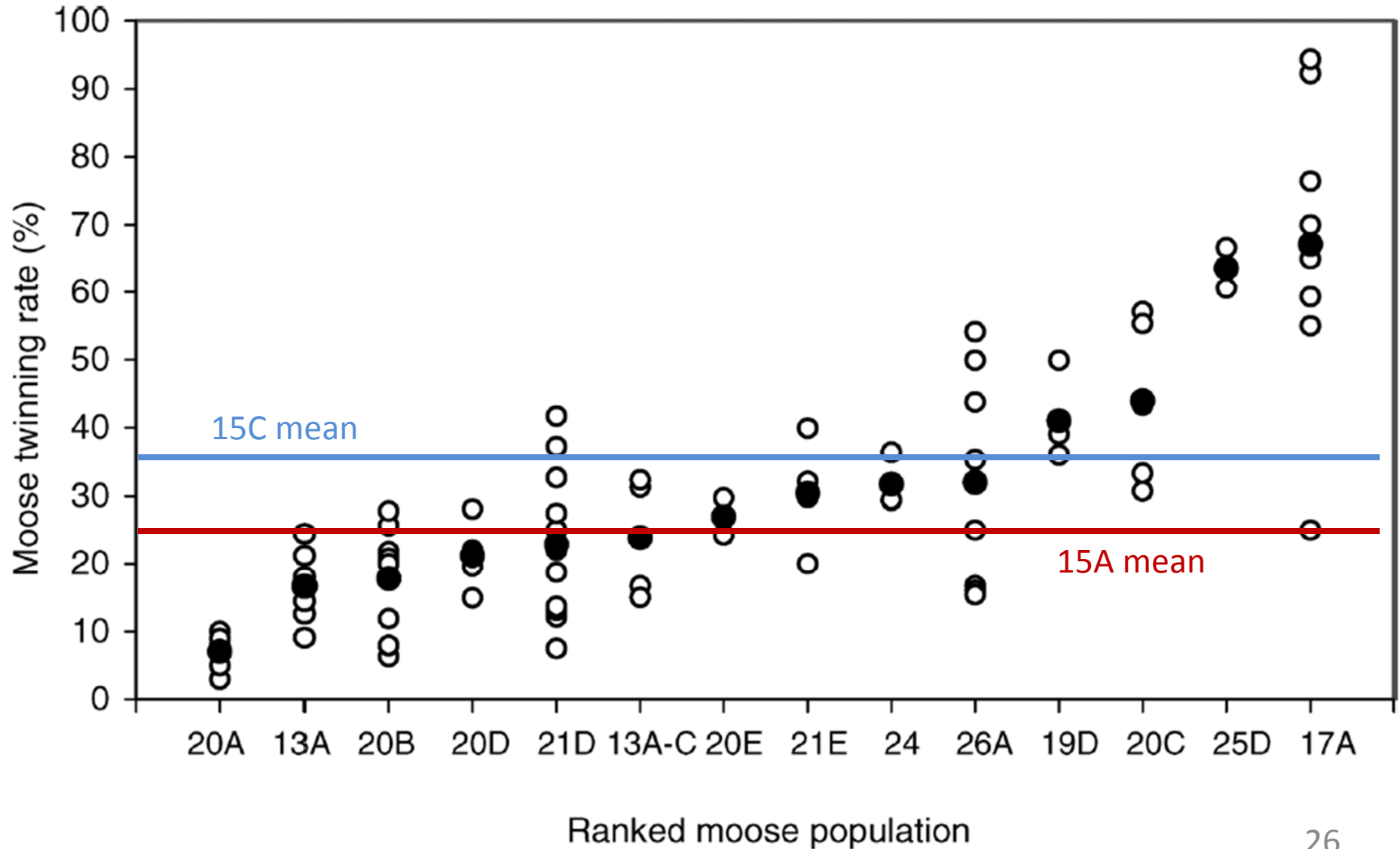


# Twinning (%)

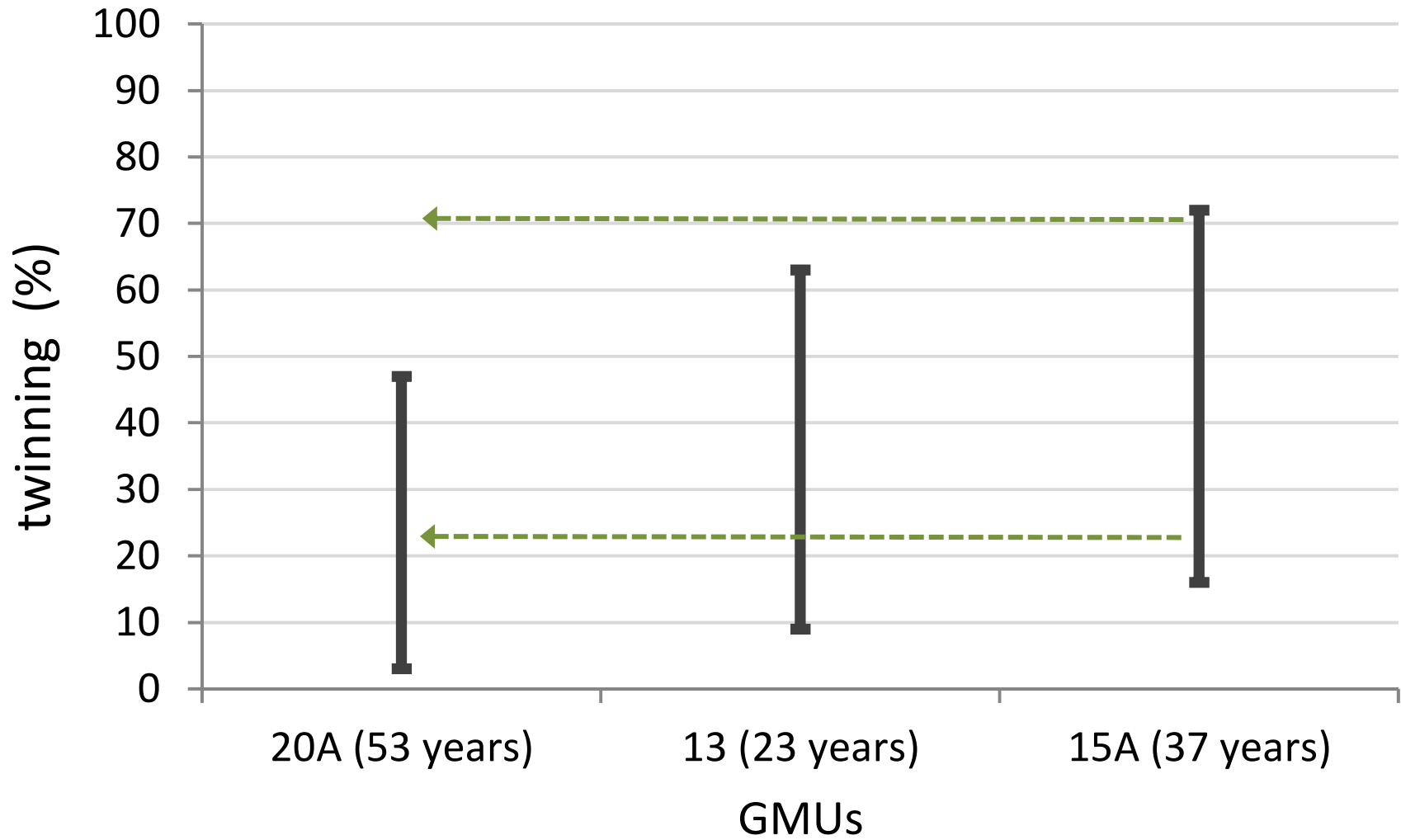


# Boertje et al. 2007. Figure 2

Annual (white) and mean (black) twinning rates across Alaska



## Long-term ranges of twinning rates





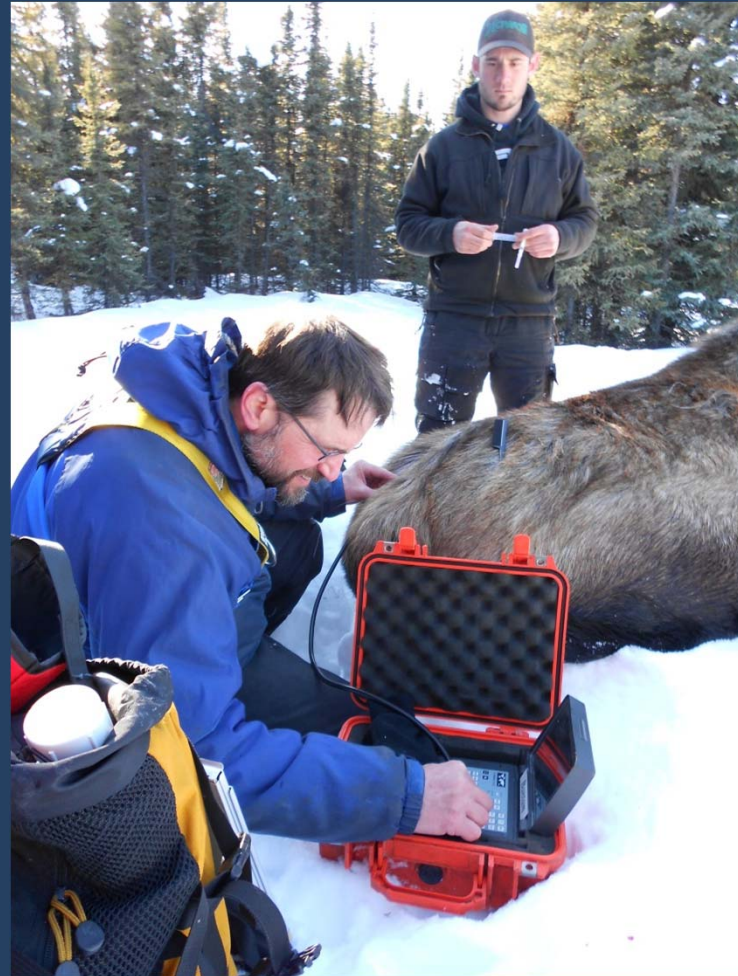
Proportion of adult cows > 2 years old  
that had a reproductive pause  
(2012-2014)

15A = 30%

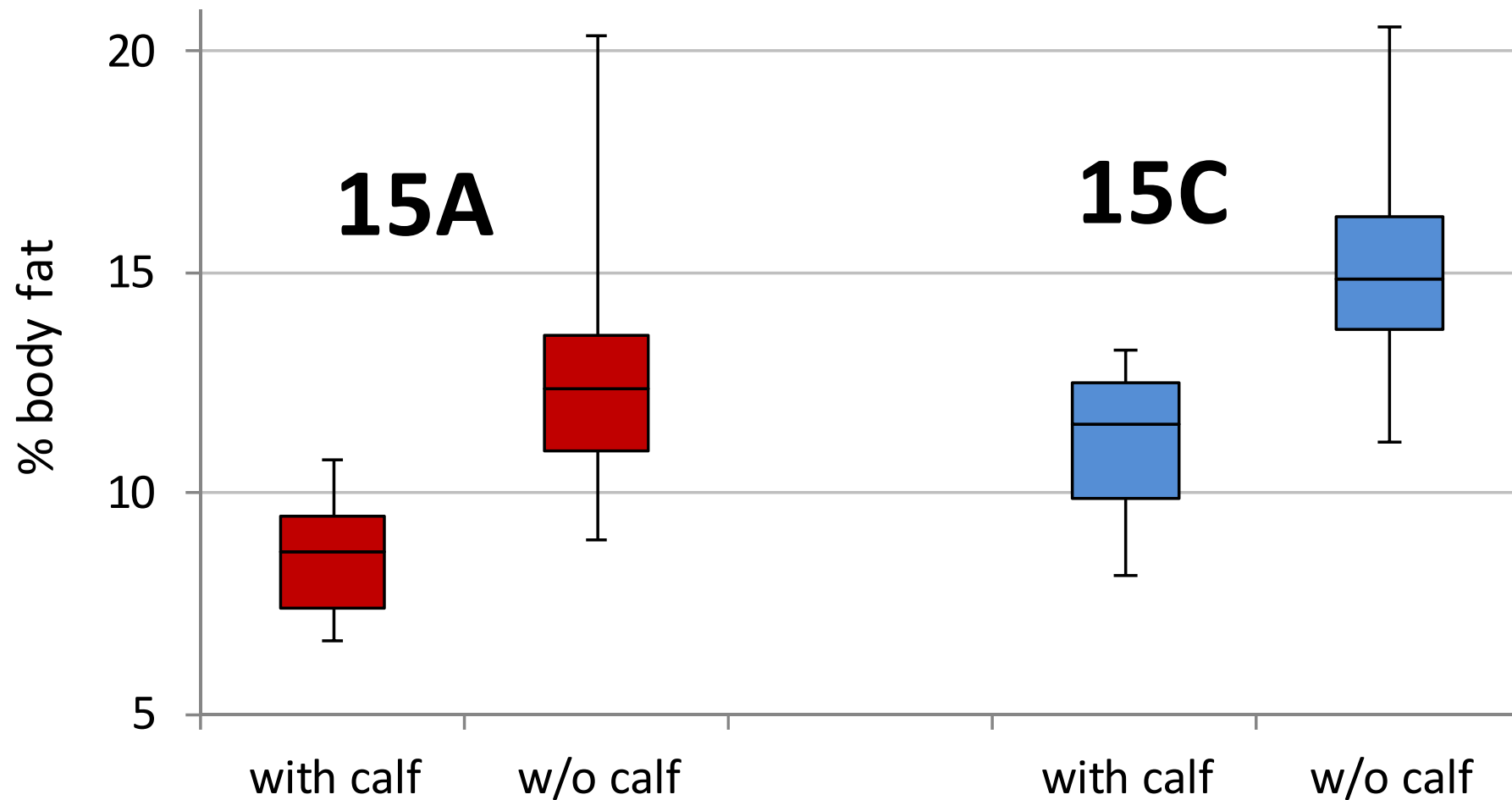
15C = 22%

# Body condition

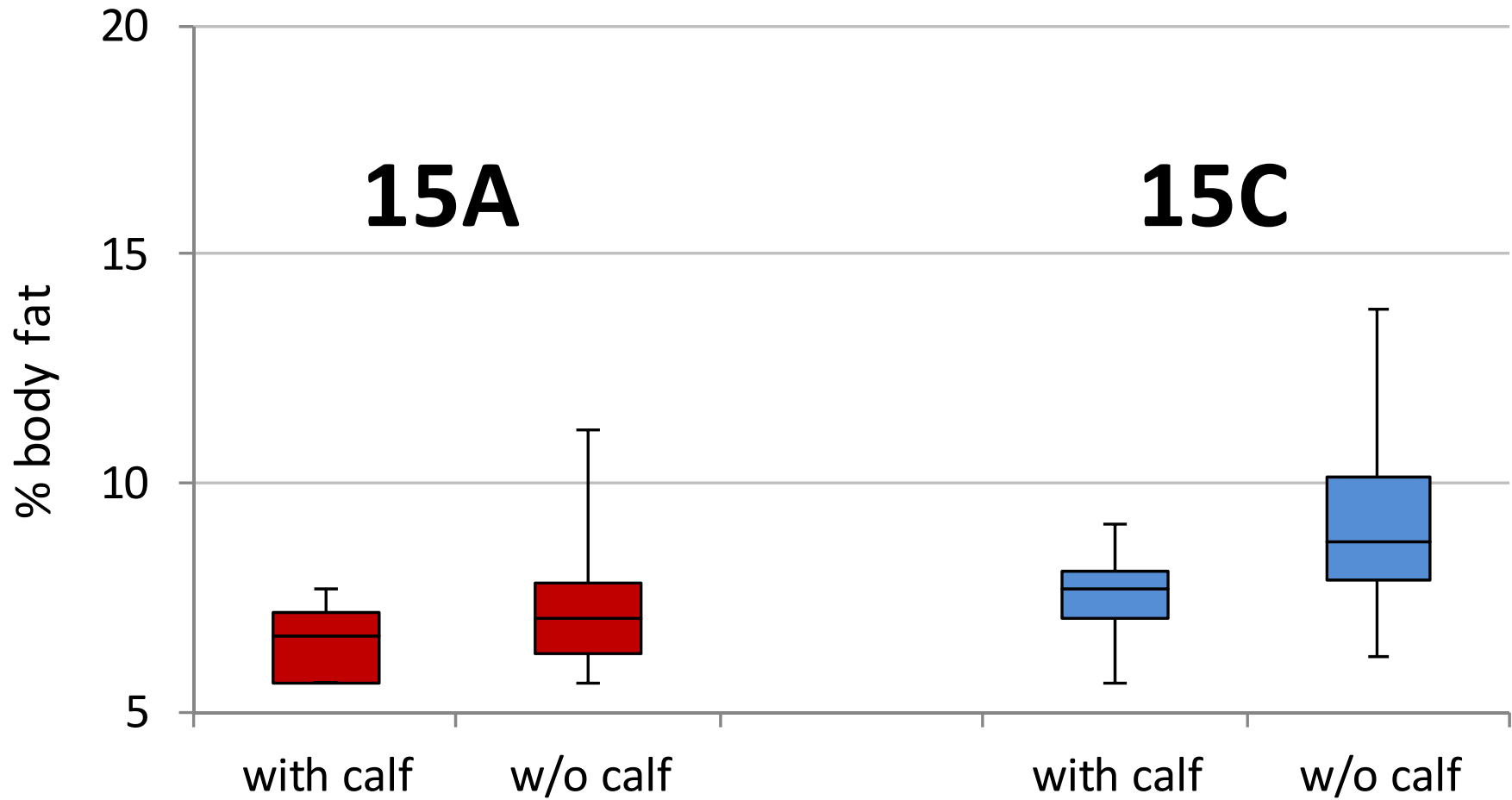
- Rump fat = total body fat
- Franzmann score
- Bone marrow



# % body fat of adult cows in November

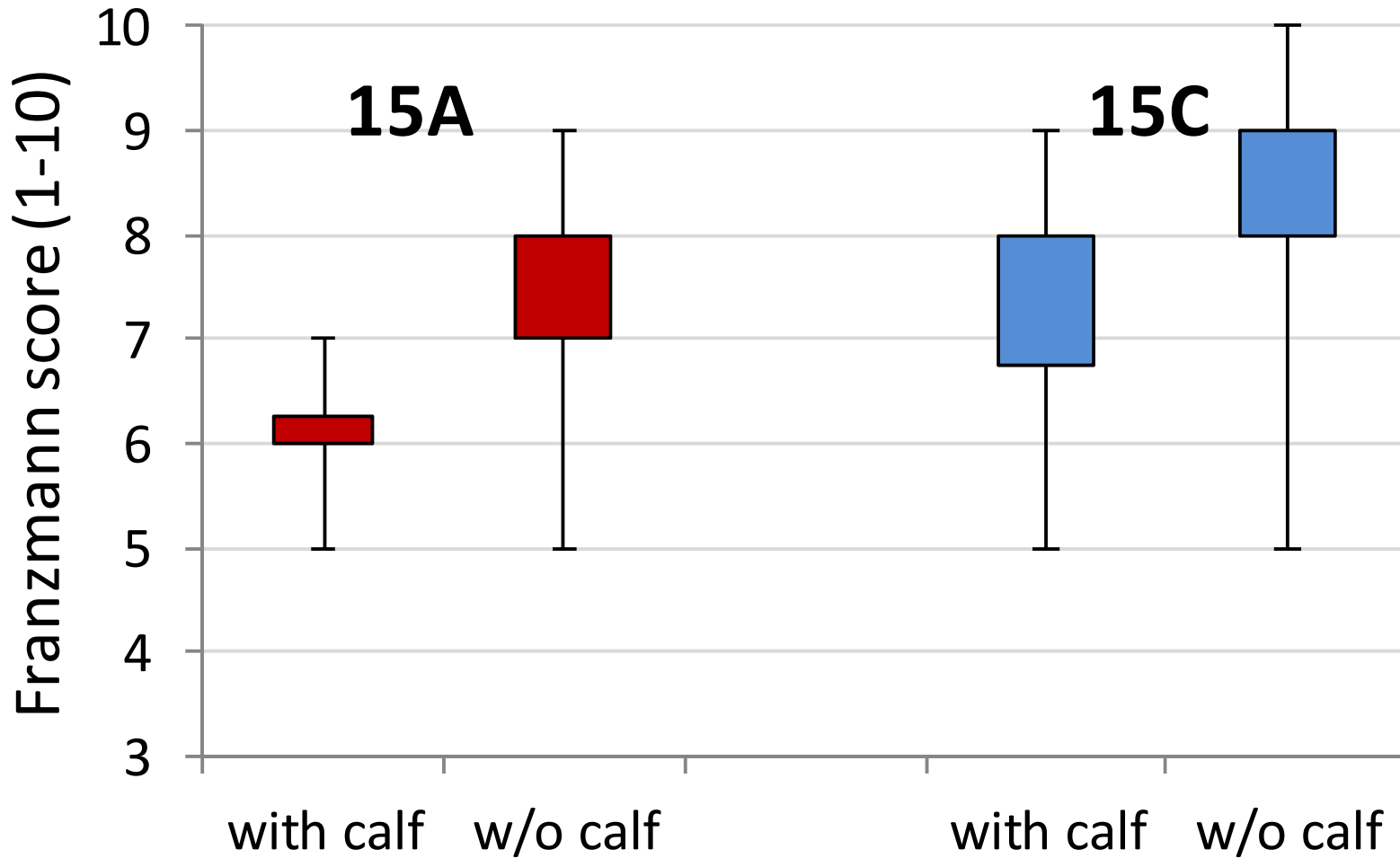


# % body fat of adult cows in March

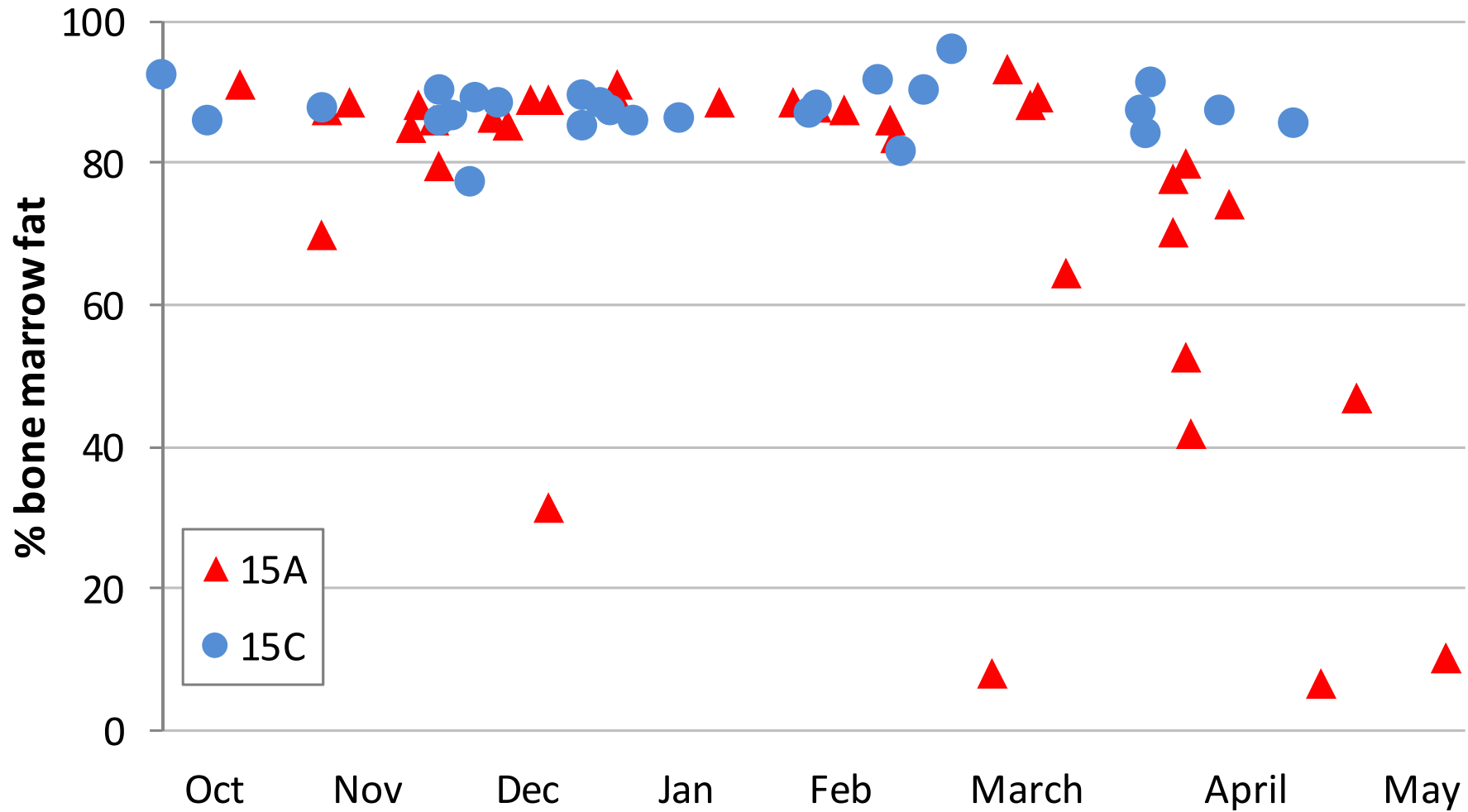




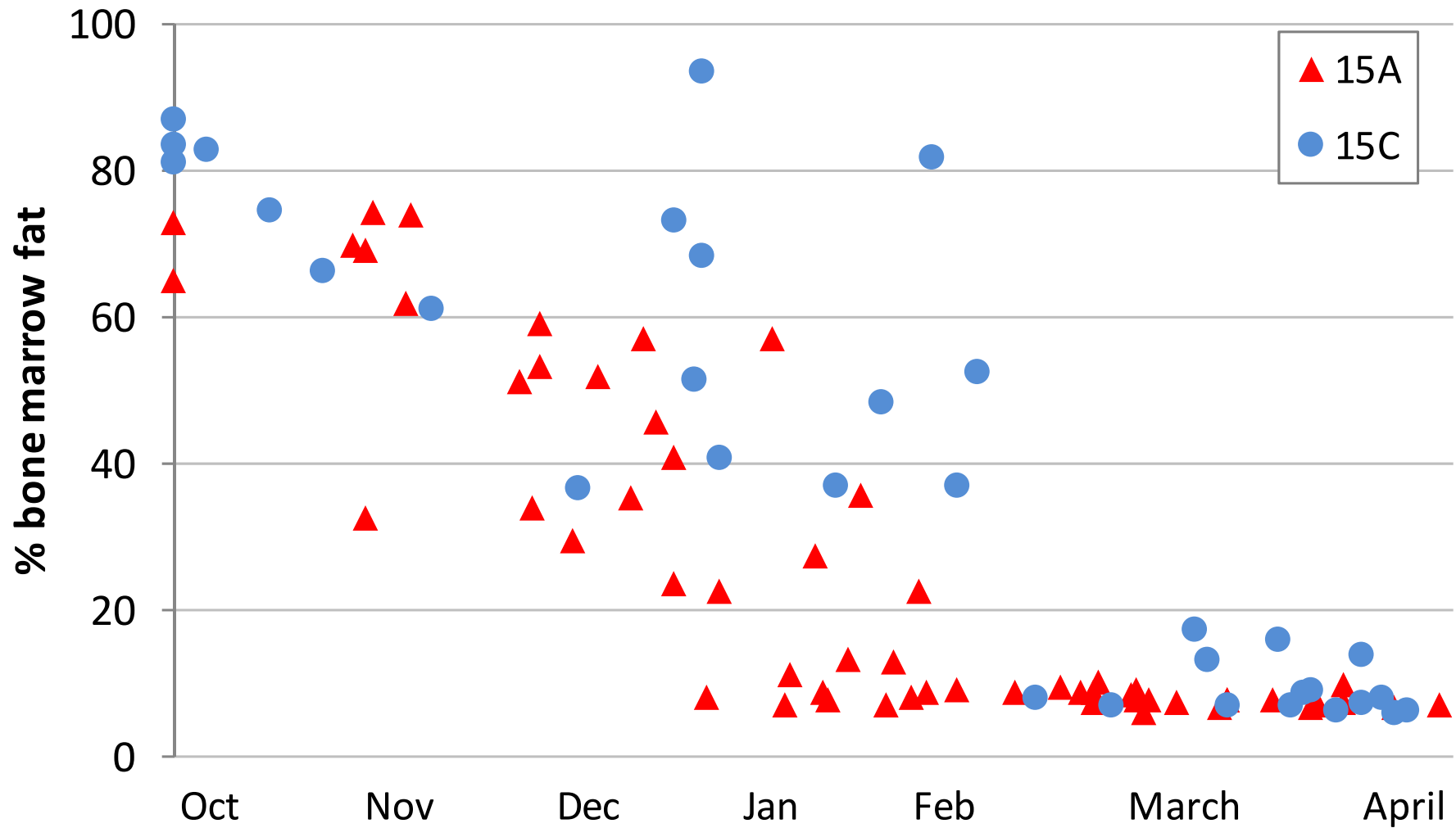
## Fall Franzmann scores for adult cows



### Bone marrow fat in 15A vs 15C -adult cows (2013-2015)



### Bone marrow fat of 15A vs 15C calves (2013-2015)



Bone marrow studies	location	% of calf marrow samples with >20% fat from Feb-May
Snider 1980	Ontario	100
Spears et al. 2003	Minnesota	75-100
Ballard and Whitman 1987	Nelchina, AK	67
Fong 1981	Newfoundland	64
Sand et al 2012	Sweden	>50
Ballard et al. 1981	Nelchina, AK	48
Peterson et al. 1984	Kenai Pen., AK	24
current study 15C	Kenai Pen., AK	11
Franzmann and Arneson 1976	Kenai Pen., AK	9
Coady 1973	Fairbanks, AK	>0
current study 15A	Kenai Pen., AK	0

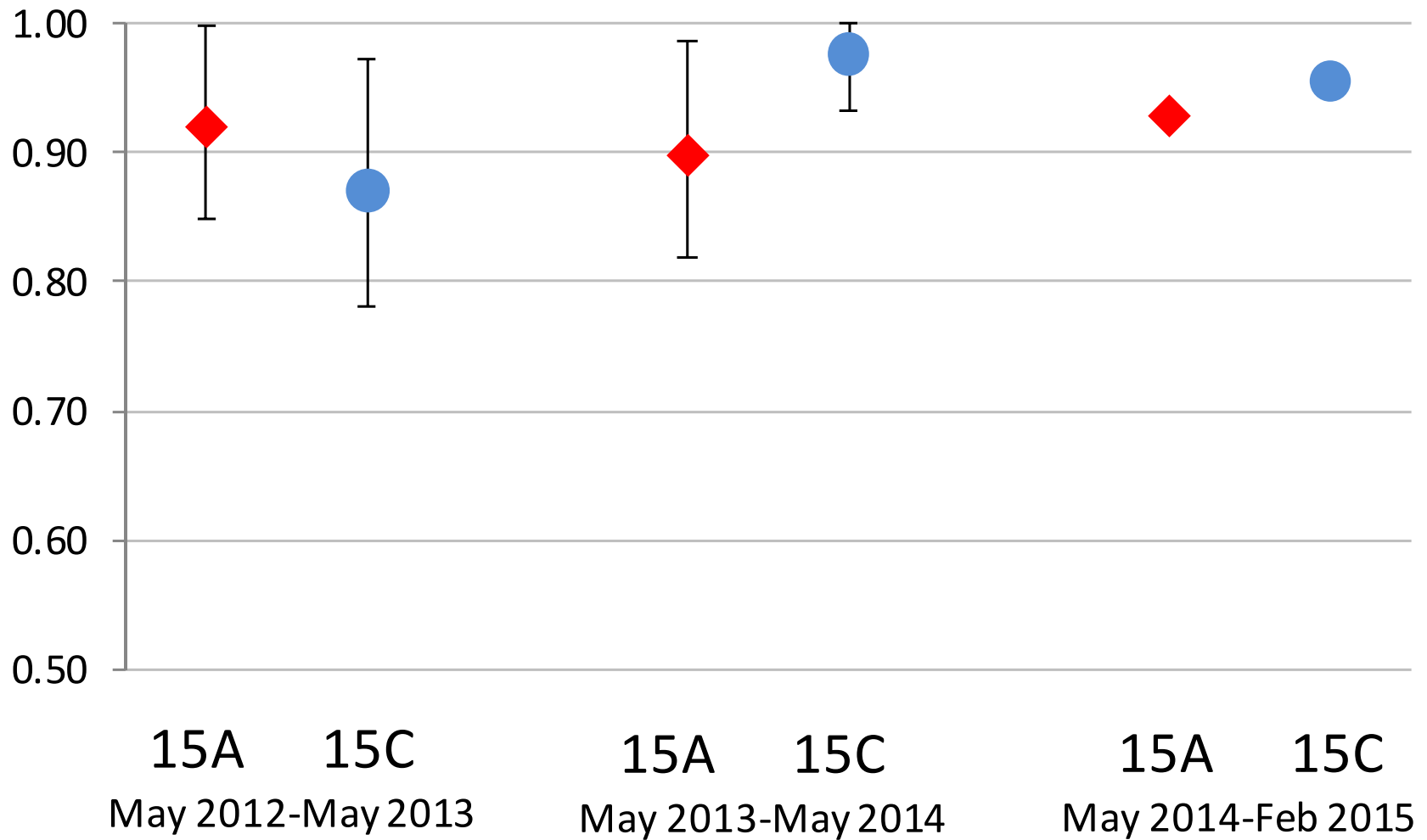


# Cow and calf survival

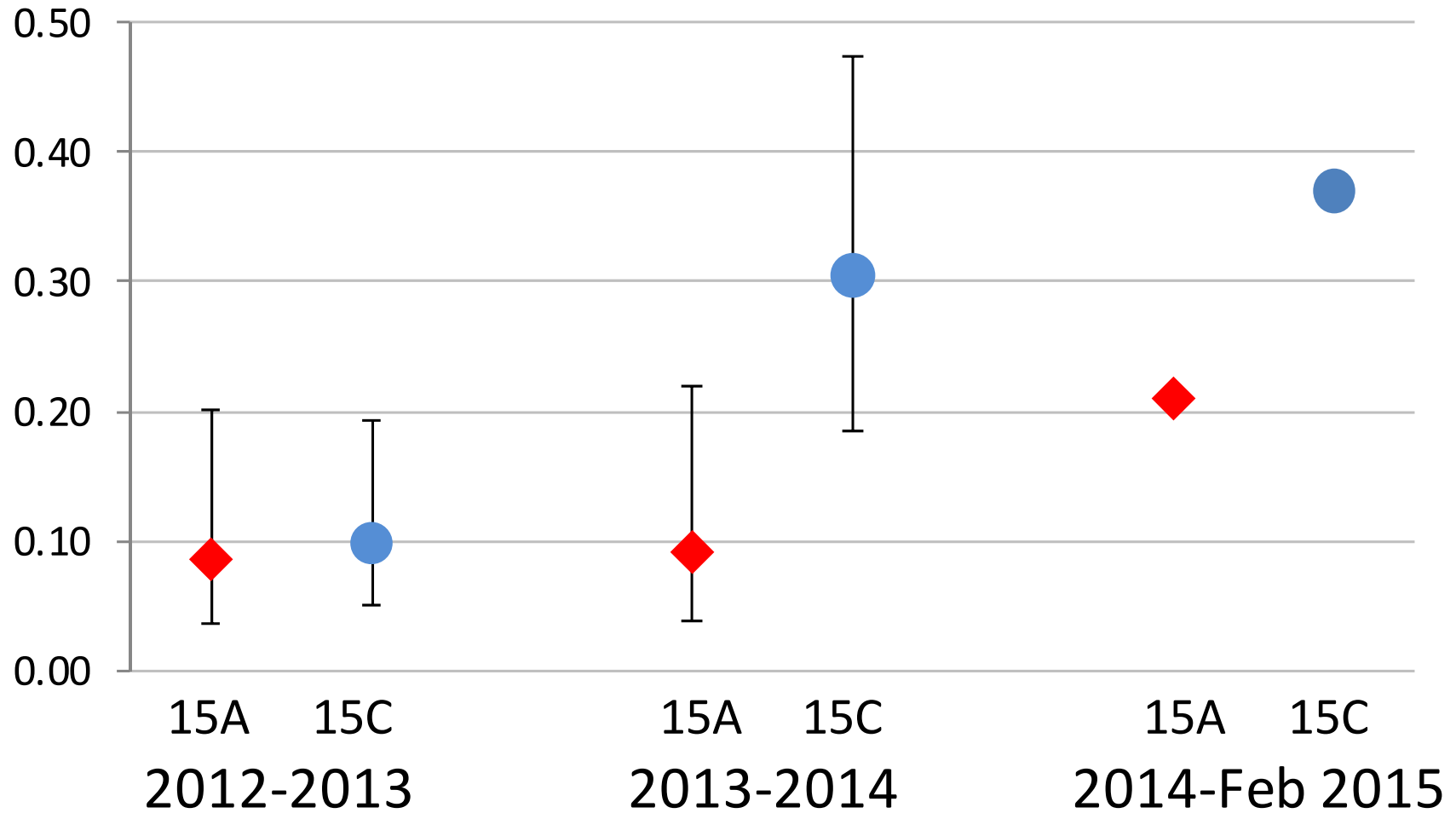




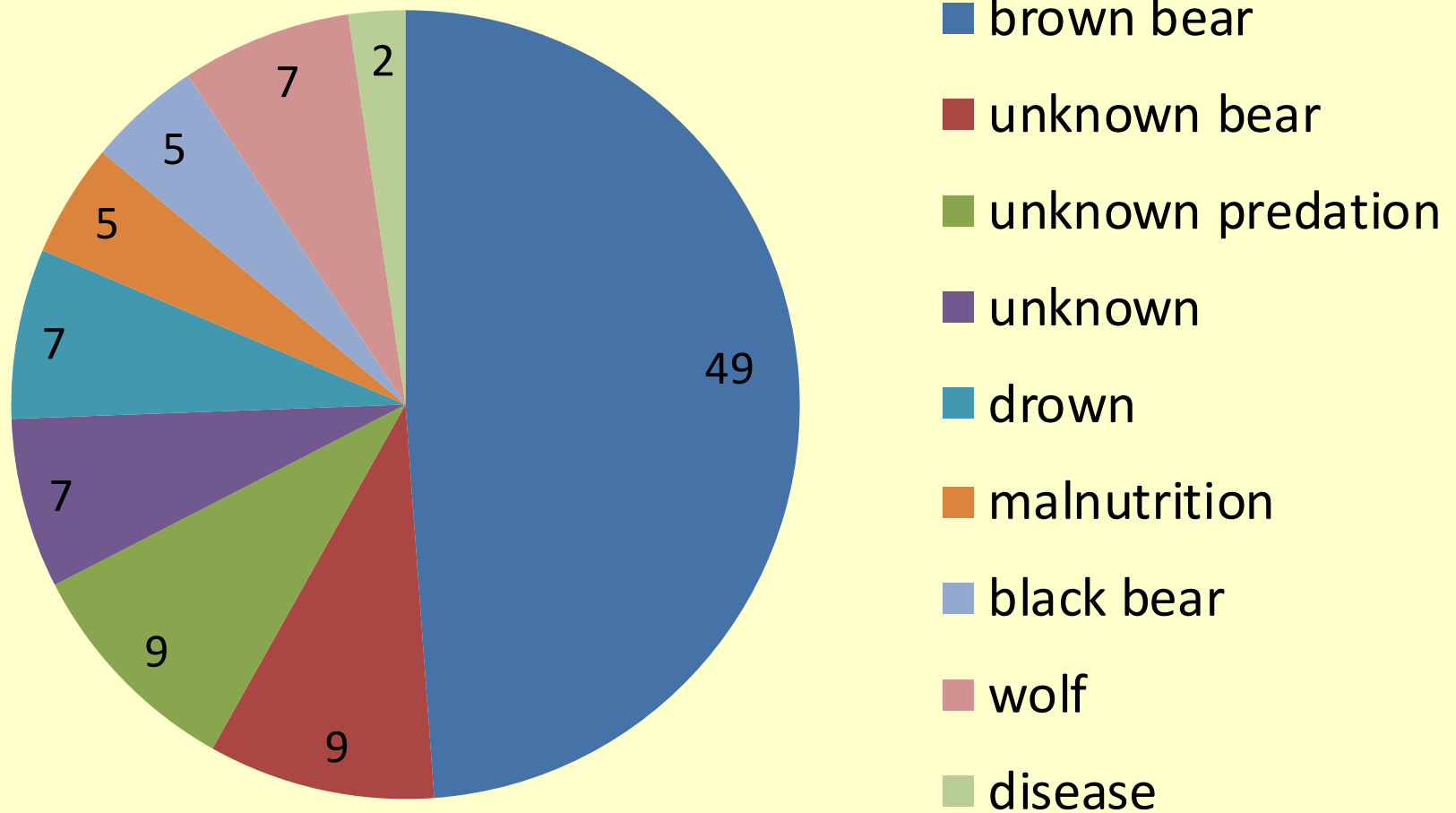
# Estimates of annual survival rates for adult cow moose



# Estimates of annual survival rates for moose calves



## 2012 Calf mortality study in GMU 15C- proportion of mortalities by cause (n=43)







# Summary: nutritional status

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<b>15A</b>	nutritional measure	<b>15C</b>
<b>low-OK</b>	pregnancy rate	<b>low-OK</b>
<b>low</b>	parturition rate	<b>low</b>
<b>low-OK</b>	twinning rate	<b>OK</b>
<b>high</b>	reproductive pauses	<b>high-OK</b>
<b>low-OK</b>	body fat- fall	<b>OK</b>
<b>low</b>	body fat-spring	<b>OK</b>
<b>low-OK</b>	lean mass	<b>OK</b>
<b>low</b>	bone marrow	<b>low-OK</b>

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