

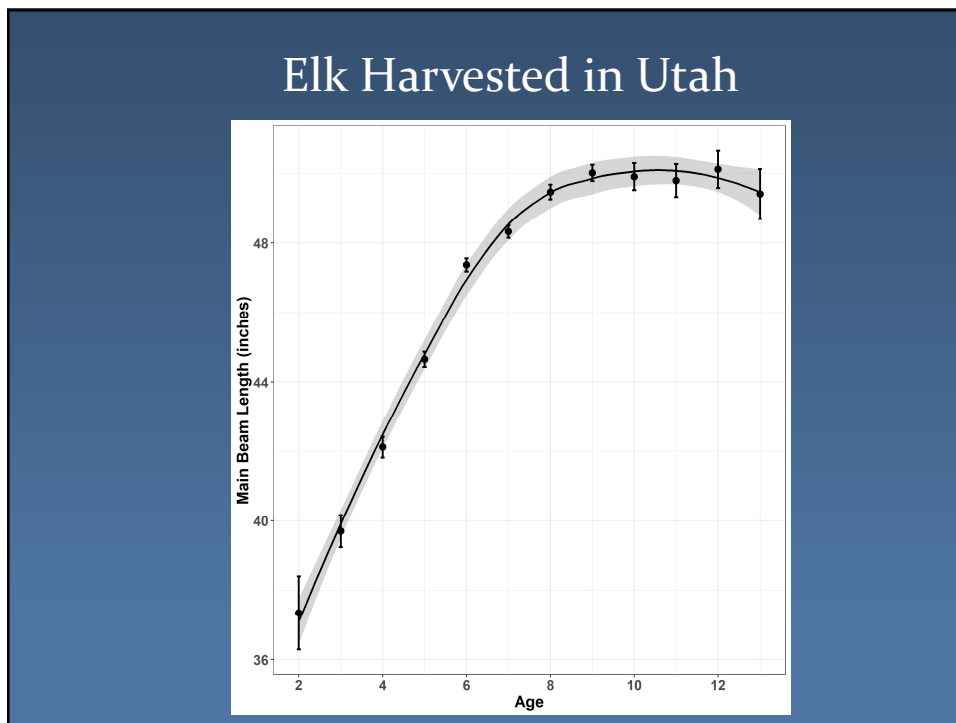
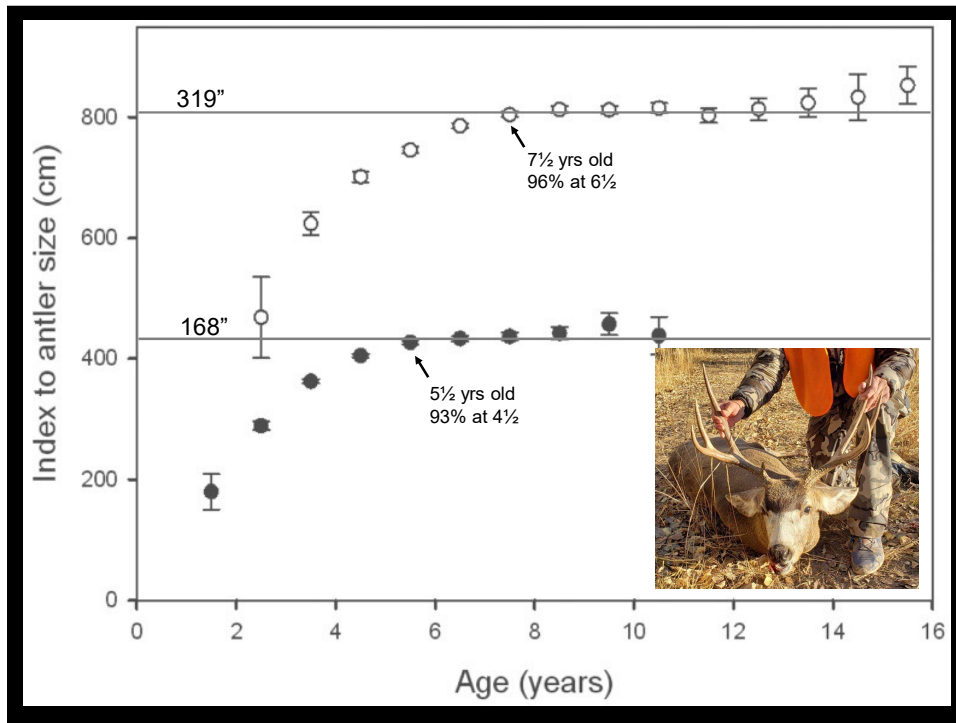
# Acknowledgements

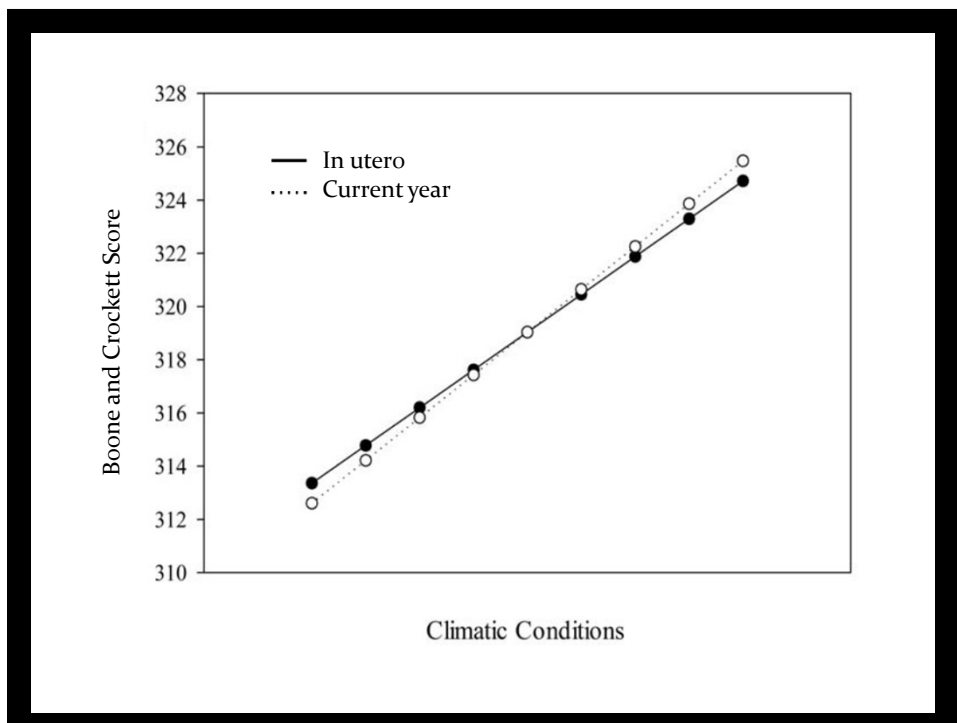
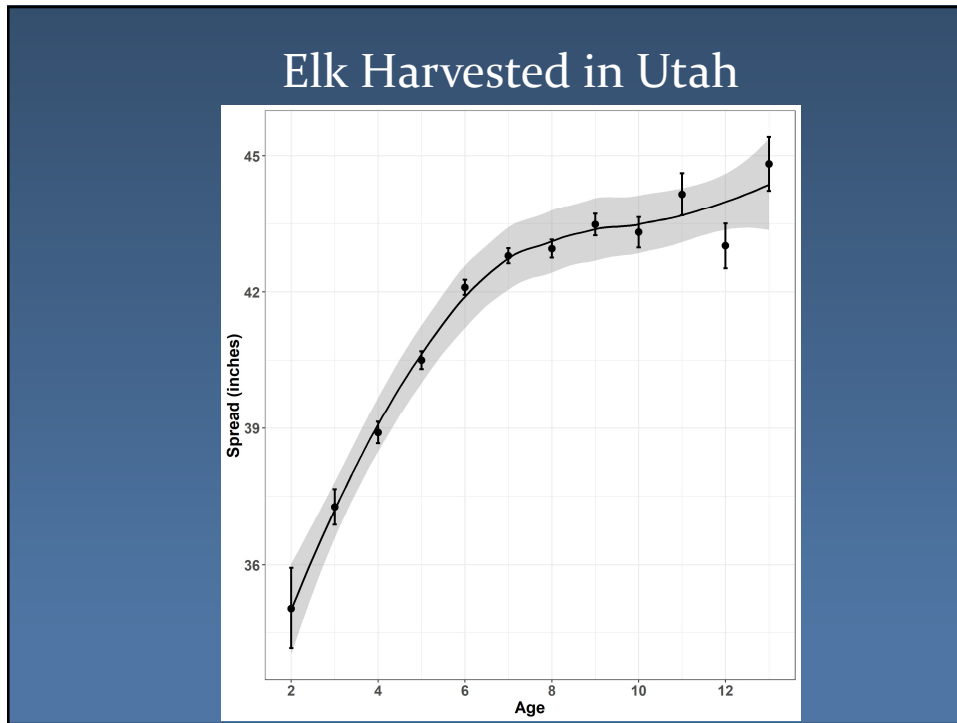
- UDWR Biologists
  - Jason Nichols
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  - Xaela Walden
  - David Smedley
  - Jim Christensen
  - Darren DeBloois
  - Dave Rich
  - Syd Lamb
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  - Tom Becker
  - Dale Liechty
  - Rusty Robinson
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  - Dustin Mitchell
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  - Randall Thacker
  - Amy Vande Voort
  - Clint Sampson
  - Derrick Ewell
  - Ginger Stout
- BYU Technicians
  - Madelon van de Kerk
  - Many Others



# Antler Growth



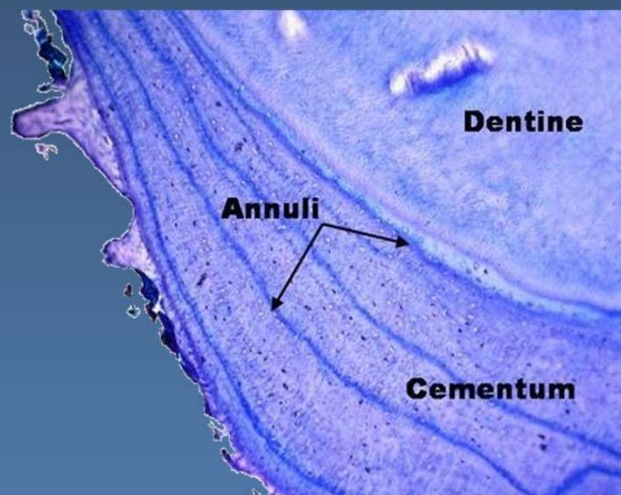




## Portable Ultrasound and Ingesta-Free Body Fat (IFBF)—“Game Changer”



## Harvest Age – Antlerless Elk



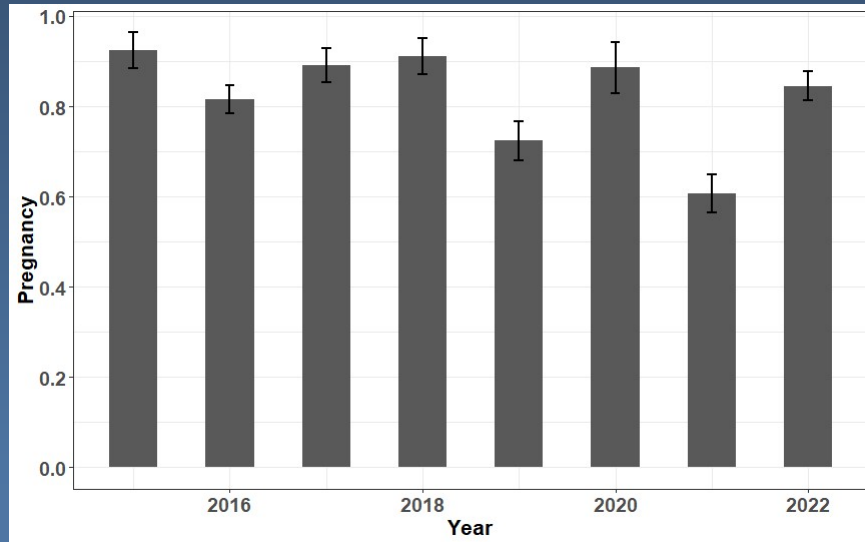
## Age of Antlerless Elk Harvested, Utah 2020-2021

UNIT	n	Mean age	0-4 (%)	5-9 (%)	10-14 (%)	15+ (%)
Beaver	41	4.7	54	34	12	0
Book Cliffs	121	7.2	31	42	18	9
Cache	105	4.1	65	26	6	4
Manti	84	4.4	56	30	11	4
La Sal	76	5.5	51	32	13	4
San Juan	39	4.6	62	31	5	3

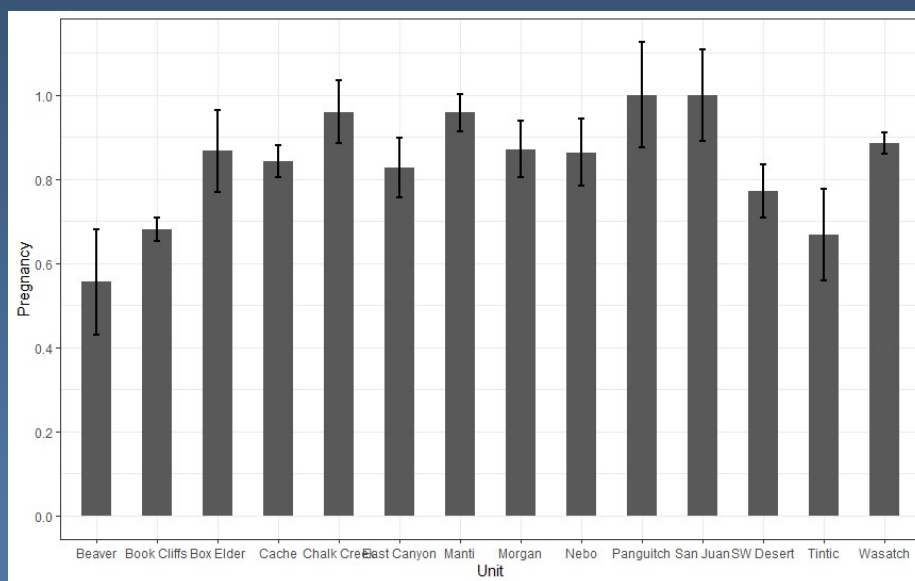
## Pregnancy Rates



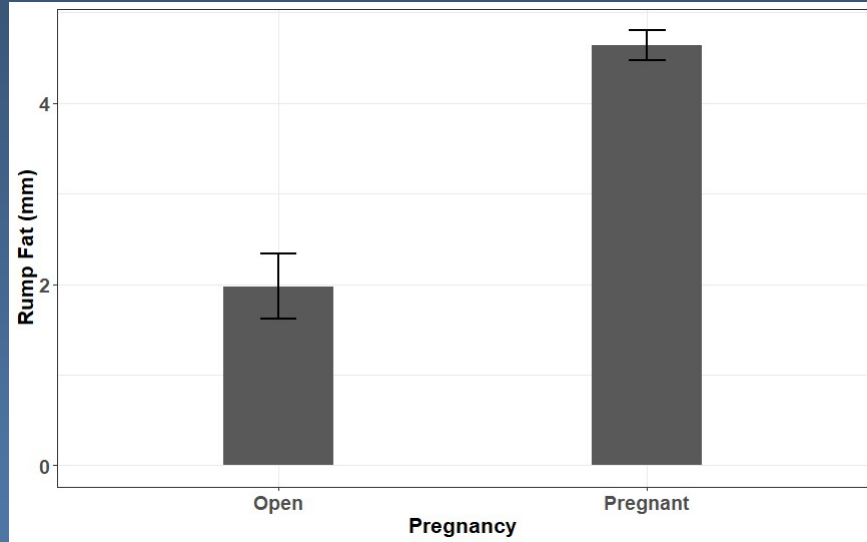
## Elk Pregnancy Year



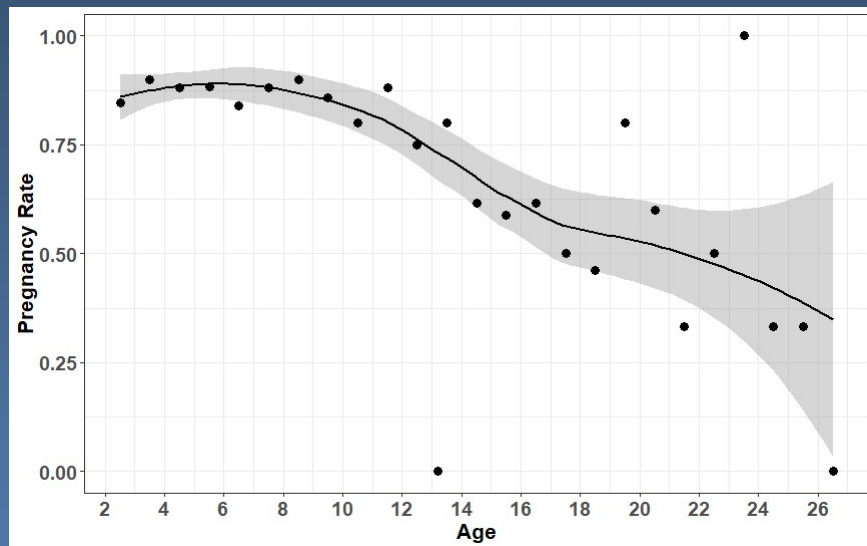
## Elk Pregnancy by Unit



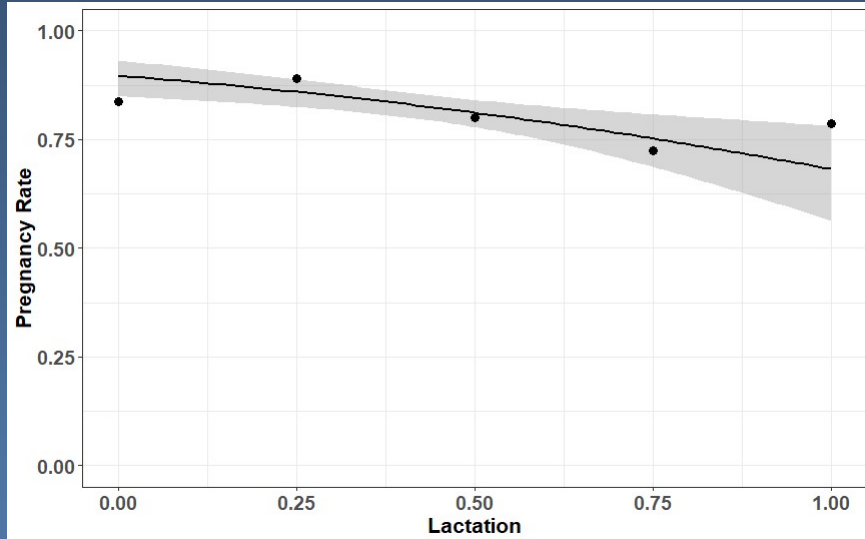
### Mean Rump Fat for Pregnant Elk



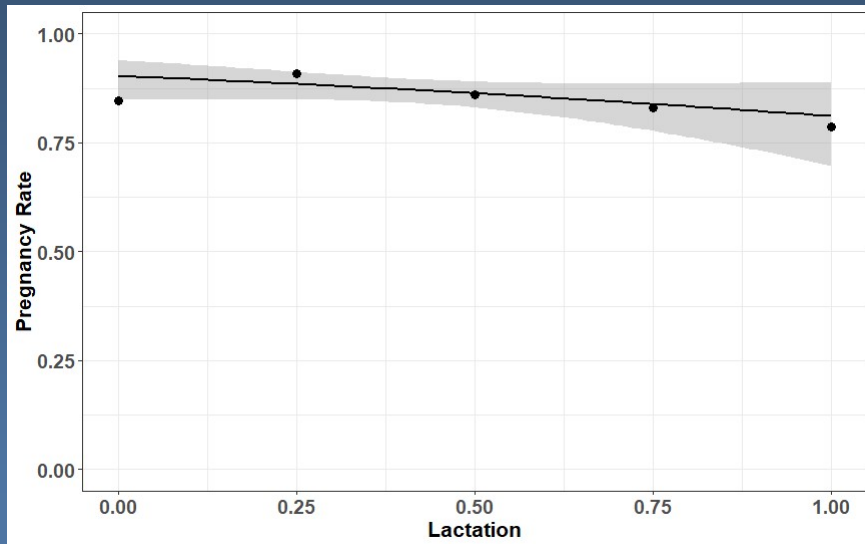
### Elk Pregnancy by Age – No Yearlings



### Elk Pregnancy by Lactation – 2+ years old

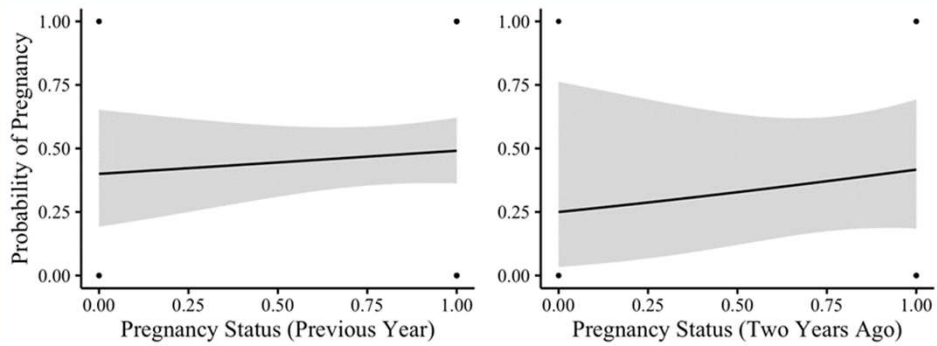
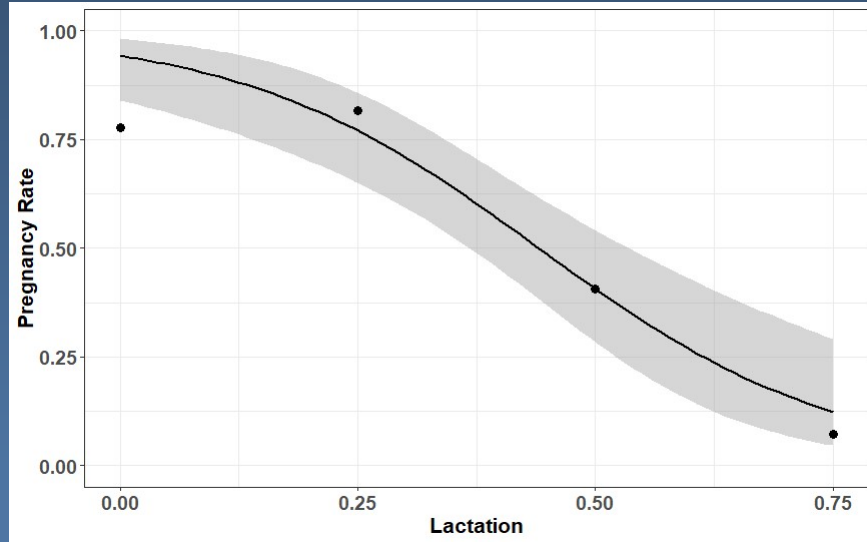


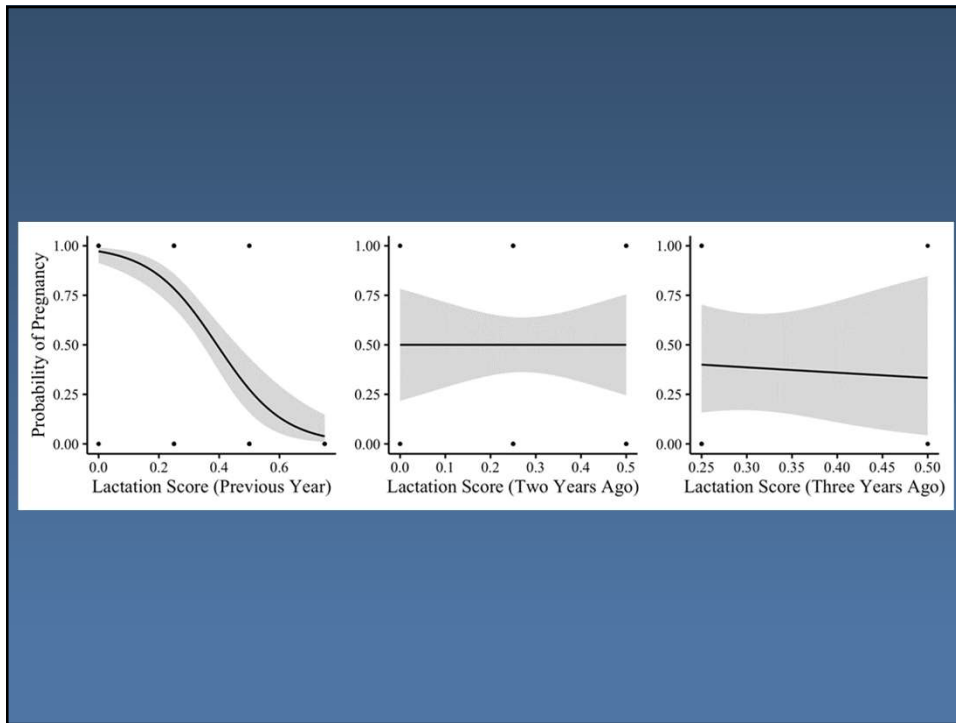
### Elk Pregnancy by Lactation – 2-12 years old





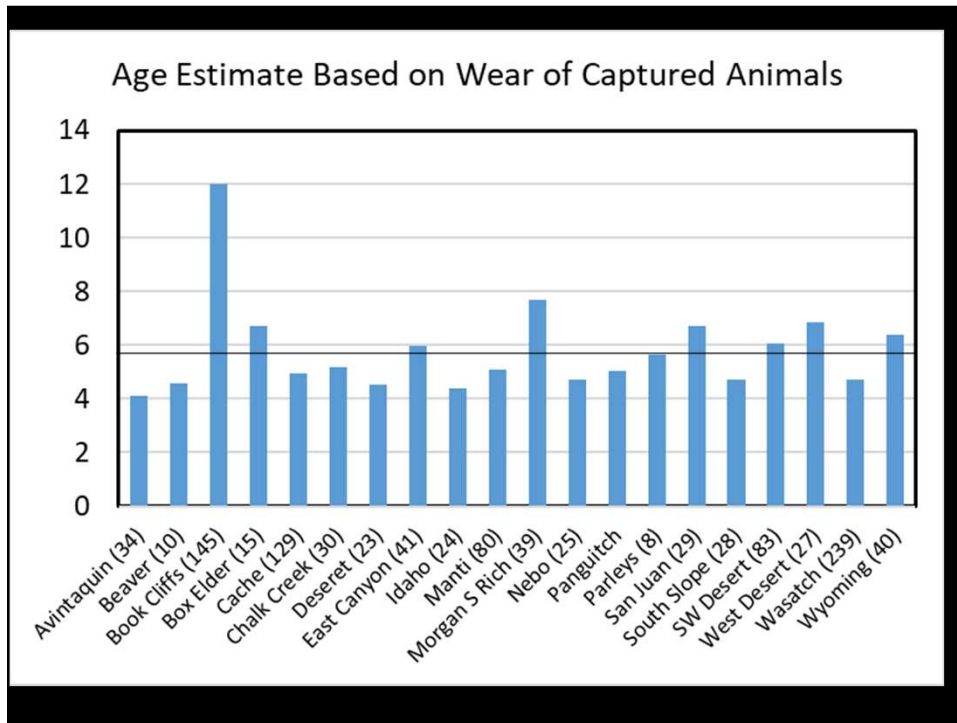
## Elk Pregnancy by Lactation - >12 years old





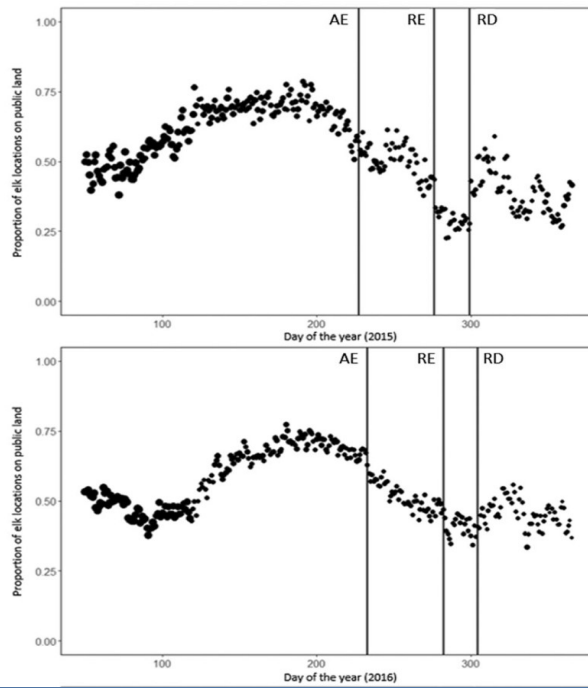
## Estimated Age of Antlerless Elk



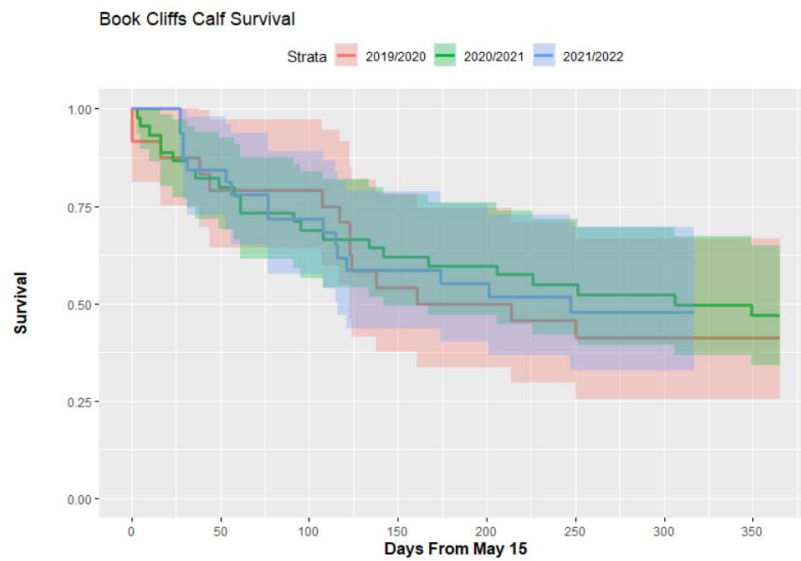


Movements,  
Survival and  
Causes of Death

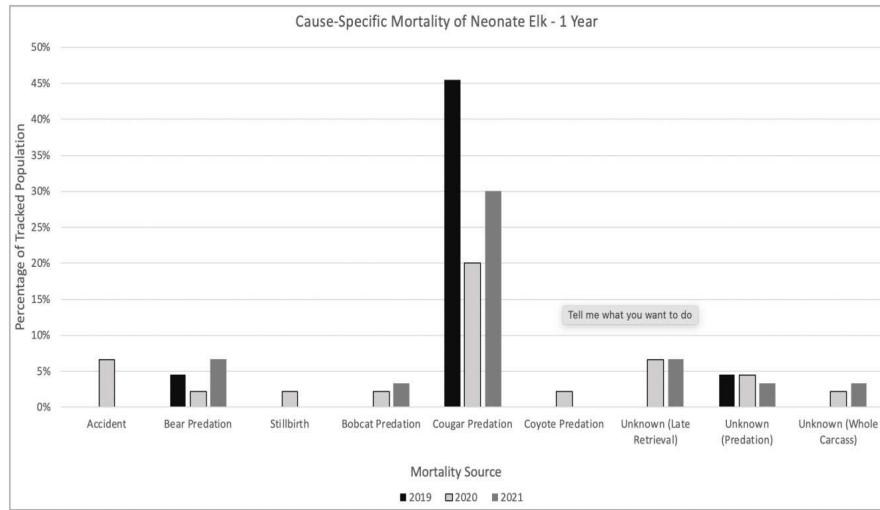
# Wasatch



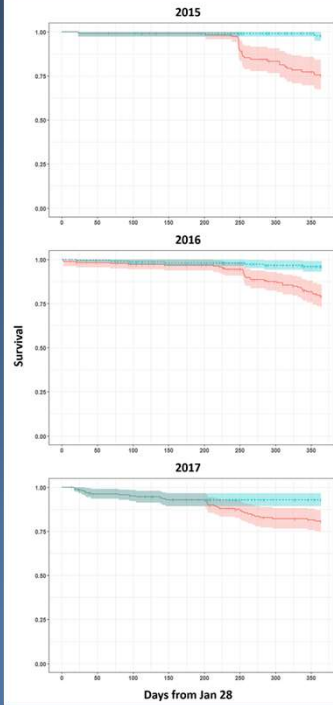
# Survival (neonates to 1 year)



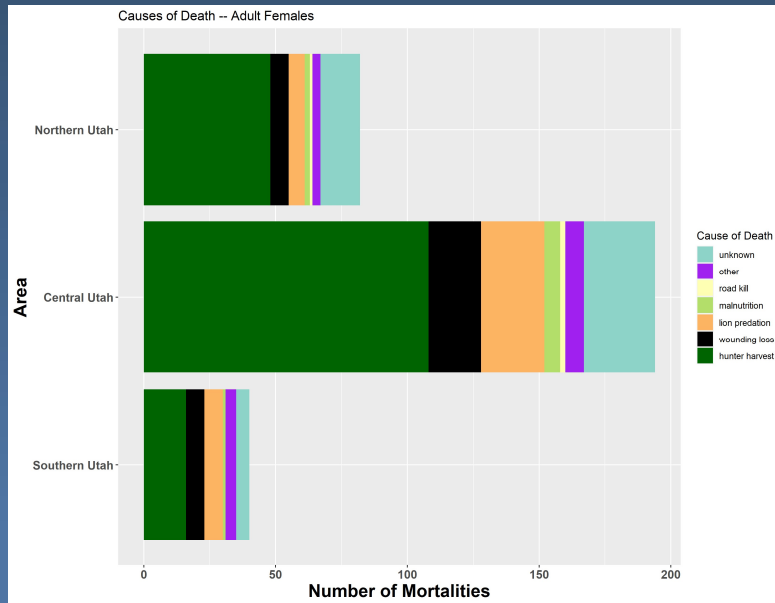
## Cause-specific Mortality—Neonate Elk



## Annual Survival of Adult Females



## Causes of Death—Adult Females



## Future Research

- Southern Utah Complex
- Nebo Study