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## Research Support for Deer Management in Southeast Alaska

- 1) Emerging methods and technologies 
- 2) Deer abundance pilot study 
- 3) Application to deer management 



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## New Methods and Technology

◆ fecal DNA (fdDNA)




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# New Methods and Technology

- ◆ fecal DNA (fDNA)
- ◆ Game cameras



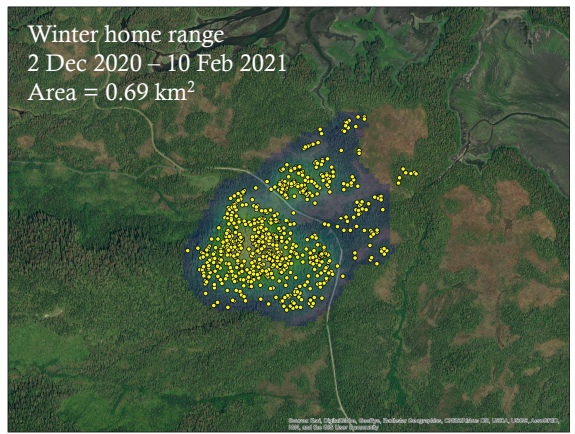
0316

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# New Methods and Technology

- ◆ fecal DNA (fDNA)
- ◆ Game cameras
- ◆ GPS satellite collars



Winter home range  
2 Dec 2020 - 10 Feb 2021  
Area = 0.69 km<sup>2</sup>

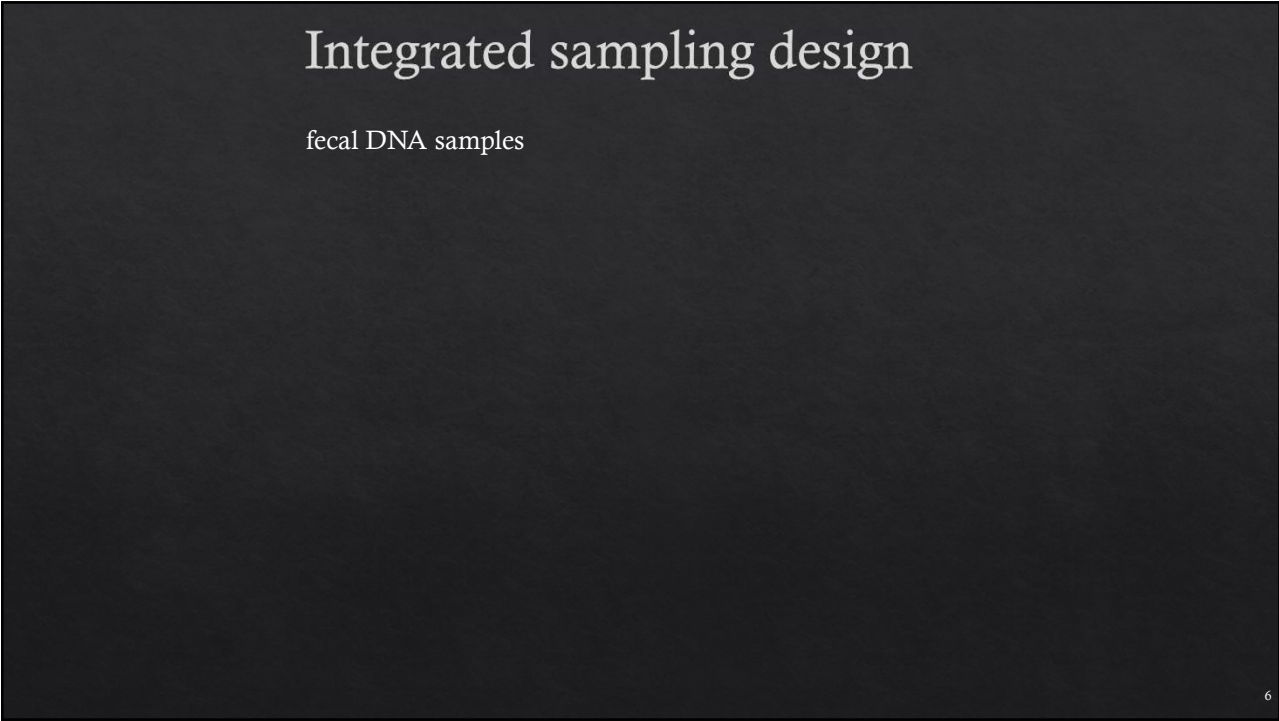
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# Integrated sampling design

fecal DNA samples



DNA



Sex-specific, individual identification, potential age-class


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# Integrated sampling design

fecal DNA samples

Remote game cameras



DNA

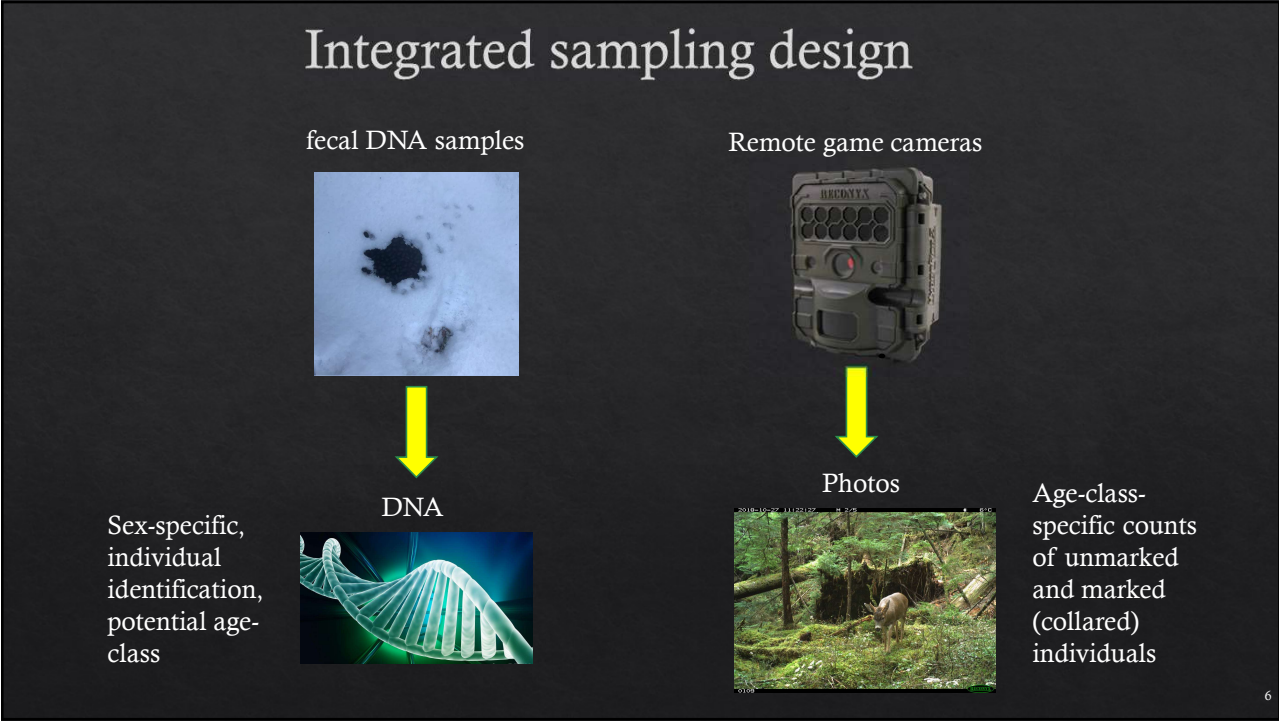


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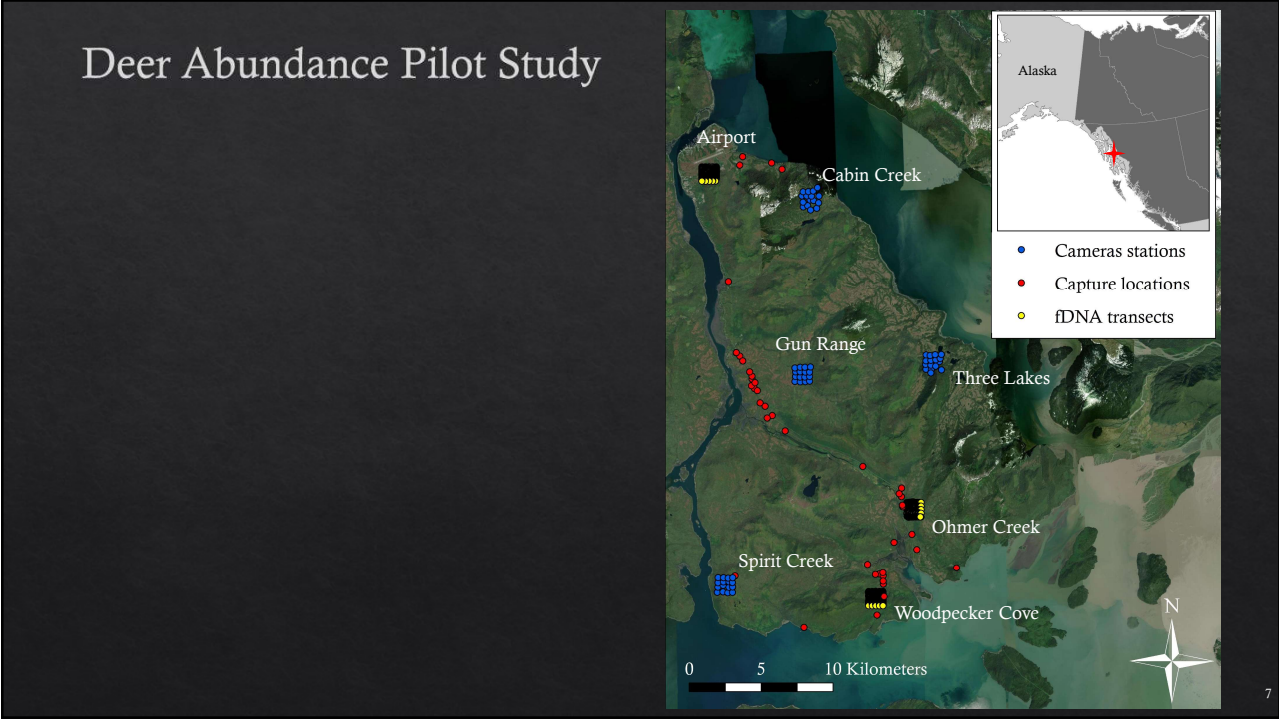
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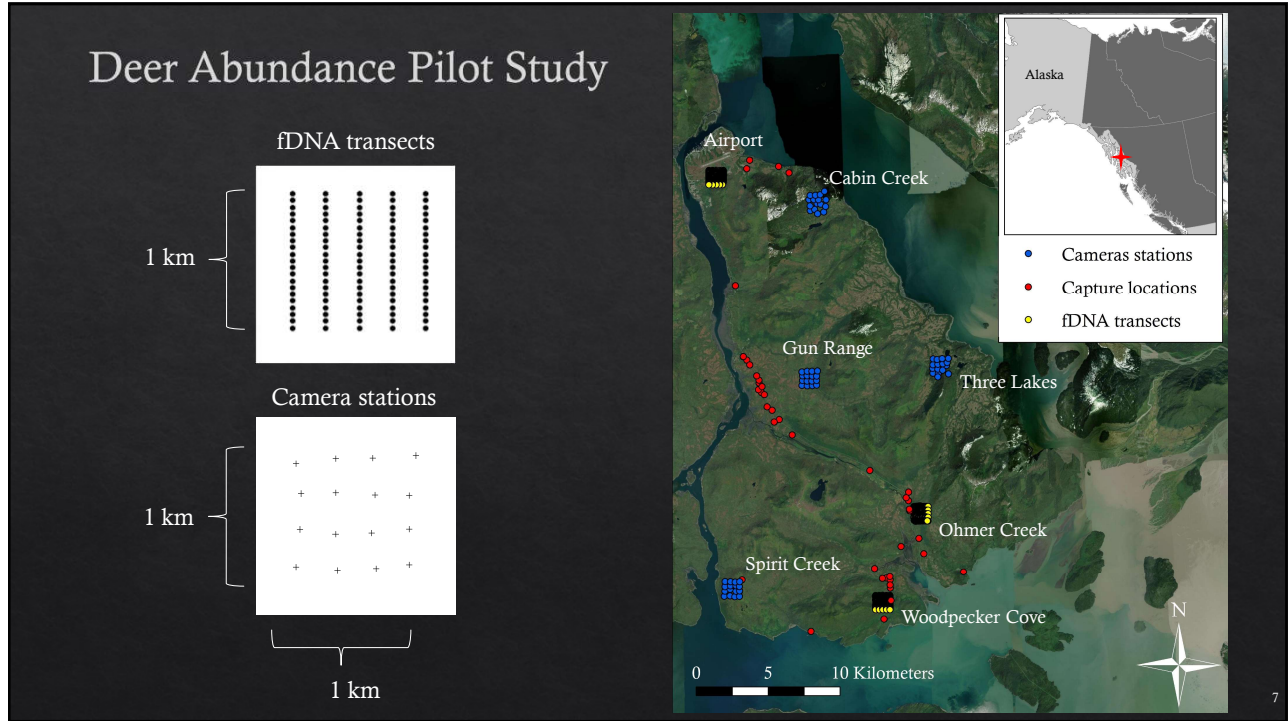




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### fDNA sampling protocol

- Flag each transect (~ 1 km)
- Use snow tracking when available and record effort
- Repeated visits to transects (3 – 4)
- Swab deer pellets for DNA
- Dry and store in desiccant
- Ship samples in coin envelopes to lab for processing

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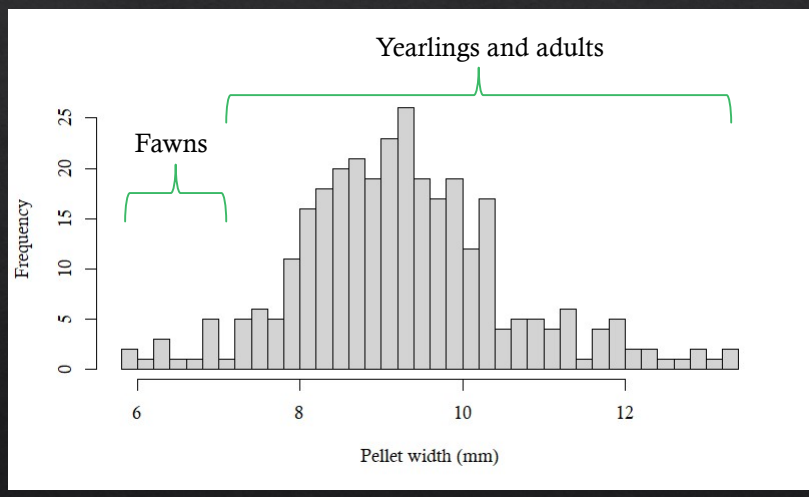
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# Age-Class from Pellet Width Measurements



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# GPS Collars: Annual Survivorship

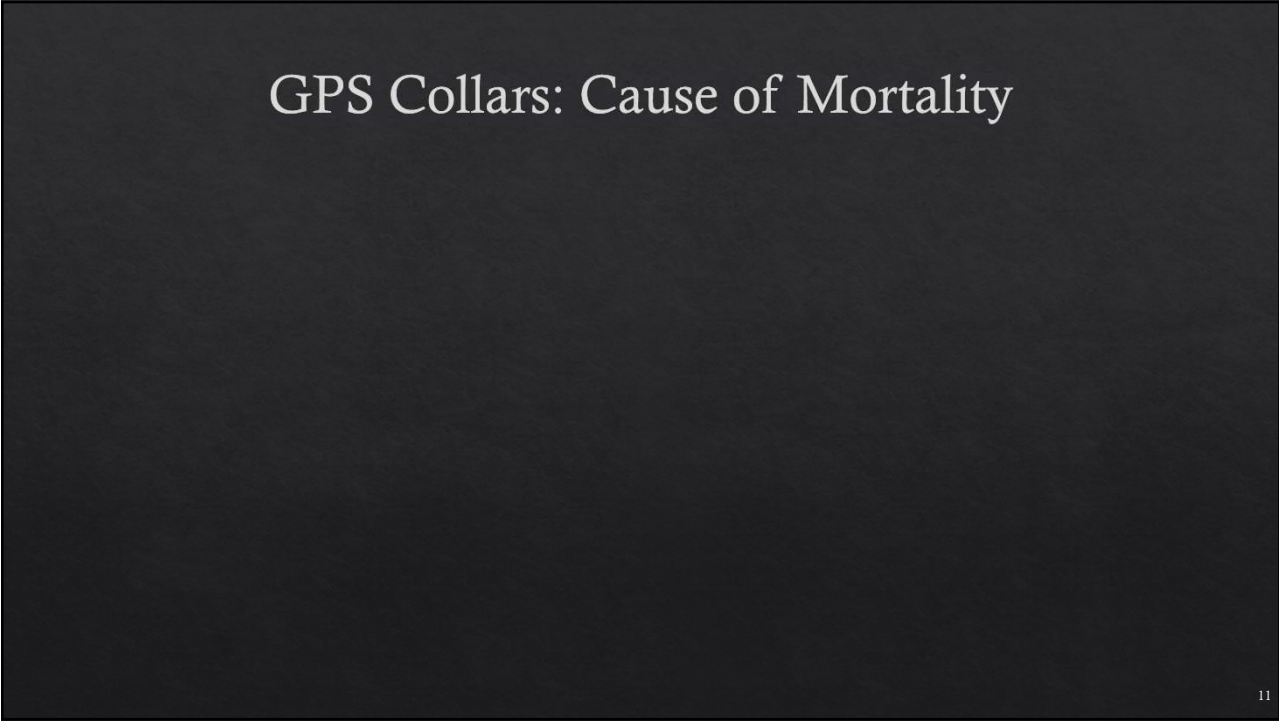


Year	Survivorship	Max. number at risk
2020 – 2021	0.95	20
2021 – 2022	0.89	28

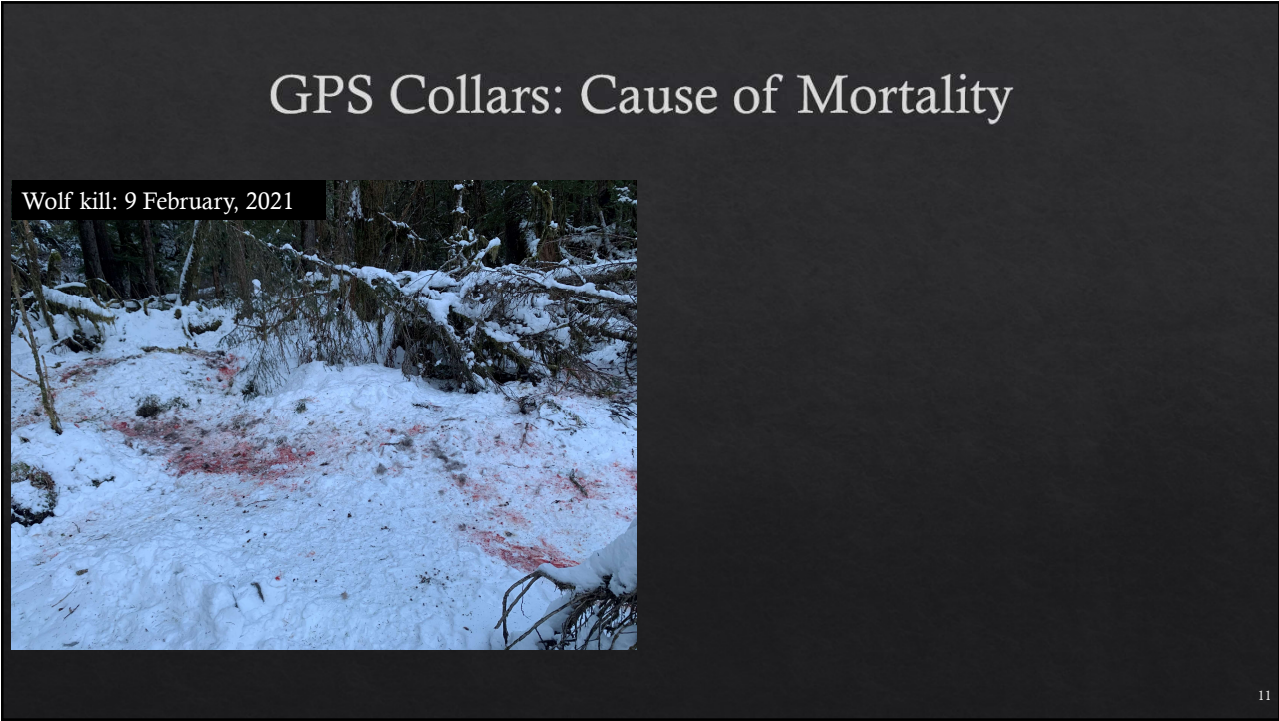
\*Annual period: 1 June – 31 May

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## GPS Collars: Cause of Mortality

Wolf kill: 9 February, 2021



Cause	Number of events	Number at risk	Mortality rate
Wolf	1	20	0.05
Unknown	1	28	0.04
Vehicle	2	27	0.07

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## Research Highlights

- ◆ Collected 3 winters of pilot DNA data including 641 samples
- ◆ Record amplification success rates for fecal DNA samples (~81-92%)
- ◆ 149 unique individuals identified
- ◆ sex ratio: 80 females/69 males
- ◆ 22 deer detected across all three years and 38 detected in 2 years of the study
- ◆ Cutting-edge genetics methods developed for deer to greatly reduce reporting time
- ◆ 41 deer collared so far (2 bucks, 39 does)



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## Application to Deer Management

- ◆ Annual survivorship estimates to provide real-time information on winter severity effects
- ◆ Population structure (proportion of fawns, does, bucks) and trend
- ◆ Buck antler class structure and 'phenology'
- ◆ Validation test for regional camera monitoring program for deer

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- Community of Petersburg
- Frank Robbins and Hilary Wood at the Petersburg office
- Wildlife technicians (Lucas Baranovic, Michelle Duncan, Lars Sorensen, Tim Spivey, Kristian Larson, Yasaman Shakari, Frank Robbins, Alex Rodriguez-Smith, Nathan Ajax, Stephanie Bogle, Tessa Hasbrouck, and Jenell Larsen-Tempel)
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# Questions or Comments



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