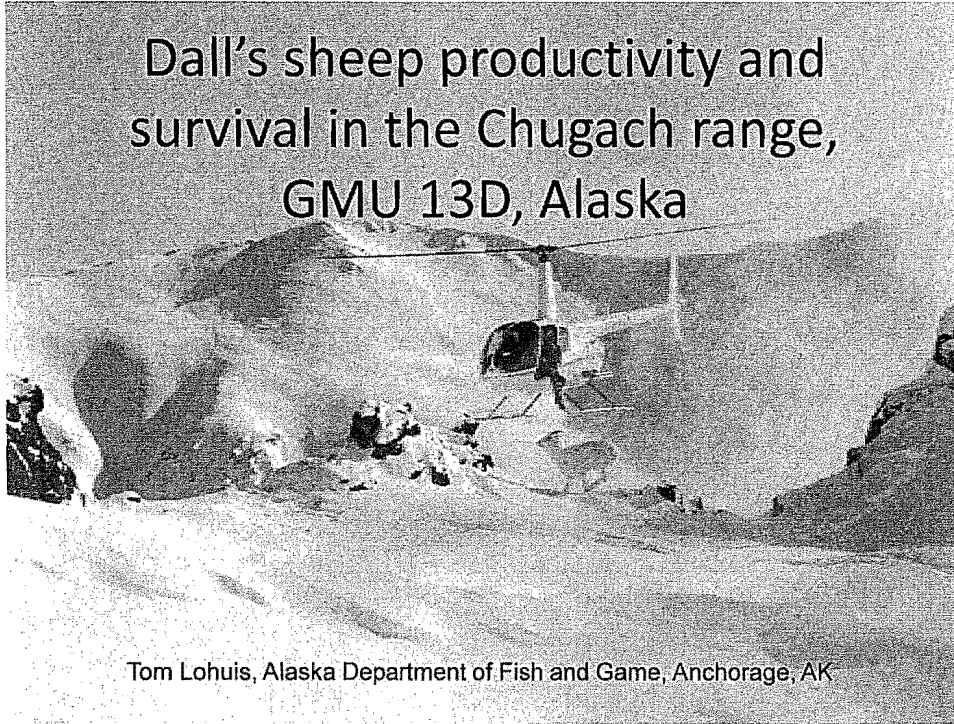
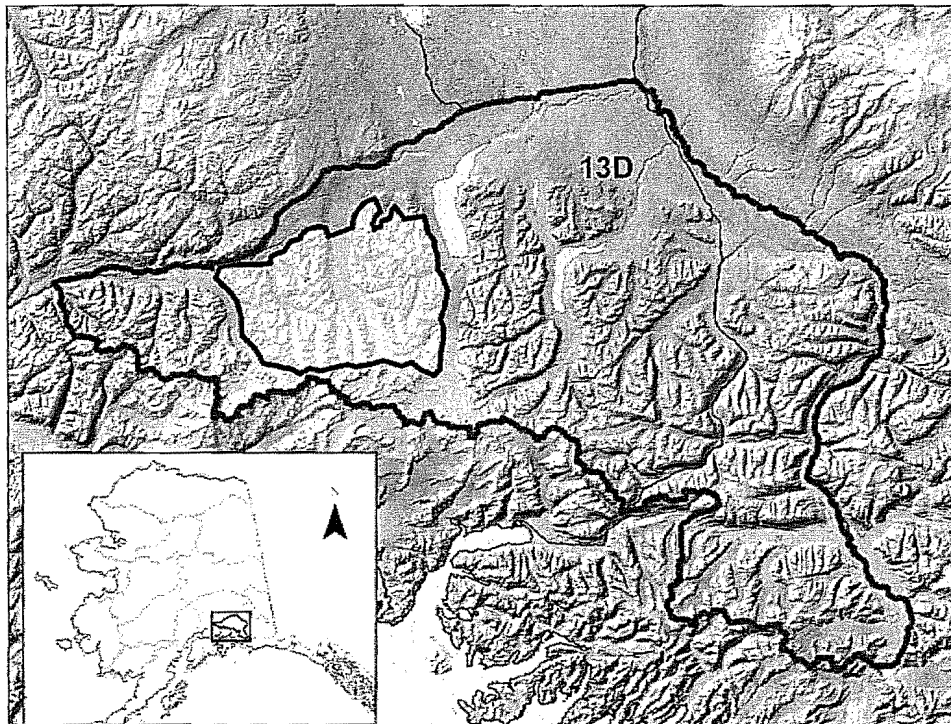


Dall's sheep productivity and survival in the Chugach range, GMU 13D, Alaska



Tom Lohuis, Alaska Department of Fish and Game, Anchorage, AK



Study area background

13D – Declining sheep populations

Unit-wide estimates

~650-750 1960s through 1980s

~350-430 2007 and 2009

➤ Until 2005, declines approximately equal in ram and ewe component

Study area background

13D Study area

High degree of public interest, popular hunting area, 'any ram' harvest on drawing permit as of 2008 hunting season

Logistically easy

Bounded on 3 sides by large glaciers





Project goals

Initial focus: Establish a baseline demographic picture...“What shapes population trends?”

Pregnancy, recruitment, mortality, disease

Lines of inquiry

Weather

Late, heavy spring snows ?

Ice formation ?

Predation

AK range studies (Arthur 2003 and Scotton 1998)

~90% of lamb mortality due to predation

coyotes 47%, eagles 30%

100% adult mortality caused by predation

wolves 57%, bears 7%, wolverines 7%

Lamb survival to 1 yr = 26%

Adult survival = 85%

Lines of inquiry

Habitat and nutrition

Mineral deficiencies? Malnutrition?

Disease

Pneumonia? Reports of dead sheep in this study area
from hunters and during annual surveys

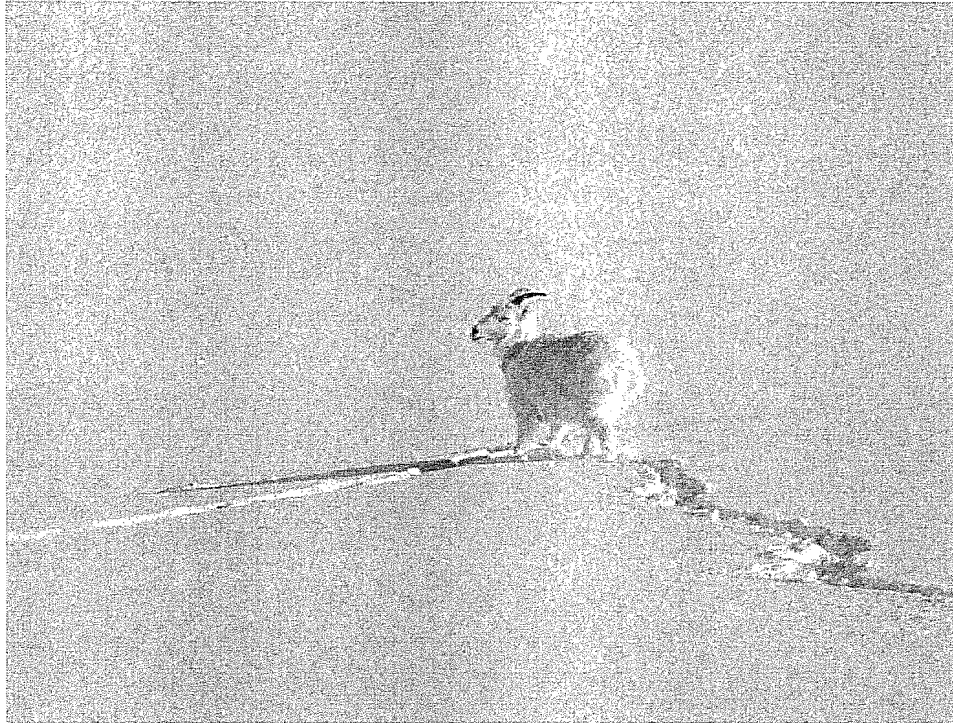
Project Calendar—to date

March-April, 2009 – 37 adult ewes
captured

30/33 recaptured in 2010, +4 additional
ewes

Blood, fecal samples, nasal and pharyngeal
swabs, qualitative body condition
assessment, VHF radiocollar





Preliminary results and observations—adult females

Body condition appeared extremely poor, even for late winter

Ewes weighed between 96-118 lbs (n=5)

AK range 110-130 lbs (Heimer and Watson 1986)

2009 Pregnancy rate lower than expected at 65% (22/34 pregnant)

Other populations 74-95% (AK Range, Arthur 2003)

Probably not age effect, as 7/34 were ≤ 4 y.o., and 5/7 were pregnant

Preliminary results and observations—adult females

2010 Pregnancy rate higher at 88% (30/34 pregnant)

Body condition appeared extremely poor, even for late winter

Preliminary results and observations—adult females

33/37 ewes survived to March 2010 (89%)

2 additional mortalities May 2010

Causes of mortality—adult females

6 adult mortalities as of 5/26/2010

1 unknown (4/2/09)

captured 3/23, carcass not recovered

1 killed by wolverine (4/3/09)

age, deep snow, capture, possible contributors

2 avalanche (4/16/09 and 3/24/10)

1 uterine infection/septicemia (5/25/10, labs pending)

1 pneumonia (5/26/10, labs pending)





Preliminary results and observations—disease

Serum from 35 adult ewes tested for exposure to viral diseases

- ParaInfluenza-3
- Malignant catarrhal fever
- Bovine viral diarrhea
- Bluetongue/EHD
- Ovine progressive pneumonia
- RSV
- IBR

No exposure detected

Preliminary results and observations—disease

Nasal and pharyngeal swabs from 37 adult ewes cultured

19/37 positive for *Pasturella*

7 *Pasturella trehalosi*

12 *Pasturella* spp.

9/37 positive for *Mannheimia hemolytica*

4/9 positive for LkTa gene

0/37 positive for *Mycoplasma ovipneumoniae*

Project Calendar—to date

May 11-June 8, 2009 and May 15-June 3, 2010 – Daily flights to determine parturition, locate lambs, radio collar neonates, and to check for mortality

Preliminary results and observations—parturition

2009: 20 lambs born to 22 pregnant ewes
First lamb born 5/11, last 6/8. Median lambing date 5/27

19 live lambs born to collared ewes, 1 lamb nonviable
16/19 handled and radiocollared

8 lambs born to uncollared ewes handled/collared

Preliminary results and observations—parturition

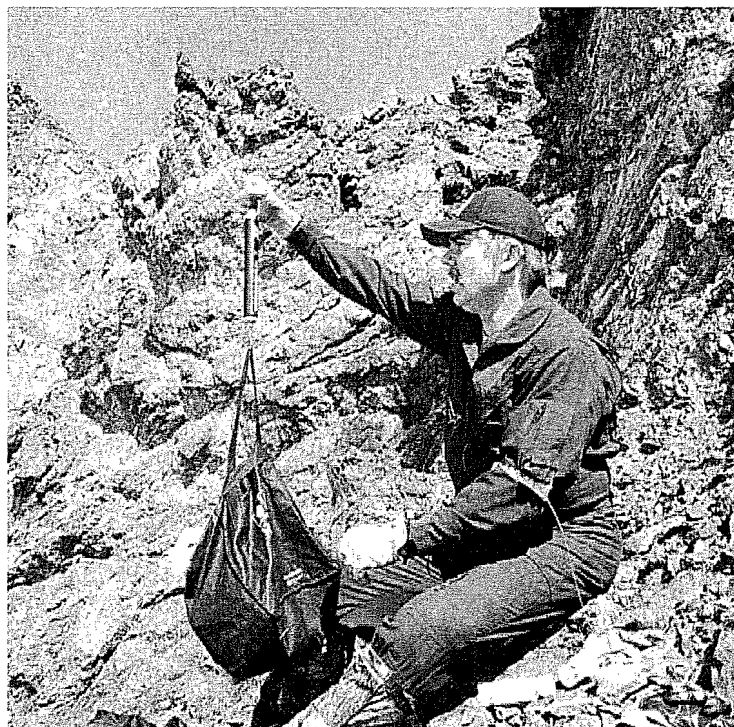
2010: 26 lambs born to 30 pregnant ewes as of
6/3/2010

First lamb born 5/15, last 6/6 - 6/8

13/ 26 captured and radiocollared

13 lambs born to uncollared ewes radiocollared







Project Calendar—to date

June - July 1 – Flights every 2-4 days to check for lamb mortality, mortalities recovered via helicopter and evaluated

July 1-Aug 10 – Flights every 5-7 days, weather permitting

Sept. 15-May 15 – Flights 2x/month

Preliminary results and observations - 2009

No lambs injured during handling

2 lambs killed by eagles after handling removed from sample

Initial sample of 22 collared + 3 uncollared lambs

71% of lambs female

Preliminary results and observations - 2010

No lambs injured or killed during capture

Initial sample of 26 collared lambs

57% of lambs female

Preliminary results and observations—lamb mortality

13/25 2009 lambs alive as of 6/3/10
(52%)

Preliminary results and observations—lamb mortality (2009 cohort)

- Predation (n=5, 20%)

- Eagles at 9d and 17d
- Brown bear at 2d
- Unknown at 15d
- Wolf at 9 mo.

Preliminary results and observations—lamb mortality (2009 cohort)

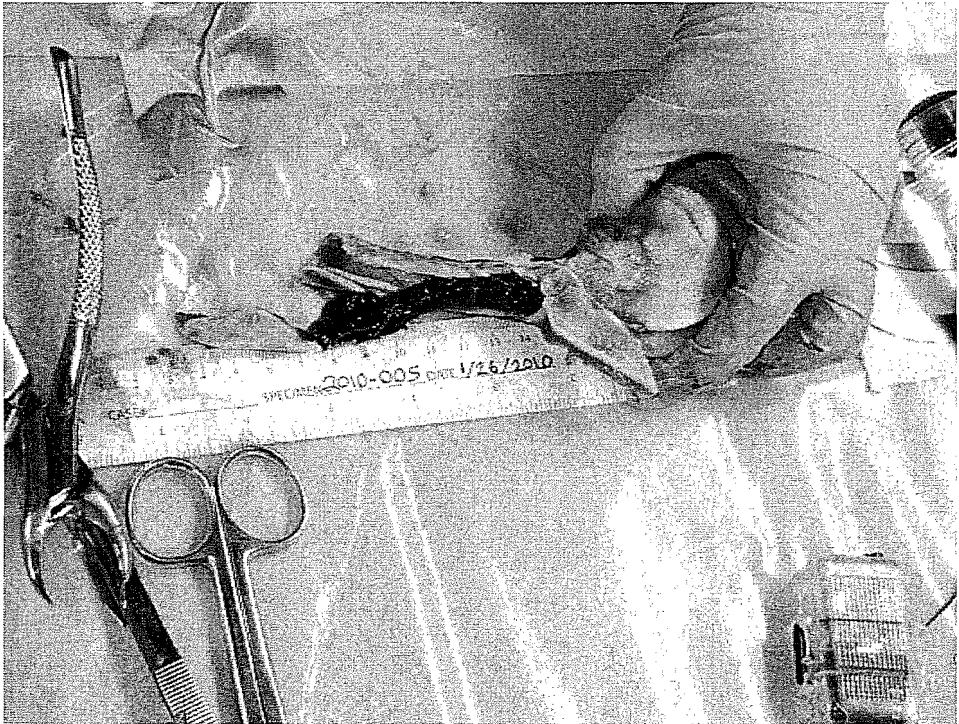
- Nonpredation (n=6, 24%)
 - Starvation at 2d
 - Drowning at 4d
 - Pneumonia /lungworm at 35d
 - Malnutrition/contagious ecthyma at ±7 mos.
 - Malnutrition at ± 8 mos.
 - Avalanche at ± 9 mos.
- Unknown (n=1, 4%)
 - at 46d

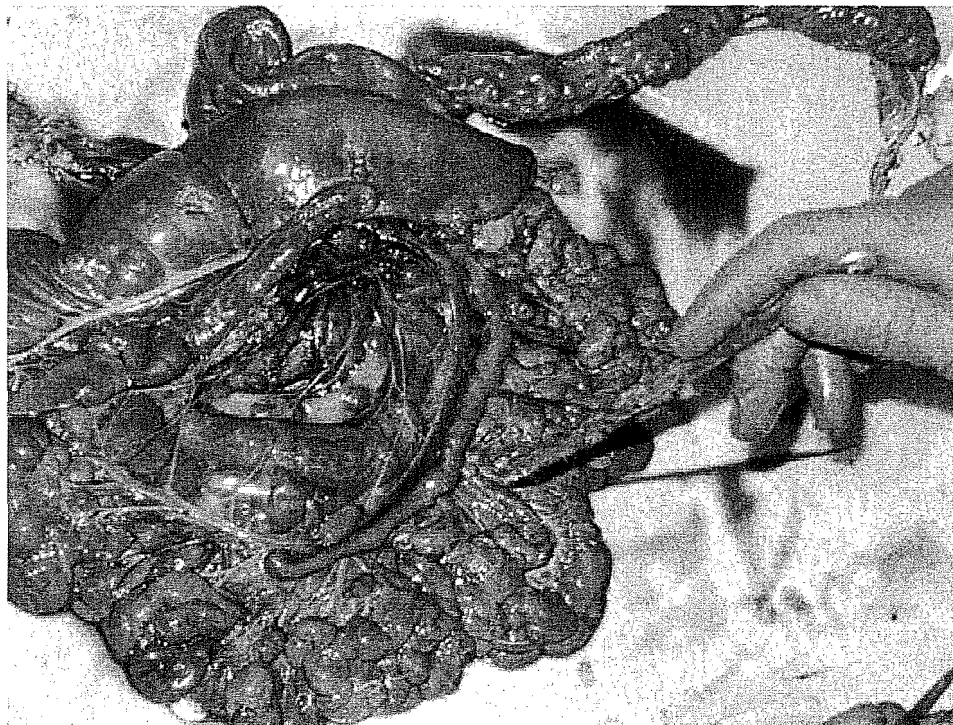
Preliminary results and observations—lamb mortality (2010 cohort to date)

- Nonpredation (n=5, 19%)
 - Starvation at 2d
 - Fall at 2d
 - Drowning at 2d
 - Drowning at 6 d
 - Unknown nonpredation between 6/3 and 6/22
- Predation (n=2, 7%)
 - Eagle at 15d, 16d,









Project calendar - future

2011 - 2012 – Continue captures, pregnancy testing, lamb captures/collaring, monitoring.

Long term reproductive history

Weather effects (freeze/thaw events, snow coverage, snow hardness)

Predation effects when hare numbers decline



Thanks

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