

Lamb Production And Survival of a Bighorn Sheep Population in Central Idaho

Natural Resource Ecology and Conservation Biology Senior Thesis - Summer 2001
Presented by Christopher S. McDaniel

Problem

- Big Creek has a long history of bighorn sheep research
- Akenson and Akenson (1991) documented a *Pasteurella* die-off in 1989 and 1990.
- Initial production = 76 lambs:100 ewes
- Recruitment through summer = 7 lambs: 100 ewes

Study Area

- 2.3 million acre Frank Church – River of No Return Wilderness
- Based out of University of Idaho's Taylor Ranch on Big Creek
- Winter Range
 - Big Creek
- Lambing/Summer Areas
 - Big Creek
 - West Fork of Monumental Creek
 - Red Ridge



Objectives

1. Determine lamb production and survival in 2001 at each lambing area and summer range.
2. Compare survival and production rates of 2001 to those observed by Jim and Holly Akenson in 1989-90
3. Determine timing and probable cause of 2001 lamb mortality.
4. Document lambing areas.

Methods

Field Data Collection

- Air/Ground radio-telemetry on 5 collared ewes
- Observe/Document location, sex/age composition, and other characteristics for all encountered sheep



2001 Production/Survival Data

Time Periods

- Study period was divided into three time periods correlated with lamb development:

Birth: (May 20 – June 15)
Wean: (June 16 – July 15)
Post-wean: (July 16 – Aug 10)



Analysis

- Lamb summer survival coefficients were obtained by dividing lamb:ewe ratios in period (X) by ratios in period (X + 1).
- To determine 2001 production and survival Chi-square comparisons were performed among 2001 lambing periods and lambing areas.
- To compare 2001 to 1989-90 production/survival, Chi-square was run between post-weaning rates in 2001 & 1990 lambing areas.



"It is essential that management objectives for a species as scarce as mountain sheep provide for the continuing collection and interpretation of basic data against a possible time when all of our knowledge and ingenuity may be required to maintain the species"

– D.R. Smith (1954)

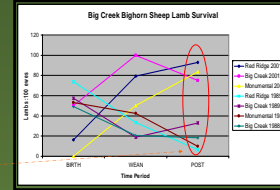
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Results

2001 Production and Survival

- Low initial detection of lambs
- By post-wean time period, high detection and high survival especially when compared to 1989-90 survival



2001 vs. 1989-90

- No significant difference among sites in 1990 or 2001
- Significant difference between Red Ridge, W. Fork Monumental sites and Total summer survival in 1990 & 2001

Summer Survival (Lamb at we ratio to Aug.)			
	1989-90	2001	p
Big Creek	51:100 (51%)	78:100 (78%)	<0.002
West Fork	10:100 (10%)	43:100 (43%)	<0.001
Monumental	0:100 (0%)	6:100 (6%)	<0.01
Total	61:100 (61%)	84:100 (84%)	<0.001

Collared Sheep

- 4* of 5 collared ewes had lambs in 2001
- All 4 successfully reared a lamb through August 2001
- 1 out of 5 in 1989; 0 out of 10 in 1990
- Not showing characteristics of *Pasteurella* die-off
- *5th collar failed before it could be determined if ewe had a lamb



Habitat Use

- At least 1 collared ewe in each lambing area
- Red Ridge Area had highest use.
- Newly documented lambing site within W. Fork Monumental lambing area.
- Arrival of previously undocumented herd on Big Creek

Mortality

- No lamb mortality was directly encountered during in summer 2001
- Average Lamb:ewe ratio of 82:100 (n = 52) at the conclusion of the study on Aug. 10 2001
- Counts in mid-December 2001 show lamb:ewe ratio of 59:100 (n= 53)
- Counts in spring of 3 previous years show late winter ratios of ≈ 30:100
- Lamb mortality is still occurring in the Big Creek population



Conclusions / Recommendations

- High lamb:ewe ratios across the whole population throughout the summer of 2001 (avg. 82:100).
- High survival of lambs of known (collared) ewes (4 Of 4 documented)
- This leads to the conclusion that:
 - Summer lamb mortality not occurring on a large scale.
 - Big Creek bighorn sheep are not likely being affected by *Pasteurella* related mortality at this time.

At Minimum:

- Need to maintain current monitoring practice
- Replace dead/dying collars
- Collar more ewes
- Increase frequency/consistency of aerial monitoring of sheep during the spring & summer
- Ideally:
 - To determine when lamb mortality is occurring, Implementation of a year-round monitoring program is needed.

