

A COMPARISON OF CERTAIN ASPECTS OF THE BEHAVIOUR AND
DEVELOPMENT OF LAMBS FROM TWO POPULATIONS OF BIGHORN
SHEEP (Ovis canadensis canadensis Shaw)

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Abstract

The study was carried out on lambs belonging to two different populations of bighorn sheep in the Canadian Rocky Mountains. The study areas were located at Bare Mountain, Banff National Park, Alberta, and Radium Hot Springs, Kootenay National Park, British Columbia. Information was recorded on all aspects of behaviour related to the nourishment and development of the lambs during their first few months of life. Quantitative data were collected on the durations of suckles, grazing and play bouts, lamb production and development. It was concluded that the lambs from the Bare Mountain population were of poorer quality. The lambs from this population, compared to those from Radium Hot Springs, had a lower milk intake, whilst at the same time relying on a higher forage consumption. Consequently they spent less time in play activities. Bare Mountain lambs also showed markedly poorer growth and development and this appeared to continue into the second year of life. Lamb production also reflected the difference in quality between the two populations, with a lamb to ewe ratio of 33: 100 for the Bare Mountain population, and 70 : 100 for the Radium Hot Springs population. The differences found between these two populations of bighorn sheep are comparable to the results of studies of the effects of high and low plane levels of nutrition on the growth and development of the domestic lamb (Ovis aries).

David Shackleton - Question Period

- Q. Do you have any figures for the length of grazing by a lamb shown on the slide, and when it began?
- A. I observed the first lambs at Banff on 4th June when they were about 2 weeks old, and they were grazing consistently then. The figures as I gave them were mean values and were 2 minutes per lamb and 3 minutes per ewe for grazing bouts. I first observed sustained grazing by Kootenay lambs when they were 7 weeks old, but they could have started two weeks earlier.
- Q. Did you collect data on the difference between range qualities here at all?
- A. No I didn't. This has been studied quite adequately by John Stelfox, although I don't think he is collecting in the Kootenays. This aspect requires a separate study to itself to do it adequately. I must add that the rest of my study is concerned with the social behaviour, morphology and taxonomy of the sheep from the two populations.
- Q. Although I don't believe you did any work on this, in your reading were you satisfied that there is a constant relationship between the amount of forage available and the amount of milk produced by the females?

- A. From the available literature on domestic sheep which I have read, there is good evidence to show that the quality of the forage is very significant, more so than the quantity. The better the quality, the greater the amount of milk produced. This effect is significant whenever the high quality feeding regime is started; whether it is started prior to lactation or up to 4 weeks after its onset.

Comment: On Bill's question about the difference between Banff and Radium (Kootenay), you could probably go back to some of the information on the population at Radium before the die-off in 1966-67 and see that the lambs at that time had the same appearance as the ones at Banff do now, and that the range conditions were similar.

- A. Well, John has the information about this and I am also collecting data on the horn growth and development, from rams which are still living and which were alive before the die-off. There is tentative evidence to support your suggestion.

Comment: There is more evidence from the Wigwam herd as well and this almost parallels your findings Dave.

- Q. Dave, do you have any differences in the time of weaning or didn't you record this?

- A. I guess in domestic sheep weaning occurs around 70 days of age, but I couldn't say for sure in bighorns.

- Q. Was the herd structure the same for both parks?

- A. In Banff there were: 30 adult ewes, 10 lambs, six 2-year old males, six 2-year old females, 4 yearling males and 5 yearling females, giving a total of 61. In Kootenay there were: 26 adult ewes, 19 lambs (12 male and 7 female), one 2-year old male, two 2-year old females, 3 yearling females, 3 yearling males, and 9 rams of 3-years and older, giving a total of 63.

ON THE SIGNIFICANCE OF THERMOCLINES TO THE
BIOLOGY OF WINTERING MOUNTAIN SHEEP

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Abstract

The theoretical significance of why mountain sheep frequent high elevations during mid-winter is investigated. A thermocline is found at high elevations which allows sheep and mountain goats to live at higher ambient temperatures than those occurring in the valleys below. It can be shown that each day-degree in a warmer microclimate saves a significant amount of fat from oxidation, if the animals live below the temperature at which their food intake is insufficient to cover the cost of keeping warm. With the aid of formulas derived from experiments on the bioenergetics of ruminants, it can be shown that each day-degree