Ewe Harvest Strategies for Western States and Provinces—2007.

Authored by: Wild Sheep Foundation Professional Biologists from Alaska, Alberta, British Columbia, Colorado, Montana, New Mexico, and Northwest Territory

***Abstract*:** At the 2007 Professional Wildlife Biologist Meetings held in conjunction with the Western Hunting Exposition in Salt Lake, Utah, a review of the current harvest strategies for wild sheep ewes (*Ovis spp.)* was conducted. A questionnaire, designed to collect data on ewe harvest strategies, was distributed to biologists from 6 jurisdictions that hunted ewes in 2007. This product is a synthesis of the results from that questionnaire and/or oral presentations by biologists from Alaska, Alberta, British Columbia, Colorado, Montana, and Northwest Territory. These data were also presented at the 2008 Northern Wild Sheep and Goat Council Biennial Meeting in Midvale, Utah.

BIENN. SYMP. NORTH. WILD SHEEP AND GOAT COUNC. 16:99-102

Introduction

Female ungulates are regularly hunted in North America with hundreds of thousands of doe white-tailed deer (*Odocoileus virginianus*) and tens of thousands of cow elk (*Cervus elaphus*) harvested annually. A notable exception is wild sheep where just 6 of 20 jurisdictions harvest wild sheep ewes. Three jurisdictions, Alberta (n=~100), Colorado (n=~40), and Montana (n=~125) harvest fewer than 300 bighorn sheep (*Ovis canadensis*) ewes annually. Although Alaska issues >350 Dall's sheep (*Ovis dalli*) permits, <40 ewes are harvested annually. Because the harvest levels are so low in Northwest Territory (n=~20) and British Columbia (n=<10) they were not included in this analysis.

Although trapping and transplantation has been the primary population reduction strategy for most jurisdictions, many wildlife agencies have expressed an interest in the potential for ewe harvest as an additional population management technique. The expense of administering a hunt is generally a fraction of the cost of trapping and transplantation, particularly from wilderness areas requiring consider helicopter time. The questionnaire is attached as Appendix A.

Results

Criteria for a Herd to have a Ewe Hunt?

Rocky Mountain bighorn sheep ewe hunts are used as a population management tool and are often used in concert with translocation to reduce herd sizes below carrying capacity. In Colorado, primarily herds with >100 individuals are hunted. In Alaska and Northwest Territory ewe hunts also provide for subsistence needs.

In Alaska Dall's sheep ewes are hunted by draw, by subsistence, and in remote/restricted access areas. Some hunts are ewe-only while others are either sex or ewe or full curl restrictions. These are used as population reduction hunts as well as increasing sportsmen opportunity.

What are the Specifics for these Ewe Hunts?

The number of permits issued annually ranged from 95-374 among the jurisdictions. To establish the number of

ewe licenses following formulas are used by Alberta and Montana:

Alberta—

$$\text{No. of permits} = \frac{\text{Harvest rate (\%) * (winter ewe + yearling population estimate).}}{\text{Hunter success rate (\%) for that Sheep Management Area}}$$

Harvest rate will not exceed 18% unless a population reduction is needed. Hunter success rate is the average of the preceding 5 years.

Montana—

$$E(t+1) = (E(t) + (L(t) * 0.5)) * (0.95)(1 - (0.15 * 0.9))$$

- Where: E = number of ewes at (t) or (t+1)
- t = time of survey (March-April)
- Annual mortality of 0.05 or survival = 0.95
- L = number of lambs * 0.5 = female lambs recruited
- 0.15 = harvest rate
- 0.9 = Hunter Success

Draw Odds?

The draw odds for ewe hunts were substantially better than draw odds for rams. The probability of being drawn was Alberta 25%, Colorado 72%, and Montana 50%.

Total Number of Ewes Harvested?

In 2007, 4 jurisdictions, Alberta (n=~100), British Columbia (n<10), Colorado (n=~40), and Montana (n=~125) harvested just 277 bighorn sheep ewes.

In Alaska, an average of 374 ewe permits were issued but only about 32 ewes were harvested.

Success Rate?

The success rates were Alberta 44%, Colorado 39%, and Montana 75%. These success rates were substantially less than those reported for rams.

In Alaska, the success rate is only 9%.

What Percentage of Ewes Harvested in Herds?

None of the jurisdictions harvested >10% of the estimated number of ewes within the hunted populations. The highest proportion was in Montana (8.3%), with Alberta (3.1%) and Colorado (2.2%).

Other Issues

One concern is the potential accidental harvest of yearling rams. However all agencies reported few instances of immature rams being harvested instead of ewes. Some herds at carrying capacity do not have ewe hunts. These include herds in protected areas, some herds <100 individuals, and some herds that are limited by diseases. Some herds are not hunted because they continue to be used as transplant stock. In general, ewe hunts are an accepted management strategy to help maintain healthy bighorn herds.

Jorgenson et al. (1993) suggested that 12-24% ewes could be harvested or translocated annually to maintain stable population levels. The ewe harvest rates reported here are presumably too low to influence population demographics or result in increased horn basal circumference as documented by Jorgenson et al. 1993, although the harvest in some Montana herds is close.

Table 1. Synopsis of ewe harvest strategies in Alberta, Montana, Colorado, and Alaska.

	Alberta	**Montana**	**Colorado**	**Alaska**
No. of herds hunted	29	15 of 48 (31%)	7 of 51 (16%)	~14 units
No. of permits	231	169	95	374
Harvest success rate—percent	44	75	39	9
Draw odds--percent	25	49	72	?
No. ewes harvested	102	127	37	32
% of estimated ewe population harvested	3.1	8.3	2.2	?

Literature Cited

Jorgenson, J. T., M. Festa-Bianchet, W. D. Wishart. 1993. Harvesting bighorn ewes: consequences for population size and trophy ram production. Journal of Wildlife Management 57:429-435.

Acknowledgments

We would like to thank C. Addison, J. Allen, T. Carlsen, R. Schwanke, B. Tobey, A. Veitch, and B. Watkins for their contribution to this manuscript. Also we would like thank The Wild Sheep Foundation for hosting the annual Professional Wildlife Biologists Meeting.

Appendix A. Questionnaire sent to biologists in wildlife agencies that harvest female wild sheep.

QUESTIONS FOR EWE HARVEST STATES/PROVINCES— AB/BC/MT/CO/AK

1. **What are criteria for a herd to have a ewe hunt?**
   - Size?
   - Population estimate in relation to carrying capacity?

2. **How many herds have ewe hunts?**
   - What percentage is that of the total number of herds?

3. **What are the specifics for these ewe hunts?**
   - Number of permits issued state/province wide?
   - Percentage of estimated ewe population?
   - Success rates?
   - Draw odds—i.e., are any hunts 'under-subscribed'?
   - Are these 'any-weapon' hunts or 'primitive-weapon' hunts?
   - Issues w/ accidental harvest of immature rams?
   - Do you have herds at K that are not hunted? Why?

4. **General comments on the overall public response to these hunts?**

5. **How do these hunts fit into the overall trap and transplant plan for the province/state—i.e., do you hunt herds that are more difficult/ expensive to trap—e.g., wilderness herds vs. 'drive to' herds?**

6. **Does anyone have data on the hypothesized increase in basal circumference of rams born into herds that are below carrying capacity as a result of ewe harvest—*sensu* Jorgenson et al. 1993?**

Jorgenson, J. T., M. Festa-Bianchet, W. D. Wishart. 1993. Harvesting bighorn ewes: consequences for population size and trophy ram production. Journal of Wildlife Management 57:429-435.