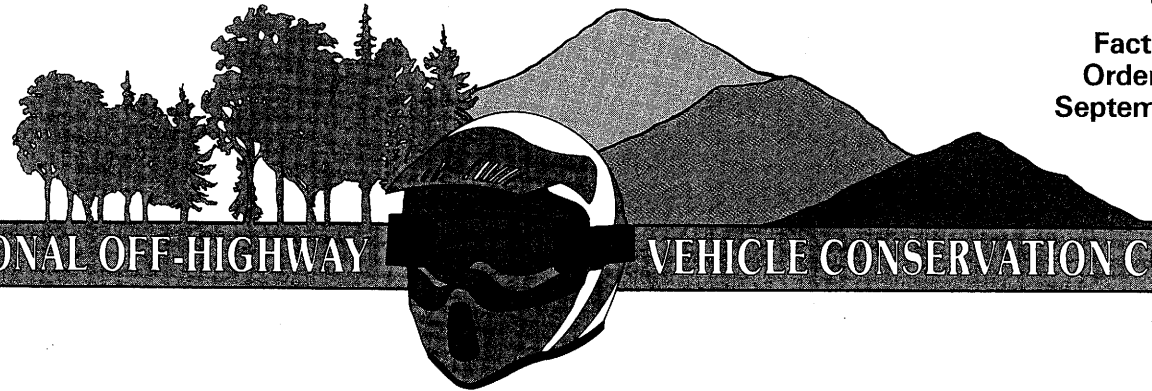


W-0014

NATIONAL OFF-HIGHWAY VEHICLE CONSERVATION COUNCIL



## How Off-Highway Vehicles Affect Mountain Sheep

by Michael E. Laing

### OVERVIEW

In the past two decades, numerous topics have appeared in research papers, dissertations, theses and journals covering the effects of snowmobiles, trail bikes and other forms of off highway vehicles on our environment. These have covered many large mammals such as mountain sheep, elk, mule deer and white-tailed deer. The geographical areas include several states, predominately in the north-eastern, north-western, Rocky Mountain states, and California.

This fact sheet provides a summary of each article available for mountain sheep.

The only article available concerning mountain sheep was written by Robert A. MacAuthur, Valerius Geist, and Ronald Johnston. It was published in the Journal of Wildlife Management in 1982. The article is titled **CARDIAC AND BEHAVIORAL RESPONSES OF MOUNTAIN SHEEP TO HUMAN DISTURBANCE.**

In this study, telemetered heart rates and behavioral responses of mountain sheep reacting to human disturbance in the Sheep River Wildlife Sanctuary of southwestern Alberta were recorded. The area encompasses the winter range of a hunted population of 90-120 mountain sheep. Within the sanctuary, sheep are regularly exposed to human activities along a gravel road. This provides 25-30 recreational vehicle encounters per hour during peak periods.

Electrocardiograms (ECG) were placed subcutaneously on trapped sheep (four ewes and one ram). Data was collected between March 4 and May 10, 1978 and 1979 from the five sheep. Data was collected from two ewes and one ram between October 30 and December 18, 1979. Observation was made from a parked vehicle. Visual surveillance was completed in a one to four hour period. Heart rate was documented every 10 minutes. Heart rate was also recorded during normal social interaction and dur-

ing exposure to predators, road traffic, aircraft, and people.

Harassment trials were conducted by a person approaching the sheep to within 50 meters with and without a leashed dog. Beginning in March 1979 a step wise approach was incorporated in which the advancing person made three minute stops from the sheep at a distance of 150 meters, 100 meters, 50 meters and 25 meters. Trials were included in which five instrumented sheep were approached by a person walking from a parked vehicle on the road or from over the ridge away from the road.

It was determined that cardiac and behavioral responses of the sheep to an approaching human were greatest when the person was accompanied by the dog or approached sheep from over the ridge. Reactions to road traffic were minimal. No responses to aircraft were observed at distances exceeding 400 meters from the sheep.



The collected data also suggested that on sheep ranges used heavily for recreation, disturbance to sheep may be minimized by restricting human activities to roads and established trail systems. The presence of dogs on sheep ranges should be discouraged.

#### **BIBLIOGRAPHY**

MacArthur, R.A. Geist, V. & Johnston, R.H., (1982) Cardiac and behavioral responses of mountain sheep to human disturbance. *Journal of Wildlife Management*. 46 (2):351-358.

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