

RESEARCH ABSTRACT

**Principal Investigator(s):**

Evelyn H. Merrill  
Department of Zoology  
University of Wyoming  
University Station, Box 3166  
Laramie, WY 82071

Richard D. Taber, Ken J. Raedeke  
College of Forest Resources AR-10  
University of Washington  
Seattle, WA 98195

**Study Title:** Population dynamics and habitat ecology of elk in the Mount St. Helens blast zone

**Key Words:** terrestrial animal upland vertebrate elk  
forage blowdown zone recovery archives

**Abstract:** Population dynamics and seasonal patterns of foraging behavior of elk in the northwest portion of the Mount St. Helens blast zone were investigated during the years 1982 through 1985. A combination of rapid vegetation regrowth, mild winters, restricted human access and low harvests allowed a rapid re-invasion and recovery of the elk population.

Eight major plant communities were identified in the Mount St. Helens blast zone. By 1983, plant composition in the blast zone was similar to adjacent lands outside of the blast zone that had been recently logged.

During the winter, elk used low elevational benches along the major river drainages particularly the seeded debris slide of the North Fork of the Toutle River. In spring, elk moved up in elevation to calve. Early successional fireweed communities and seeps were selected by elk during the summer and fall. Diets of elk were generally higher in forbs during the summer and grasses in the fall and winter than diets of most west coast elk populations. Changes in diet selection were consistent with an energy maximization strategy. Elk selection of plant communities was positively correlated with forage abundance.

Heat flux models indicated that because of large body size, high sweating capabilities, and an increase in wind velocities in afternoon, elk could maintain body temperatures in the open blast zone communities in summer. Model predictions were consistent with our observations that elk did not move to forest cover unless it was readily available.

**Type of Measurement(s):**

- Radio telemetry location
- Meteorological/air temp, wind, humidity
- Standing phytomass
- Elk activity
- Forage quality - IVDDM, crude protein
- Fecal analysis-elk food habits
- Animal counts, herd composition

- Elk fetus collections and kidney fat indices

**Frequency of Measurement(s):**

- Radio telemetry location: approximately 10 days, January-December, 1983-1985.
- Meteorological/air temp, wind, humidity: 24 hr/day, June-November, 1985.
- Standing phytomass: monthly, June-November, 1985.
- Elk activity: 24 hr/day, 12 days/month, June-November, 1985.
- Forage quality - IVDDM, crude protein: June-November, 1985.
- Fecal analysis-elk food habits: crude protein--monthly, June-November,1985; species composition--June-November, 1985.
- Animal counts, herd composition: spring and fall, 1983-1985.
- Elk fetus collections and kidney fat indices: fall, 1983-1985.

**Data Storage:** Data are stored on field forms; computer files are in Dec Rainbow CPM Wordstar and Lotus files; Rustrak recorder tapes. Data have been published in a final report.

**Long-term plans:** Data available for collaborative efforts: Data are available but no future plans at present. Merrill would like to see additional data collected on the elk population after the next 5 years.