Aspen Height, Stem-Girth and Survivorship in an Area of High Ungulate Use

Richard B. Keigley, Research Ecologist, U.S. Geological Survey, Northern Rocky Mountain Science Center, 632 Coulee Drive, Bozeman, MT 59718

Michael R. Frisina, Range-Habitat Coordinator, Montana Fish Wildlife and Parks, 1330 West Gold Street, Butte, MT 59701

An increase in an ungulate population potentially exposes aspen suckers, saplings, and trees to an increased level of use. This study examined how stem height and stem girth influenced the selection of stems by ungulates for browsing, rubbing, and gnawing, and reconstructed the history of ungulate use for the study area. Transects were run through each of three aspen clones growing on the Fleecer Wildlife Management Area to determine the height, circumference, and surface area of stems injured by rubbing and gnawing. Stems in the height range of 20 to 250-cm tall were browsed. Stems 2- to 13-cm diameter and greater than 80-cm tall were preferentially selected for rubbing and gnawing. The area of exposed xylem on dead saplings was 2- to 3 times the area of exposed xylem on live stems. There were no live stems in the 76- to 349-cm height range. Based on an analysis of stem height and age, ungulate use of the aspen clones was inferred to have increased from a light-to-moderate level to an intense level in the early 1990s. We concluded that elk were primarily responsible. The findings of this study have implications for aspen restoration programs and wildlife management. Where ungulate numbers are high and aspen is desired, aspen should be protected from browsing, rubbing and gnawing until stems reach about 13-cm diameter and have grown out of the browse zone. In this study area, aspen would require about 25 yrs to grow to that size.