

DYNAMICS OF HUNTED AND UNHUNTED MOUNTAIN GOAT POPULATIONS

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Abstract: Native populations of mountain goats (*Oreamnos americanus*) are sensitive to harvest. To assess the potential effects of limited hunting on population dynamics, we analysed long-term data obtained from annual aerial counts of twelve mountain goat herds in Alberta from 1973 to 1999. Eight herds were hunted until 1987, and 4 were not hunted. Mountain goat numbers declined in most herds between 1980 and 1983, despite a decrease in the number of permits issued. Hunting was closed in 1987. We found that temporal changes in population size varied among herds over the same period, suggesting that herd-specific factors were responsible for these changes. Only 3 of 8 herds showed a marked increase after hunting was closed. The unhunted herds also showed substantial among-herd differences in population trends, suggesting that the impact of harvest varies among populations and that goat management must be herd-specific. Juvenile/adult goat ratios based on aerial surveys were not clearly associated with harvest levels, and were only slightly affected by weather conditions, but these ratios are a poor estimator of recruitment. Our results suggest that factors other than harvest contributed to the population decline. Future harvests should target adult males, but in an intensively studied population adult sex ratio was heavily biased in favor of females. A herd of 100 goats may only sustain the harvest of 1-2 adult billies a year.
