

AERIAL CENSUSING OF CARIBOU POPULATIONS
THROUGH THE USE OF STRATIFIED RANDOM SAMPLING

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The successful management of game populations is dependent upon accurate census information. In Alaska

to census game populations it is necessary to use aerial observations because of the vast mountainous areas which are involved. Much of the previous aerial work has lacked sufficient refinement so that standard statistical methods usually were not applicable, and a measure of the precision was not available. In this paper a stratified random sampling procedure for censusing caribou is outlined. Strata were constructed according to population densities, and sampling units which were four square miles in area were constructed within each stratum. Allocation of the sampling units was proportional to the estimated number of caribou that occurred in each stratum. This type of allocation allowed more sampling effort to the more variable strata, thus approximating the requirement of optimum allocation and helping to minimize the variance of the population estimate. The relation of the strata means and variances was examined to establish a reference which may be used for the allocation of sampling effort for future surveys. The population estimate, and 0.95 confidence limits (for the areas where the stratified sampling procedure was completed), was found to be 52,607 \pm 11,234. This sampling procedure was found to be very adaptable to the rugged terrain typical of the census area. The final estimates of size of the Nelchina caribou herd, including the direct count areas, was 70,000 animals (1).

Notes

1. Financed through Federal Aid to Wildlife Restoration funds, Research Project W-6-R. Alaska Department of Fish and Game

SCIENCE
IN ALASKA

1962

Proceedings
Thirteenth
Alaskan Science Conference
Juneau, Alaska

August 22 to August 26, 1962

Published by
ALASKA DIVISION
AMERICAN ASSOCIATION FOR THE ADVANCEMENT
OF SCIENCE

April 25, 1963