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# CLIMATIC VARIATION AND AGE RATIOS IN BIGHORN SHEEP AND MOUNTAIN GOATS IN THE GREATER YELLOWSTONE AREA

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Using management data regularly collected by state and federal agencies, we indexed recruitment rates of bighorn sheep and mountain goats in the Greater Yellowstone Area (GYA) by calculating young:adult ratios. Annual and long term regional climatic conditions were indexed using data from Natural Resource Conservation Service Snotel sensors across the GYA. Linear regression models were used to assess hypotheses that recruitment rates in bighorn sheep and mountain goats in the GYA were associated with annual and regional variation in climatic conditions. The initial dataset consisted of 685 bighorn sheep lamb:ewe ratios from 21 herds since 1960 and 184 mountain goat kid:adult ratios from 18 herds since 1966. After censoring data, 369 bighorn sheep records remained, which were split into three seasonal subsets, and 123 mountain goat records remained in a single dataset. Findings suggest that recruitment rates in bighorn sheep and mountain goats were associated with annual variation in both pre-birth and post-birth climatic conditions, interacting with long term regional climate conditions. Additionally, strong interactions were found between precipitation during the birthing season and winter severity. Collectively, these findings suggest that recruitment in bighorn sheep and mountain goat populations in the GYA may be sensitive to changes in future climate conditions and that the response may vary regionally across the GYA.