

Pronounced Effects of Hunter Harvest on Mountain Goats in the Case of Small and Demographically Fragmented Populations

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With spatially patchy population structuring, slow life history, and relatively high vulnerability of reproductive-aged females to harvest, mountain goats are a species where the intersection of small populations and harvest management has important implications. There are rules of thumb for harvest rates of mountain goats, but how to define population units when applying such rules can be unclear. We combined historic data for hunter harvest of mountain goats in Montana with population projection matrix models to explore goat dynamics under harvest management. First, we used historic hunter harvest data to assess the evidence that hunting played a role in native mountain goat population declines. Next, we assessed the implications of spatial structuring of goat populations when applying recommend harvest rates to populations in the future. Rectifying simulated population dynamics with historic hunter harvest data suggests over-harvest to be a likely culprit behind declines in several native populations in Montana, even under an assumption of otherwise favorable demographic conditions. Second, the spatial management of harvest can strongly influence the impacts of harvest going forward, with potential to exacerbate harvest effects if unevenly prescribed across subpopulations.