
COMBINING HUNTER SURVEYS AND TERRITORIAL DYNAMICS TO MONITOR WOLF PACK ABUNDANCE AND DISTRIBUTION IN MONTANA

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Carnivores are difficult to monitor on large spatial scales. We developed a patch occupancy model (POM) using hunter surveys to monitor gray wolves (*Canis lupus*) in Montana, and evaluated the ability of these models to provide wildlife managers with a time-and cost-efficient monitoring technique. We used hunter's sightings of wolves as our index of occupancy and explored how classifying a patch as occupied based on different minimum number of wolves sighted (1,2,3,4, or 5) or different minimum number of hunters sighting wolves (1,2,3,4, or 5) affected results. We also evaluated how our definition of a "patch" influenced the occupancy estimates by creating POMs with 3 different patch sizes that corresponded to the variation in wolf territory sizes in Montana. We ran multiple models with different patch sizes predicting occupancy classified according to different levels of minimum wolf sightings and minimum hunters seeing wolves. We assessed model accuracy by comparing POM estimates to the Montana Fish, Wildlife, and Parks (FWP) minimum wolf pack count. Our preliminary results showed that patch size did not strongly influence occupancy estimates and that a patch should only be identified as occupied if ≥ 2 to ≥ 4 hunters each observed ≥ 2 to ≥ 4 wolves in that patch. Within this range, FWP's minimum wolf pack count fell within the 95-percent confidence interval of POM estimates for 33 percent of the models.