
DEVELOPING A MONITORING FRAMEWORK TO ESTIMATE WOLF DISTRIBUTION AND ABUNDANCE IN SOUTHWEST ALBERTA

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Gray wolf (*Canis lupus*) populations are difficult to monitor because wolves can be elusive and occur in low densities. Traditional radiotelemetry-based monitoring methods have limited application when turnover is high within the wolf population and resources to maintain long-term collaring programs are limited. We worked collaboratively with Alberta Environmental Sustainable Resource Development between 2012 and 2014 to develop techniques for monitoring gray wolf populations in the absence of radiotelemetry in southwest Alberta. We surveyed potential rendezvous sites and collected DNA samples from wolf scats for genetic analysis and surveyed hunters for wolf sightings made during the hunting seasons.

We fit false-positive occupancy models to annual detection data derived from genetic results and hunter surveys with Program PRESENCE. We found percent forest cover and human density positively influenced pack occupancy whereas detection probabilities varied by survey method, sampling effort, and sampling season. The model predicted wolf pack occupancy well and distribution and abundance estimates were consistent with agency predictions. While developing the monitoring framework, questions arose regarding pack turnover and population growth under widespread human harvest. Previous studies have focused on population recovery following wolf control actions but little emphasis is put on populations that exist under regular harvest. We will use genetic data to determine how immigration contributes to wolf population trends under a long-term harvest regime and tie this into pack occupancy through colonization and local extinction probabilities. This will expand the application of our occupancy model and will further clarify how wolf populations respond to long-term regulated harvest.