

Evolving Models for Evolving Conditions - Updating Montana's Wolf Group Size Model for iPOM (Integrated Patch Occupancy Model)

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Montana Fish, Wildlife and Parks uses iPOM (Integrated Patch Occupancy Model) to estimate wolf abundance in the state. This method involves several submodels, including a group size model that was developed in 2019 based on data from 2005–2018. However, substantial changes have occurred since 2018, including liberalized harvest regulations, additional covariate data, and five years of new pack size observations from monitoring efforts. These changes provided the opportunity to revisit the model, therefore we developed and tested a revised group size model. The new model integrates data on harvest regulations, mortalities, pup presence, and environmental features to better account for temporal and spatial variability in group sizes. The model provides good accuracy in predicted versus observed group sizes, regardless of count quality classifications from field observations, and appears to help correct for undercounts that are probable in poor quality observations. This updated approach provides a more robust understanding of wolf group size dynamics and their environmental and anthropogenic drivers, offering insights for adaptive management of wolf populations under evolving ecological and regulatory conditions.