Importance Of Recruitment To Accurately Predict The Impacts Of Human-Caused Mortality On Wolf Populations

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Reliable analyses can help wildlife managers make good decisions, which are particularly critical for controversial decisions such as wolf (*Canis lupus*) harvest. Creel and Rotella (2010) recently predicted substantial population declines in Montana wolf populations due to harvest, in contrast to predictions made by Montana Fish, Wildlife and Parks (MFWP). Here we replicate their analyses considering only those years in which field monitoring was consistent, and we consider the effect of annual variation in recruitment on wolf population growth. We also use model selection to evaluate models of recruitment and human-caused mortality rates in wolf populations in the Northern Rocky Mountains. Using data from 27 area-years of intensive wolf monitoring, we show that variation in both recruitment and human-caused mortality affect annual wolf population growth rates and that human-caused mortality rates have increased with the sizes of wolf populations. We also show that either recruitment rates have decreased with population sizes or that the ability of current field resources to document recruitment rates has recently become less successful as the number of wolves in the region has increased. Predictions of wolf population growth in Montana from our top models are consistent with field observations and estimates previously made by MFWP. Familiarity with limitations of raw data helps generate more reliable inferences and conclusions in analyses of publicly-available datasets. Additionally, development of efficient monitoring methods for wolves is a pressing need, so that analyses such as ours will be possible in future years when fewer resources will be available for monitoring.