

## ADAPTIVE HARVEST MANAGEMENT OF MULE DEER IN MONTANA<sup>TWS</sup>

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A decline in mule deer populations in the mid-1990's provided impetus for innovation in mule deer harvest management. The FWP Commission officially adopted the Adaptive Harvest Management (AHM) process in 1998. Recognizing that there is much we do not understand about the dynamics of mule deer populations sets AHM apart from traditional forms of management. Strong differences of opinion concerning the effects of hunting regulations on population trends result from uncertainty about the effects of hunter harvest. A redesign of the entire management process improves identification and consideration of these uncertainties to reveal new knowledge about the resource. Four basic components are linked in this process: 1. Population goals and objectives are specific to differences in population characteristics among five important environments. Objectives for each environment define levels of fluctuation more acceptable to landowners and hunters. 2. Population monitoring has been reorganized to increase quality and consistency of data on population size and composition using standardized methods. Monitoring includes two levels of aerial survey intensity: trend areas and census areas. The former are flown twice per year (post-hunting season and spring) and the latter 4 times per year (post-hunting season and 3 times in spring). Post-hunt surveys occur between December 1 and January 15 and spring surveys between March 15 and April 30. Trend areas provide data on status of local populations at 67 sites across land ownerships and land-uses. Replicate surveys during spring on census areas provide detailed data on size and composition of 13 important populations across the major environments. Monitoring data define population status in relation to objectives and connect together the other components of the AHM process. 3. Hunting Regulations in a three-part package (restrictive, standard, liberal) provide an array of harvest rates for populations in each environment. Recommendations to change regulations are triggered by a priori thresholds of population size and composition. 4. Computer Models of prairie and mountain mule deer populations have been constructed using STELLA modeling software. Data on population size and composition from the 13 census areas are integrated with environmental data and harvest regulations to predict population status one year into the future. Feedback between modeling and monitoring allow comparison of model predictions to observed population data. This process improves detection of significant changes in population status and provides more timely response. Annual iteration of the AHM process brings harvest management closer to an organized experiment, rather than simply an ongoing experience.