Viability of Resident Deer and Elk Hunter Participation in Montana

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The majority of funding for Montana FWP programs is generated or tied to sales of deer (*Odocoileus* spp.) and elk (*Cervus elaphus*) hunting licenses. Future declines in deer or elk hunter participation could therefore have negative consequences for wildlife management and conservation programs. To investigate deer and elk hunter participation rates in Montana, we made use of the FWP Automated Licensing System (ALS) database. Since 2002, the number of individuals buying deer and elk licenses has been roughly stable. We converted the data in ALS to a 6 (yrs) by 255,851 (unique individuals) matrix of resident hunter encounter histories for the period 2002-2007. Using a multi-state mark recapture model, we estimated hunter retention rates, hunter license buying probabilities, and transition probabilities between major age classes, considering hunter sex and region of residence as group covariates. We then used FWP hunter education databases to estimate hunter recruitment rates. Using these estimated rates, we parameterized and analyzed a stage-based population projection matrix. Estimated recruitment rates for teenagers following hunter education courses were sufficient to stabilize

the trend in deer and elk hunter participation, given our estimates of retention and license buying rates, in agreement with the overall trend in license sales for 2002-2007. Based on sensitivity and elasticity analyses of the projection matrix, future hunter participation rates and license sales would be most influenced by increases in recruitment rates and license buying probabilities for middle-aged adult and teenage males. We discuss the implications of these results for FWP hunter recruitment and retention efforts and social trends.