Atamian, M. and J. Sedinger. 2005. Dynamics of Greater Sage-grouse (*Centrocercus urophasianus*) Populations in Response to Transmission Lines in Central Nevada. Progress Report: Year 3. Department of Natural Resources and Environmental Sciences, University of Nevada - Reno.

Abstract**:** To characterize demographic processes in greater sage-grouse (*Centrocercus urophasianus*), we monitored 11 lek sites in a 3800 km^2 area in Eureka County, Nevada. The long-term goal of this 10 year study is to assess the impact of Sierra Pacific Power Company's Falcon-Gondor transmission line on sage-grouse demography and population dynamics. We used mark-recapture, lek observations, nest & brood monitoring, vegetation sampling and radio telemetry to estimate key demographic parameters. A total of 474 sage-grouse (378 male, 88 female, & 8 young of the year) have been banded with both a color and metal band during the first three years of the study. We used lek observations, and recaptures and resighting of banded individuals to estimate population demography and movement probability. The robust design data structure for capture-recapture data for males made use of the pattern of captures among months of the lekking period and allowed us to estimate size of the male population, annual survival of males and the probability that the average male attended a lek at least once during the spring. We used radio telemetry to locate nesting females, follow broods through fledging, and to estimate female survival. Once located, nests were monitored to estimate nest success and nest site vegetation was measured. Using Program MARK, we estimated daily nest survival at 0.9562 (95% CI = 0.9412-0.9675) and nest success at 0.2853 (95% CI = 0.1823-0.3966). Nest site vegetation characteristics were evaluated as covariates in a nest success analysis. Our data suggested a correlation between nest success and some of these vegetation parameters. Hens with broods were checked once a week and their young counted until young were independent (45-50days). We estimated chick survival for the first 45 days at 0.2987 (95% CI = 0.2168-0.4106). Program MARK known fate data type, was used to estimate an annual female survival of 0.5952 (95% CI = 0.5095-0.6809). We estimated the size of the male population as 684 ± 76 (SE). Annual survival of adult males was estimated as 0.68 ± 0.06. and the probability that the average male attended a lek at least once was 1.0.