

**PENNSYLVANIA GAME COMMISSION
BUREAU OF WILDLIFE MANAGEMENT
PROJECT ANNUAL JOB REPORT**

PROJECT CODE NO.: 06210

TITLE: White-tailed Deer Research/Management

PROJECT JOB NO.: 21010

TITLE: Survival and Response to Hunting Activity of Female White-tailed Deer

PERIOD COVERED: 1 July 2007 through 30 June 2008

COOPERATING AGENCIES: Pennsylvania Cooperative Fish and Wildlife Research Unit, The Pennsylvania State University, Department of Conservation and Natural Resources

WORK LOCATION(S): Wildlife Management Units (WMUs) 2G and 4B

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ABSTRACT In 2007, we monitored survival, dispersal, and movements of GPS-collared female deer in response to hunting activity in Wildlife Management Unit 4B. We also conducted aerial surveys of hunters during the 12-day rifle deer season. Final analyses are being prepared as part of a Masters of Science thesis. A final report on this project is expected in 2009.

OBJECTIVES

1. Estimate female survival and mortality causes.
2. Quantify effect of variables on survival.
3. Estimate female dispersal.
4. Estimate density and distribution of hunters on 2 study areas.
5. Monitor home ranges and movements of antlerless deer on these study areas to determine the response of deer to hunting-related activities.
6. Determine if specific environmental factors are related to whether an antlerless deer is harvested by a hunter (e.g., proximity to area closed to hunting, distance from road, etc.).

METHODS

Survival and locations of GPS-collared deer in WMU 4B were monitored through December 2007. Aerial surveys were conducted during the regular rifle season in WMU 4B to determine the density and distribution of hunters (Stedman et al. 2004, Diefenbach et al. 2005). Fixed-wing aircraft flew transects across the study area, pending acceptable weather conditions, and observers marked the locations of hunters on a tablet PC with a digital pen. All data were geo-referenced and analyzed in a Geographic Information System. Hunter density was estimated using distance sampling methods (Buckland et al. 2001) and hunter distribution was modeled with the Resource Selection Function approach developed by Manly et al. (2002).

Statistical models will be developed to estimate hunter density and distribution as described above, and the telemetry data will provide information on deer movements and home ranges. Models of hunter distribution from the aerial surveys and estimates of deer home ranges from telemetry data will be used to determine if deer with home ranges farther from roads (on public lands), or near areas closed to hunting (private lands) have lower harvest rates. In addition, the telemetry data from GPS radiocollars will be used to investigate deer movements in response to hunting pressure.

RESULTS

There are no new results to report since the 2006-07 annual report. A final report is expected in 2009.

RECOMMENDATIONS

1. Complete final analyses of hunter distributions, deer movements, dispersal, and survival and harvest vulnerability modeling.
2. Prepare final report by June 2009.

LITERATURE CITED

- Buckland, S. T., D. R. Anderson, K. P. Burnham, and J. L. Laake. 1993. Distance sampling: Estimation of biological populations. Chapman and Hall, New York, New York, USA.
- Diefenbach, D. R., J. C. Finley, A. E. Luloff, R. Stedman, C. B. Swope, H. C. Zinn, and G. J. San Julian. 2005. Bear and deer hunter density and distribution on public land in Pennsylvania. *Human Dimensions of Wildlife* 10:201-212.
- Manly, B. F. J., L. L. McDonald, D. L. Thomas, T. L. McDonald, and W. P. Erickson. 2002. Resource selection by animals. Second edition. Kluwer Academic Publishers, Dordrecht, The Netherlands.
- Stedman, R. S., D. R. Diefenbach, C. B. Swope, J. C. Finley, A. E. Luloff, and H. C. Zinn. 2004. Integrating wildlife and human dimensions research methods to study hunters. *Journal of Wildlife Management* 68:762-773.