Preliminary Development of an Un-baited Camera Survey for Estimating White-tailed Deer Densities

James T. JOHNSON1*, Michael J. CHERRY2, L. Mike CONNER3, Richard B. CHANDLER1, Michael T. BIGGERSTAFF1, Charlie H. KILLMASTER4, William D. GULSBY5, Karl V. MILLER1

1University of Georgia, Warnell School of Forestry and Natural Resources, 180 E. Green Street, Athens GA 30602, USA
2Virginia Tech, Department of Fish and Wildlife Conservation, 160 E Cheatham Hall, Blacksburg, VA 24061, USA
3Joseph W. Jones Ecological Research Center, 3988 Jones Center Dr. Newton GA, 39870, USA
4Georgia Department of Natural Resources, Wildlife Resources Division, 2067 U.S. Hwy. 278, SE, Social Circle, GA 30025, USA
5Auburn University, School of Forestry and Wildlife Sciences, 602 Duncan Dr. Auburn, AL 36849, USA

*Corresponding author: Jjohnson2@jonesctr.org

The most widely employed method of estimating population parameters of white-tailed deer (Odocoileus virginianus) is likely the baited camera survey technique developed by Jacobson et al. (1997) [1]. While the protocol is relatively easy to follow, the process of identifying individual bucks can be difficult and time consuming, no error terms are estimated, and the use of bait is illegal in some places and may be used only outside of hunting seasons in others. In addition, there have been relatively few improvements to using cameras as a survey tool over the past 20 years, therefore the need to investigate and implement recent advances in ecological modelling approaches [2][3] are warranted. We propose a novel technique for generating parameter estimates using a spatially explicit modelling approach with only the use of trap level count data. We conducted passive (un-baited, 1/~20 ha) and baited (1/~40 ha) camera surveys on four 1000-ha camera grids in southwestern Georgia, USA in 2014 and 2015. September baited camera survey density (deer / km²) estimates for the four properties were 34, 25, 20, and 17, and preliminary passive survey estimates (95% CI) during October were: 26 (23-31), 24 (17-33), 20 (12-25), 12 (7-17), respectively (Figure 1). The passive survey produced similar estimates to the baited survey, however, actual densities for each site are still unknown. The passive model is currently under refinement and beta testing of the model will be necessary before full deployment. However, the use of un-baited cameras shows promise for generating population estimates at a relatively low cost without the need to identify individual deer.
**Figure 1.** Comparison of density (deer / km²) estimates between the passive un-baited surveys and baited camera surveys.

![Comparison of density estimates between passive un-baited surveys and baited camera surveys.](image)

**References**

