

Accuracy of Axis Activity in Lotek 3300L GPS Collars to Determine Deer Activity Characteristics

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INTRODUCTION

Global positioning system (GPS) collars with the capability of recording head movements could provide useful information in determining white-tailed deer (*Odocoileus virginianus*) activity patterns in relation to environmental variables. Animal activities include walking, foraging, and running; whereas, they are inactive when resting (Ungar et al. 2005). Global positioning system collar head movements have been reported to accurately predict 88% of observed behaviors (Coulombe et al. 2006). Collar fit on the animal influences reliability of the data obtained (Schauer 2003). As a result, Ungar et al. (2005) suggest calibrating individual collar animal activities with visual observations of collared animals.

OBJECTIVES

Determine the relationship between percent of time white-tailed deer are active based on the recorded axis activity of GPS collars and percent of time deer are active based on visual observations.

METHODS

- Four male captive white-tailed deer (≥ 2.5 years old) were outfitted with Lotek 3300L GPS collars.
- The GPS collars are equipped with vertical and horizontal motion sensors that record the number of times the sensor is triggered every 5 minutes with a maximum of 255 events.
- Deer were observed for 8 hours each day ($n = 6$ days).
- Deer activity was recorded every minute for each deer and then averaged over 5 minute periods.
- Percent of time deer were active was estimated with GPS collars and by visual observation.
- Behavior observations were conducted concurrently with GPS collar estimates of activity.

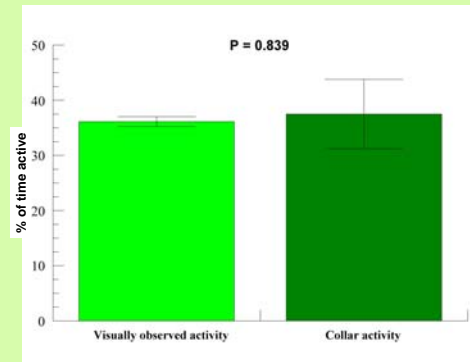


Figure 1. Mean and standard error comparison of visually observed activity and GPS collar activity.



Statistical Analyses:

- Data were averaged across time for each deer (date and time of observation were considered subsamples). Paired t-tests were used to compare percent of time active recorded by GPS collars and percent of time active recorded by observers using deer as replications ($n = 4$).

RESULTS AND CONCLUSIONS

- GPS collar activity $37 \pm 6\%$ (mean \pm SE) and visually recorded observations ($36 \pm 1\%$) were similar ($P = 0.839$).
- GPS collars may provide scientists with a better understanding of deer movements and deer activity when incorporating GPS collar activity.

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