

POTAPOV, EUGENE, ALLEN BEDFORD, FREDRIK BRYNTESSON, SHERRI COOPER, BRAD NYHOLM, DAVID ROBERTSON, BRACKEN BROWN, DALLAS HENDRICKS, and ERIC A. ROHTLA. *Human accessibility affects habitat use preferences and movement patterns of suburban white-tailed deer*. Poster presented at the joint conference for the Mid-Atlantic chapters of the Ecological Society of America and the Society for Ecological Restoration held at The College of New Jersey on March 13, 2009.

Abstract: We have monitored habitat use preferences and movements of seven individual white-tailed deer (*Odocoileus virginianus*) fitted with GPS/GSM radio-collars in the Pennypack Ecological Restoration Trust's natural area preserve and its surrounding residential, industrial and commercial developments located 25 km (15 miles) northeast of central Philadelphia, PA. The preserve contains a mixture of mature forests, regenerating woodlands, riparian forests, and fields of cool- and warm-season grasses. The preserve is open to the public from dawn to dusk and the Trust allows a controlled deer hunt during the state-sanctioned hunting season. We have collected over 88,000 GPS fixes from the monitored deer and analyzed their movement with respect to land ownership, habitat parcel size, and the ability of the public to visit the various parcels. The study area was divided into habitat parcels that fell in two categories based on human accessibility: open access and restricted access. However, much of the open access category is actually restricted after dusk. In the daytime the monitored deer showed a lower preference for this open access habitat than in the nighttime. The daily movement patterns demonstrated two peaks of activity that alternated with periods of relative quiescence. These peaks of activity represent deer movement between daytime and nighttime habitats. Taken together, our results suggest that one factor that influences deer habitat use and movement is human accessibility to the lands.

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Abstract: The Pennypack Ecological Restoration Trust is a private, non-profit conservancy located about 25 km (15 miles) northeast of central Philadelphia. The Trust manages 3.1 km² (771 acres) of meadows, woodlands and floodplain forest in the Pennypack Creek valley. For two decades, the Trust has been engaged in restoration of native woodlands and grasslands that to date encompass 0.99 km². We monitored the movement of seven individual white-tailed deer (*Odocoileus virginianus*) in the preserve that were fitted with GPS/GSM radio-collars, and analyzed movements of the deer with respect to habitat restoration type and movement type (i.e., encamped vs. transiting). The high rate of location fixes provided by the collars offers an accurate method for evaluating habitat preferences. All monitored deer came across restoration plots but appeared to avoid staying in the plots for long periods of time. Two deer (both females) spent a significant amount of time (up to 50%) on overgrown grassland plots. Woodland restoration plots were frequented at a much lower rate (average 1.1% of fixes, range 0-4% of fixes for all study animals). These data suggest that reasonable protection such as tubing and keeping grass and shrub mown can keep deer away from restoration plots.

POTAPOV, EUGENE, ALLEN BEDFORD, FREDRIK BRYNTESSON, SHERRI COOPER, DAVID ROBERTSON, BRAD NYHOLM, ERIC A. ROHTLA and BRACKEN BROWN. *Fine-scale daily movement patterns and territory use by white-tailed deer in suburban Philadelphia*. Poster presented at the conference for the Mid-Atlantic Chapter of the Ecological Society of America held at Wilkes University, on April 19, 2008.

Abstract: We have monitored the movement of three individual white-tailed deer (*Odocoileus virginiana*) fitted with high-tech GPS/GSM radio-collars, collecting fixes every five minutes for two of the deer. The deer were captured in a suburban natural area preserve owned by the Pennypack Ecological Restoration Trust (PERT). The preserve is open to the public from dawn to dusk, and is also hunted during the state hunting season. The preserve contains a mixture of mature forests, regenerating woodlands, riparian forest, and fields of native, warm season grasses. The preserved lands are surrounded by suburban and commercial areas and transected by several busy public roads. The monitored deer spent most of the daylight hours outside the preserve on private lands, although the deer also did use the preserve's warm season grass stands during the day. The daily movement patterns of the deer demonstrated several periods of peak activity alternating with periods of quiescence. Some of the movements were clearly attributable to avoiding human visitors in the preserve. There was a dramatic difference between the territory use between the collared male and female deer. The two females used their territories more or less uniformly, whereas the male used brushy patches more heavily, traveling between these patches in predictable routes. We will present data on movement trajectories, Minimum Distance Moved for 24-hour periods, density of territory use by day vs. night, sizes of home ranges, and weekly movement patterns.

POTAPOV, EUGENE and ERIC A. ROHTLA. *Can randomly placed trail cameras alone return density of White-tailed deer*. Poster presented at the conference for the Mid-Atlantic Chapter of the Ecological Society of America held at Wilkes University, on April 19, 2008.

Abstract: We have generated correlated random walks based on the daily movement parameters measured for two individual deer, monitored on the grounds of a natural preserve, using GPS/GSM radio collars. We set the number of segments in the trajectory to 288 (5 min fixes per 24 hr), and set parameters for segment length and turning angle based on field measured trajectories to Gaussian distributions of 0-500 m for segment length and 0 +/- 360 degrees for turning angle. We used a Bayesian approach to calculate average probabilities (WinBUGs) of a deer to be recorded by trail cameras set in sampling areas ranging from 0.1 to 100 km², which enabled us to assess the probability of deer detection in a given area size. In order to test the model, we placed five trail cameras at five random locations within the home range of the radio-collared deer and measured the average time needed to photograph the marked individual. Predictions based on the model were in accord with the density of the collared deer calculated from the number of pictures taken per 24 hour period and the home range size of the marked individuals.