Little Falls SVU

Infrared-Triggered Camera Deer Population Survey Report

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18 December 2012

At the request of M-NCPPC and the neighboring community, Patriot Land and Wildlife Management Services provided a deer population census using infrared-triggered cameras in order to estimate population densities on roughly 100 acres of parkland in Bethesda, MD.

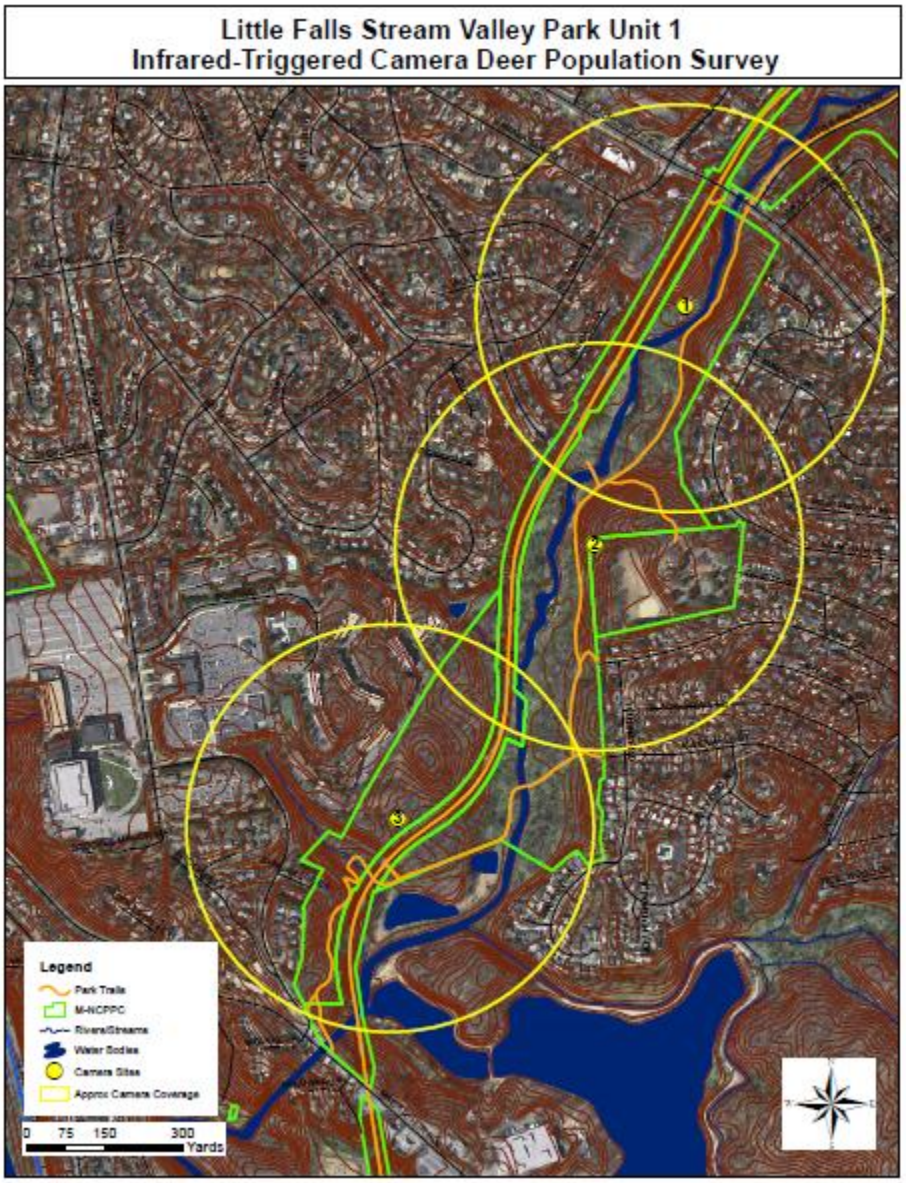
The goals of this study were to determine deer density, sex ratio, buck age structure, and fawn recruitment.

The study was performed over a period of 10 days, in which previous scientific findings have estimated that 85% of unique deer will be captured on camera in that duration (Butler).

Protocol developed at Mississippi State University for conducting infrared-triggered camera surveys was used as a baseline guide for completing this study.

As a general rule of thumb, 1 camera is placed per 100 acres. Due to the highly urban and fragmented environment of the area, 3 cameras were utilized instead (Fig. 1). These 3 cameras surveyed an estimated 300 acres. Input of suitable camera locations was provided by M-NCPPC staff. Visual observation of deer also helped to identify camera locations.

Fig. 1 - camera locations



Setup

Prebaiting and setup occurred on Thursday September 20, 2012. A "Park Use Permit" was provided by M-NCPPC to Patriot to allow access to the park for the purposes of the study. An ATV was used to access each site. Included in the setup portion was site identification, installation of numbered sign markers, application of shelled corn (50 pounds) and a mineral formulation (1 quart) to attract deer to the site. Camera setup occurred Monday September 24, 2012. Cameras were placed between 2-3' off the ground, and 10-15' away from the bait area (Fig. 2). Vegetation was cleared away from the detection zone of each camera to prevent false events. Each camera was faced either North or South to avoid backlighting and glare. Each camera was equipped with a 4GB memory card capable of storing over 3000 5MB pictures. Each camera was secured with a cable lock (Fig. 3). Each camera was programmed to obtain date and time for each picture. Cameras were set on 1 minute intervals, and activated by movement in the detection zone.

While shelled corn and a mineral formulation were used as an attractant, it should be mentioned that the study occurred during significant acorn dropping this year, which is typically a preferred food source for deer. This may have caused less pictures to be captured at the camera sites. One camera site experienced 0 deer pictures, even with the presence of ample bait. All population techniques involve a certain number of assumptions, including bait attractiveness, weather, moon phase, breeding phase, etc.

Fig. 2 - camera site examples from Little Falls SVU

Fig. 3 - camera on tree secured with cable lock (right side of picture)

Rebait

On Monday October 1, 2012, each site was re-baited with shelled corn (25 pounds). This ensured ongoing site attractiveness and the continued visit to the sites by deer.

Removal

On Thursday October 4, 2012, the study concluded, and cameras and signs were removed from the sites.

Analysis

Upon completion of the camera study, Patriot LWM began analysis of the pictures. Pictures were sorted by site. Each site was then sorted into bucks, does, fawns, unidentified, and other animal species. From there, the data was extrapolated further to determine does per buck (sex ratio), fawns per doe, acres per deer, and deer per square mile. The "Trail Camera Survey Computation Form" from the *Quality Deer Management Association* was utilized in computation of data.

When calculating deer densities, the relationship of the number of unique adult males in relation to the total number of adult males photographed is used to develop a population factor. This population factor is then multiplied by the total number of does photographed and the total number of fawns photographed. The outcome of these calculations must then be multiplied by an extrapolation factor (Population Factor) to provide a minimum population density estimate for each age/sex segment of the population. The results are then added together to yield a total minimum population estimate (Total Population). A Correction Factor of 1.18 is then factored in the case of a 10-day survey. The purpose of the correction factor is to account for the deer that may not have been photographed during the 10 days of the study. The results are the adjusted population estimates (Butler).

Results

10 days of infrared-triggered camera study was conducted. 554 total camera events occurred.

Camera Picture Totals
1 - 346 pictures
2 - 26 pictures (no deer)
3 - 182 pictures

Included in these were:
14 bucks
267 does
95 fawns
Other animals: dogs, raccoons
Other: pedestrians

Analysis of photographs revealed 1 unique buck captured in the photographs. That buck was 1.5 years of age. Calculations produced a total of 1 buck, 19 does, and 7 fawns, for a total minimum estimated population of 27 deer. Assuming that 85% of all deer in the survey area were captured (Correction Factor = 1.18), results in a total minimum estimated population of 31 deer. Based on the results for population density, buck to doe ratios and fawn recruitment were estimated. The buck to doe ratio was found to be 1:19. Fawn recruitment was 36%. The results are demonstrated below.

T = total
U = unique

Bucks U = **1**
Bucks T = **14**
Bucks U (**1**) / *Bucks T* (**14**) = *Population Factor* (**0.071**)
-
Does T = **267**
Does T (**267**) x *Population Factor* (**0.071**) = *Does U* (**19**)
-
Fawns T = **95**
Fawns T (**95**) x *Population Factor* (**0.071**) = *Fawns U* (**7**)
-
Total Minimum Population = **31**
-
For a 10-day survey, a Correction Factor of 1.18 is applied. The Correction Factor provides for adjusted population estimates.

Bucks U (**1**) x *Correction Factor* (**1.18**) = *Bucks* (**1.18**)
Does U (**19**) x *Correction Factor* (**1.18**) = *Does* (**22.42**)
Fawns U (**7**) x *Correction Factor* (**1.18**) = *Fawns* (**8.26**)
Total Population = **31.86 deer**

Does (**22.42**) / *Bucks* (**1.18**) = ***Does Per Buck*** **(19)**
Fawns (**8.26**) / *Does* (**22.42**) = ***Fawns Per Doe*** **(0.36)**
Acreage Surveyed (**300**) / *Total Population* (**31.86**) = ***Acres/Deer*** **(9.41)**
Total Population (**31.86**) x **640** = **20,390.4**
20,390.4 / *Acreage Surveyed* (**300**) = ***Deer Per Square Mile*** **(67.97)**

According to the 2012 Quality Deer Management Association's "Whitetail Report", fawn recruitment in Maryland in 2010 was 60%. This means that fawn recruitment in this study is lower than Statewide estimates. This may be due to factors such as fragmented habitat, human disturbance, vehicular mortality, and the presence of predation.

It is nearly impossible to place a figure on "Deer Per Square Mile" in Montgomery County, as well as Maryland as a whole. According to The Maryland Department of Natural Resources Assistant Deer Project Leader, George Timko, there are areas of the State that have 10-15 deer per square mile, and some that have over 200. The carrying capacity is the measure of the ability of a habitat to support a certain species, and includes such factors as food, water, shelter, etc. The deer per square mile realized at the Little Falls SVU site through the camera study is a typical example of a suburban region of the State that contains a higher number of deer per square mile than what would be seen in other parts of the State, but also less than other parts of the State.

References Cited

1. Butler, Ryan. An Evaluation of the Efficacy of Estimating Population Densities of White-tailed Deer Using Infrared-Triggered Cameras on Parkland in Montgomery County, Maryland.