

BASELINE SURVEY OF WILDLIFE SPECIES AT LOCUST GROVE

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Abstract:

The board of directors at Locust Grove are developing a 20 year master plan that will lay the ground work for the future management of the entire property. Locust Grove has a 28 acre forest on the property that has been determined to be less than 45 years old. A wildlife survey using camera traps was undertaken to examine the biodiversity of the re-grown forest. The study identified eight mammal, thirteen bird and two amphibian species. The two most abundant mammals caught on video were the White-tailed Deer (*Odocoileus virginianus*) and the Northern Raccoon (*Procyon lotor*). The least expected mammal caught on video was an American Mink (*Mustela vison*).

Background:

Locust Grove was purchased by Jefferson County and the Commonwealth of Kentucky in 1961. The restoration of the original Georgian-style mansion and many outbuildings has persevered part of Louisville's history. General George Rogers Clark, the founder of Louisville, spent his last years at Locust Grove, from 1809 to 1819. The estate of Major William Croghan and his wife Lucy Clark Croghan, General Clark's sister, become a National Historic Landmark in 1986 and is one of five museums in the state accredited by the American Alliance of Museums (www.LocustGrove.org). The Historic Locust Grove, Inc., the private foundation that manages the property, is currently developing a 20 year master plan for the 55 acre property, which 28 acres are designated as a nature preserve. Previous research on the property includes a survey on the invasive Amur honeysuckle (*Lonicera maackii*). The baseline wildlife survey and a tree survey will build on the honeysuckle research. The research aims to provide valuable

information on the condition and biodiversity of the nature preserve that can be incorporated into the future development.

Purpose:

A baseline wildlife survey of the woodlands at Locust Grove will provide the board members more insight on the biodiversity on the property. The commonwealth has owned the property for over 50 years and since then it has transformed from grasslands to 28 acres of woodlands. A tree survey ran concurrently with the wildlife survey and estimated the forest to be less than 45 years old (Caffee-Cooper 2012). The wildlife survey will provide the board of directions with information on the medium to large fauna using the urban habitat.

Methods:

A Google Earth trail map with 60 randomly generated GPS coordinates was provided from the previous honeysuckle study (Haulter and Haulter 2011). A Bushnell 119436C Trail Camera was set at each random location. The six cameras were rotated twice a week between June 26th and August 17th 2012. The trail cameras were attached to the trees, 1 to 1.5m off the ground, by an adjustable locking cable. The cameras were set to record 5 megapixel videos for 30 seconds for each event with 10 second intervals. The videos were recorded on a 2GB SD card, which was transferred to a laptop via USB SD reader during each camera rotation. A Garmin eTrex GPS receiver and a trail map (Haulter and Haulter 2011) were used to locate each coordinate. The data collected from the camera traps were entered into an Excel spreadsheet to

be analyzed. Sequential videos of the same event were grouped together as one occurrence and not counted multiple times.

To identify, mainly birds, a pair of Nike 10x42 binoculars was used, while hiking through the property. Only birds that could be properly identified were recorded. However, the binoculars did prove useful when trying to identify the Eastern Chipmunk (*Tamias striatus*) near the creek. A handheld camera (iPhone 3GS and Nikon D3100) was an added resource to help identify animals.

Data:

The camera traps captured 486 events over 60 different locations, recording 8 mammal species and 1 bird species, the Wild Turkey (*Meleagris gallpave*) (Fig. 1). The only bird included in the video footage was the Wild Turkey; all other bird footage was not included in the data. Another 12 bird species and 2 amphibian species were identified on the property (Fig. 1). The two most abundant mammals caught on the camera traps were the White-tailed Deer (*Odocoileus virginianus*) and the Northern Raccoon (*Procyon lotor*) (Fig. 2).

<u>Mammals</u>		
<i>Odocoileus</i>	<i>virginianus</i>	White-tailed Deer
<i>Procyon</i>	<i>lotor</i>	Northern Raccoon
<i>Sciurus</i>	<i>carolinensis</i>	Eastern Grey Squirrel
<i>Canis</i>	<i>latrans</i>	Coyote
<i>Didelphis</i>	<i>virginiana</i>	Virginia Opossum
<i>Sylvilagus</i>	<i>floridanus</i>	Eastern Cottontail
<i>Tamias</i>	<i>striatus</i>	Eastern Chipmunk
<i>Mustela</i>	<i>vison</i>	American Mink
<u>Birds</u>		
<i>Cyanocitta</i>	<i>crystata</i>	Blue Jay
<i>Carduelis</i>	<i>tristis</i>	American Goldfinch
<i>Picoides</i>	<i>pubescens</i>	Downy Woodpecker
<i>Cardinalis</i>	<i>cardinalis</i>	Northern Cardinal
<i>Turdus</i>	<i>migratorius</i>	American Robin
<i>Buteo</i>	<i>jamaicensis</i>	Red-Tailed Hawk
<i>Pipilo</i>	<i>erythrophthalmus</i>	Eastern Towhee
<i>Baeolophus</i>	<i>bicolor</i>	Tufted Titmouse
<i>Corvus</i>	<i>brachyrhynchos</i>	American Crow
<i>Archilochus</i>	<i>colubris</i>	Ruby-throated Hummingbird
<i>Dryocopus</i>	<i>pileatus</i>	Pileated Woodpecker
<i>Meleagris</i>	<i>gallopavo</i>	Wild Turkey
<i>Melanerpes</i>	<i>carolinus</i>	Red-bellied Woodpecker
<u>Amphibians</u>		
<i>Rana</i>	<i>clamitans</i>	Green Frog
<i>Eurycea</i>	<i>cirrigera</i>	Southern Two-Lined Salamander

Figure 1: List of species observed during the survey at Locust Grove

Animal	Total
American Mink	1
Chipmunk	1
Coyote	17
Deer	343
Opossum	18
Rabbit	23
Raccoon	160
Squirrel	46
Turkey	21
Unidentifiable	5

Figure 2: Total individual species counted in the videos

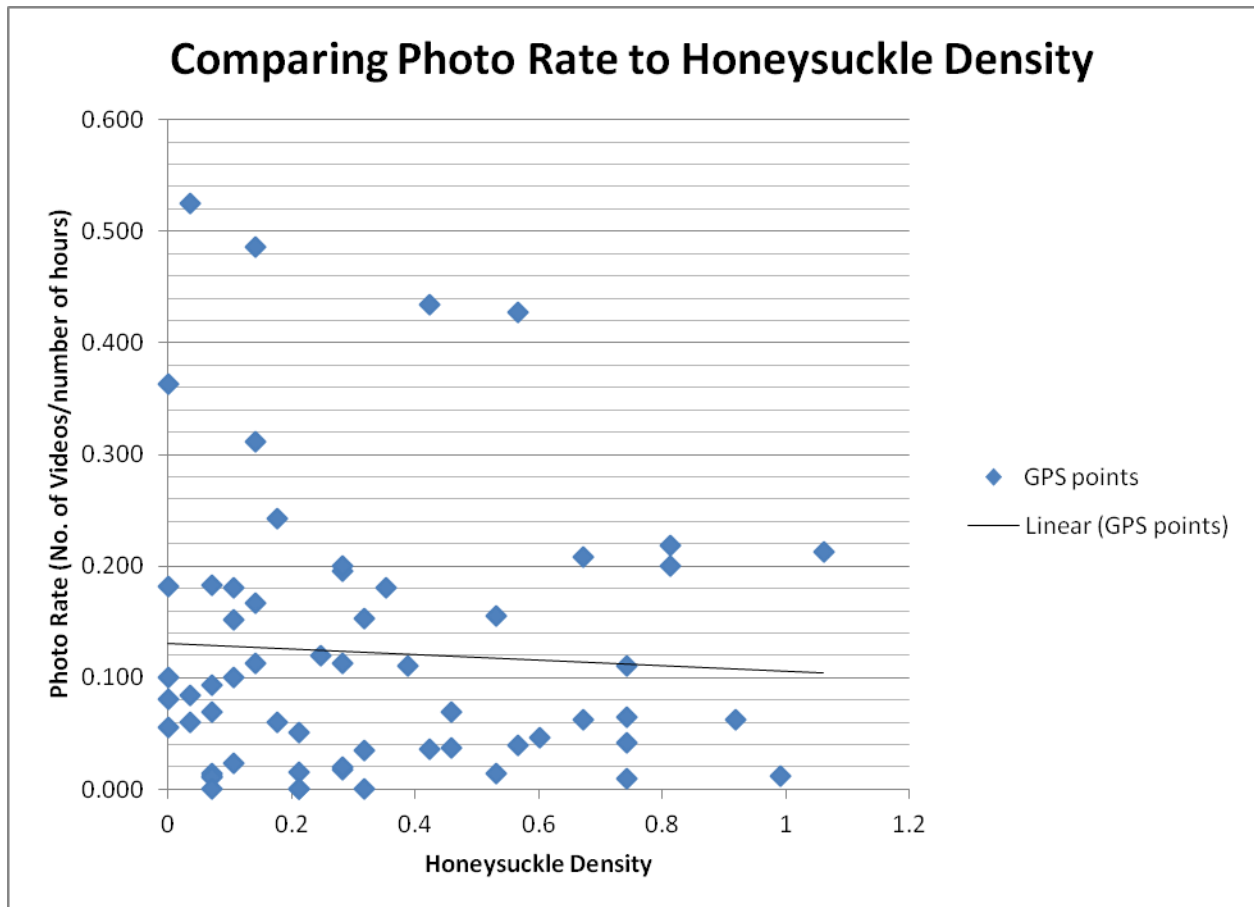


Figure 3: Comparing photo rate (number of video events/ number of hours per location) to Honeysuckle density

Discussion

The White-tailed Deer were recorded at 42 out of 60 locations, while Raccoons were observed at 35 out of 60 locations. With the studying taking place in the summer, both deer and raccoons were seen with young at various locations throughout the forest. We could suggest that they have a healthy, reproducing, stable population. Neither deer nor raccoons have any natural predators at Locust Grove. The largest pack of coyotes seen together was two, which is not large enough to take down a healthy deer. Ordeñana, et al. (2010) found that raccoons are not heavily affected by the presence of coyotes and in Illinois they found no indication of coyotes killing raccoons.

At the same time, 4 locations did not capture any wildlife. Two of the four locations were directly on the hiking trails and the other two were on the forest edge. All the locations were in the same vicinity in the eastern most part of the forest. This area is surrounded on two sides by houses, with the southern side running the entire length of the woods. The cameras at these locations recorded active use of the hiking trails by people and their pets. Cameras placed nearby, but off the trails captured opossums, raccoons, and coyotes. These species are opportunistic and have adapted well to urbanization (Ordeñana 2010). Their omnivorous diet allows them to take advantage of the close proximity to humans.

A problem of some urban habitats is feral animals killing wildlife. At Locust Grove all the videos of dogs were accompanied by their owners. Though not all of them were on leashes and I did catch a dog chasing after a deer. Due to GPS difficulties one camera was placed at the wrong location in the eastern part of the forest (same area from the previous paragraph). The

video from this location is not in the data, but it was the only video I captured of a feral cat on the property. The presence of coyotes help keep feral cats out of the forest (Ordeñana 2010).

The only mammal species that was a bit of surprise to find at Locust Grove was the American mink (*Mustela vison*). With only a small creek running through the property I did not expect to find a mammal that is usually an aquatic hunter during the summer months (Reid, 2006). On the other side, I did expect to capture Hooded Skunk (*Mephitis macroura*) or a Striped Skunk (*Memphitis mephitis*) by the trail cameras. Skunks are omnivours and are common in fragmented forest surrounded by urban development (Ordeñana 2010). It is possible they are in the forest, but were able to avoid detection. Also, an Eastern Chipmunk (*Tamias striatus*) was caught on video but it could not be identified with certainty. Though near the springhouse there were several that I was able to locate and identify. I believe there are several chipmunk boroughs around the creeks edge. Also, along the creek is where I located both amphibian species, with the creek being the only permanent source of water I expect a few more amphibians could be found along it.

The dense canopy made it hard at times to locate birds and properly identify the 13 bird species found at Locust Grove. Much more data could be gathered on the bird population at Locust Grove. The 13 identified species are a small percentage of the number of species that could be found on the property throughout a full year of observations. The most abundant species was the American Robin (*Turdus migratorius*). The only bird species that was identified through the trail cameras was the Wild Turkey (*Meleagris gallopavo*).

The cameras were not able to give information on the small mammal population. However, with many predators (Northern Raccoon, American Mink, Opossum, Coyotes and

Red-tailed Hawk) found on the property we could infer that there are definitely smaller mammals on the property. Another study would need to be conducted to assess the population of smaller mammals at Locust Grove.

To analyze the data and compare it to the honeysuckle density we used a common technique for camera trap studies, the photo rate. The photo rate is calculated by counting the number of events at location and dividing it by the number of hours the camera was at each location. I took this data and entered it into a scatter plot and drew a regression line using Excel. There is a slight negative regression with an increase in honeysuckle density, but nothing significant. While the honeysuckle does crowd out the natural vegetation the wildlife is still found in honeysuckle-dense areas.

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