Deer Population Survey

At Jonathan Dickinson State Park

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Abstract

White-tailed deer (*Odocoileus virginianus*) is one of the most common species of mammals in the United States. A population survey had not been done in Jonathan Dickinson State Park prior to this survey. The objective was to take a population count of white-tailed deer and come up with an estimated population for the park. The study was done at dusk and after dark, the surveyors would drive the designated routes and look for deer using high beam spot lights. The trails were marked out prior to the start of surveying and were created by taking geographical positions every 1/10th mile. Over the course of the survey, eight deer had been spotted. All of the deer spotted had been seen in pine flatwoods habitat. Additionally, six of those eight deer had been seen along the main paved road in the park. These results suggest that there is a relatively small population of deer in the park of approximately 35-94 individuals based on the equation: Total yards visibility / number of 1/10th mile stops + 1 x number of miles x 1,760/4840 = Visible acres.

Introduction

There are many subspecies of White-tailed deer. In the Americas alone, ranging from Canada down through Central and parts of South America, there are forty different subspecies. Sixteen subspecies are primarily found in the U.S., including the Key deer (subspecies *clavium*), the Dakota Whitetail (subspecies *dakotensis*), Blackbeard Island Whitetail (subspecies nigribarbis), and the Hilton Head Island Whitetail (subspecies *hiltonensis*) (http://www.outdoorlife.com/blogs/hunting/2012/03/number-subspecies-whitetail-deer-us).

White-tailed deer (*Odocoileus virginianus*) are found in many states across the United States (usually in overabundance) and are one of the most popular game animals. There are an estimated 30 million deer in the United States today. Under optimal conditions, deer populations will double every two years; they can reach densities of over 1 deer per hectare (100 deer per square kilometer) (http://www.actionbioscience.org/biodiversity/rooney.html). Because of this, deer populations must be closely managed in order to maintain a healthy population and more importantly a healthy ecosystem.

White-tailed deer are highly adaptable species and thrive in a variety of habitats. The areas that provide the most suitable environment include a mixture of hardwoods, croplands, brushlands and pasturelands. They prefer an interspersed habitat including meadows, forested woodlots, brushy areas and croplands (http://www.naturalresources.msstate.edu/wildlife/white-tailed-deer.html). Jonathan Dickinson State Park (JDSP) is comprised mainly of pine flatwoods; it also has a scattering of other ecosystems including cypress domes, sand pine flatwoods, scrub, marsh, and wetland habitats.

Abundant populations of White-tailed deer (*Odocoileus virginianus*) can result in levels

of herbivory on woody plants sufficient to alter composition of forest communities, reduce success of afforestration (The conversion of land into forest, esp. for commercial use.) and regeneration efforts, and damage landscape designs (Wakeland, Swihart 2009). The most common deer in Florida is the White-tailed deer.

The purpose of this project was to get an estimation of the population of White-tailed deer at Jonathan Dickinson State and observe what habitat they prefer. Since deer are crepuscular (more active at dusk/early night and dawn) this survey will be done at dusk and just after nightfall. In this paper, field observations on the estimated population of White-tailed deer in Jonathan Dickinson State Park and which type of habitat is preferred is reported. This study was the first deer population survey done in the park.

Methods

Two methods were used in this experiment; one to find the visible acreage and another to spot the deer. The method to find the visible acreage involved driving the routes and stopping every 1/10th mile. Once the truck stopped, the location on the GPS was recorded and the visible yards recorded. The visible yards were required so that the range of sight could be established and the visible acreage established so that an estimated population could be calculated later on. The method used to take the actual survey was the spotlight method. It involved going out at dusk or after dark and using high powered spotlights to spot any deer within the area. A large four wheel drive truck with an open bed was used as transportation. This was done so that there could be multiple passengers on the truck and spotting could take place on both sides of the vehicle. The truck was driven at a slow pace so as not to scare off any deer that may be present but also to ensure that deer could be easily spotted and not missed. The survey was done at dusk and early night because deer are crepuscular and would be active at that time.

The equipment that was used was a four wheel drive open bed truck, two high beam spotlights, a rangefinder, and a GPS. The truck was used during scouting part to find routes to be driven during the survey. The high beam spotlights were used to flush out deer and count their numbers. The rangefinder was used to find the visible yards which were then converted to visible acres. A GPS was used in both the scouting and surveying part of the experiment. During the scouting, the GPS was used to record the location of the stop at every 1/10th mile. During the survey, the GPS was used to record the location of where a deer was spotted.

Results

Observations were made from February 5th 2013 to March 26th 2013, during which, a total of eight deer had been spotted. The park contained a total of five observational routes, several of which were off limits to the public. Route one was named Eagles View. It had 234.49 visible acres. It was observed three times (February 5th, 2013, March 8th, 2013, and March 22nd,

2013), there were two deer sited. Based on the calculations of "visible acres observed/number of deer sighted equals acres per deer" and then "total acres in park/acres per deer equals estimated deer population", the estimated population of Eagles View was 33 deer (see table 2). Route 2, labeled as Ambush Road, surveyed on February 8th and March 22nd. It had 179.33 visible acres (see table 2). It was observed twice and no deer were spotted. Route 3 was the North Eastern section of the park and was called NE Park. It was surveyed 3 times on February 12th, 15th, and 19th. It has 99.38 visible acres. No deer were spotted. Route 4 was named Satellite Dishes because there were satellite dishes in the area. It has 93.05 visible acres. It was observed once on March 15th and no deer were spotted. Route five was named Park Drive. This is a paved road in the park that goes from the Park Entrance to the park's Education Center. Park Drive has 121.64 visible acres. It was observed 5 times on February 8th, 15th, 19th, and March 12th, and 22nd. Six deer were spotted there. The estimated deer population for this route was 94 individuals (see table 2).

Of the 168 data points measured, 60% were pine flat, 19% were pine scrub, 5% were cypress and the remaining percentages were less than 5% and included sandhill scrub, wetlands, scrubby flatwood, oak hammock, prairie, marsh, hardwood hammock, and pond (see table 1 and graph 1).

Estimated Deer Population by Route

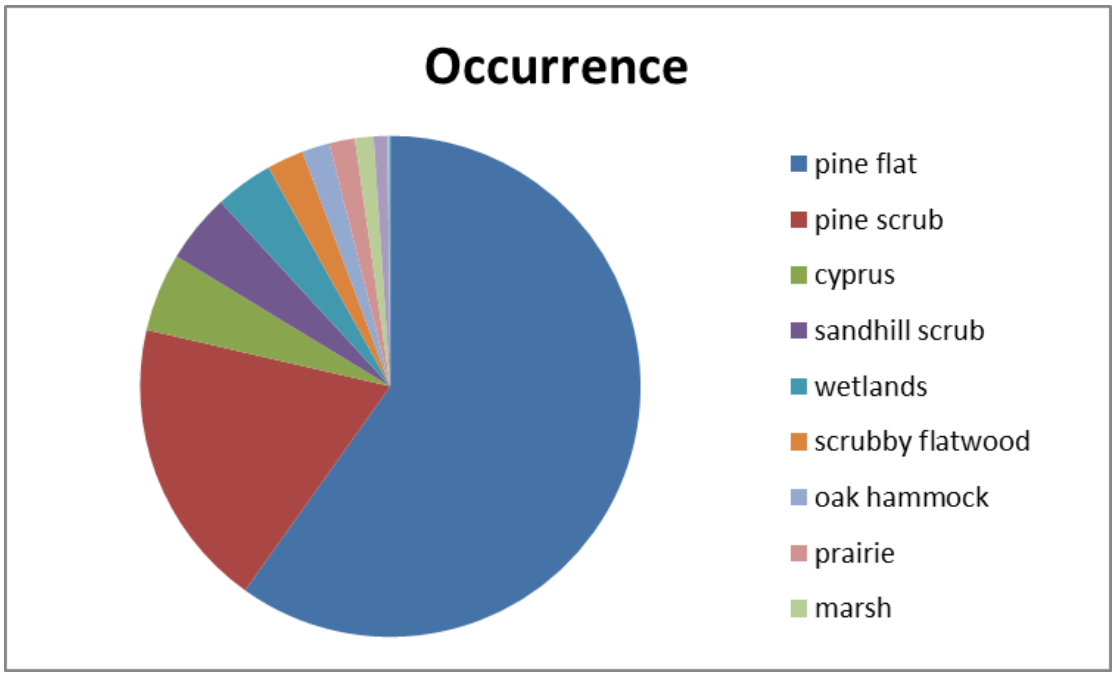
	Eagles View	Ambush Road	North East Park	Satellite	Park Drive
Number 1/10th Mile Stops	41	29	19	43	36
Number of Miles on Route	4.1	2.9	1.9	4.3	3.6
Total Yards Visibility	9553	5170	1875	3934	4312
Visible Acres	234.49	179.33	99.38	93.05	121.64
# Observations	3	2	3	1	5
Visible Acres Observed	703.47	358.66	289.14	279.15	608.2
Number of Deer Observed	2	0	0	0	6
Acres Per Deer	351.74	0	0	0	121.64
Total Acres in Park	11500	11500	11500	11500	11500
Estimated Deer Population	33	0	0	0	94

Table 1

Ecosystem	Occurrence	Total Data Points	Percentage
pine flat	100.5	168	59.82
pine scrub	31.5	168	18.75
cyprus	8.5	168	5.06
sandhill scrub	7.5	168	4.46

Wetlands	6.3	168	3.75
scrubby flatwood	4	168	2.38
oak hammock	3	168	1.79
Prairie	2.8	168	1.67
marsh	2	168	1.19
hardwood hammock	1.5	168	0.89
Pond	0.3	168	0.18

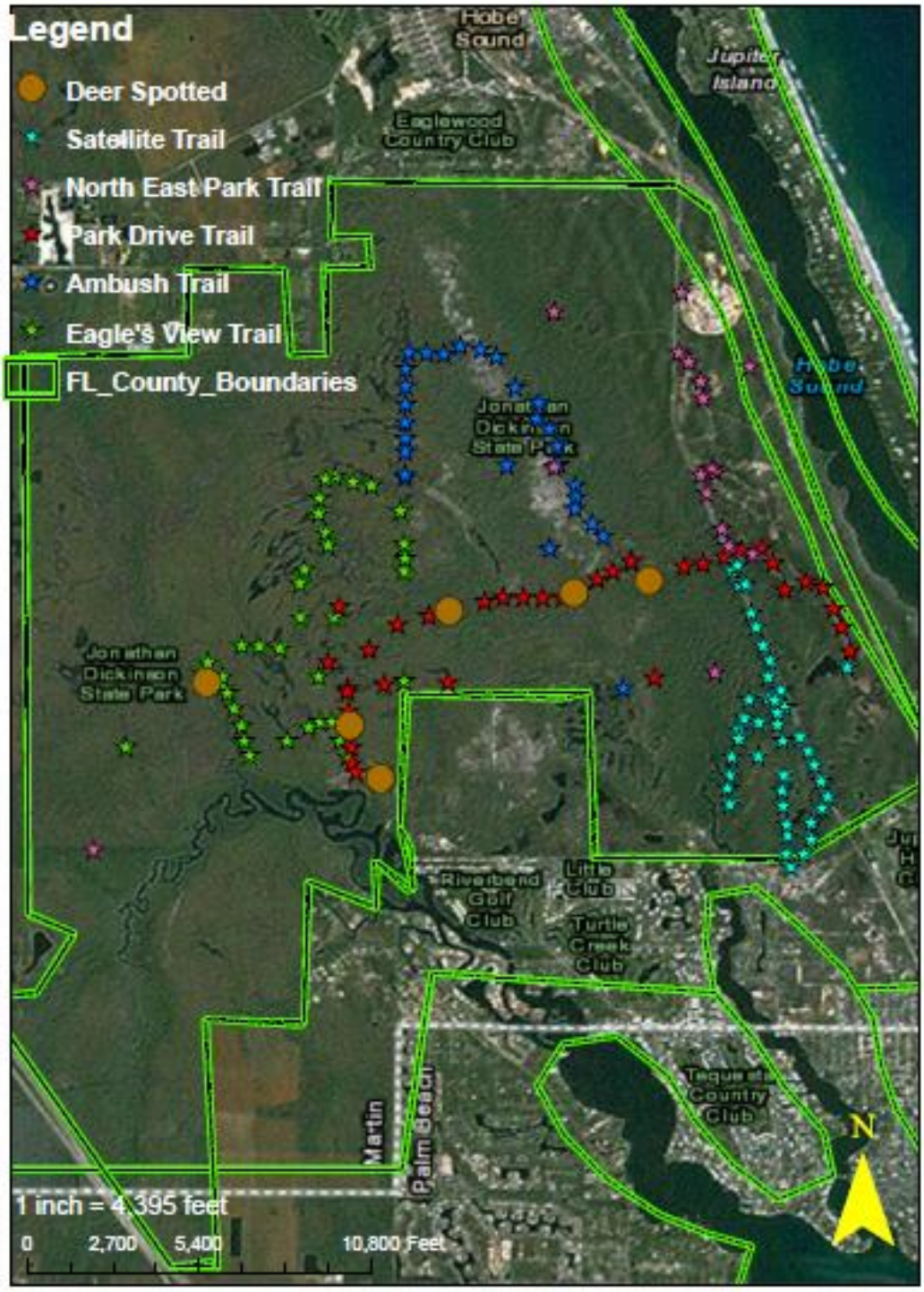
Table 2: Breakdown of habitat types



Graph 1: breakdown of habitat types in a visual representation

Map 1

Deer Survey Routes and Spotted Deer in JDSP



Discussion

Deer are crepuscular by nature and therefore are most active at dawn and dusk. At the beginning of the survey, most of the surveys were done after sundown so the deer may have already hunkered down for the night. Park workers were asked when deer were most spotted and they had replied that the best time to spot the deer was at dawn. Since hunting is prohibited in the park, the deer have lost some of their natural fear of people. While the deer will not walk up to people for handouts, they have no qualms about stopping in the middle of the road to scratch an itch or investigate their surroundings. All of the deer were seen in pine flatwoods habitats. Palmettos are approximately the same size as the deer that were surveyed and act as protective coverage for the deer. This led me to believe that the deer chose the pine flatwoods habitat over the others for protection reasons. Another possibility for the lack of deer on the off road a route is the truck that was used. It had very noisy axels as well as a loud engine and break system. It is quite possible that the deer had heard this and took shelter in a more sheltered area rather than in the open. Also, the possibility for the increased amount of deer on Park Drive may be that the truck was much quieter there since the road is paved. Another possibility for this is that Park Drive was surveyed more than the other areas leading to a larger amount of deer. Also deer are used to seeing vehicles on Park Drive whereas they may not expect vehicles on the off road routes. Consequently, they may have sought coverage from vehicles on the off road routes. It is quite possible that the deer may have been more active on full moons since other animals time their feeding schedules to its presence.

Since this was the first deer survey done in Jonathan Dickinson State Park, there are no other surveys to compare it to. It would be beneficial to continue the survey so that deer populations could be tracked over the years and seasonal trends recorded. That being said, there are two new studies being done. One is a sand drag that will allow the surveyor to identify the number of and types of animals that had passed through the sand drag. The other is a survey done with fixed game cameras.

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