

1994 and 1995 SPOTLIGHT SURVEY FOR WHITE-TAILED DEER
Cumberland Island National Seashore

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Introduction

Students from the School of Forest Resources, University of Georgia, examined several deer population survey techniques and recommended the night time counts by spotlight. The survey is not meant to estimate the size of the population but to develop trends. The protocol and initial data set is reported in the 1987 Cooperative Parks Study Unit Report Number 42 by Charles Ford. An additional population analysis is made using information from the deer killed during the annual fall hunts.

Methods

The survey utilizes two vehicles and two routes along the Grand Avenue or Main Road. Each truck has one driver/data recorder and two observers. The survey begins at dark when the boat flashlight beams can be seen at a distance of approximately 100 yards. Deer are identified, when possible, by age class (adult or sub-adult) and by gender (male or female). The specific protocol for the survey is attached at the end of this report.

Results for 1995

The 1995 survey was scheduled for five consecutive nights in September just after the new moon. Weather patterns have been unusual this year providing the island with more rainfall than normal. The first night (September 26) and last night (September 30) of the survey were cancelled due to inclement weather, rainfall, high winds and lightening. Therefore, the 1995 survey only consists of data from three consecutive nights (September 27 through the 29th).

We met at the Captains House on Cumberland Island at 7 pm. Each survey began at approximately 8 pm. The average duration of each survey was 1.7 hours (1.5 to 1.9).

The distance for the south route from the Raccoon Keys through Dungeness ruins up the Main Road to the intersection of the Plum Orchard road and the Main Road was 8.5 miles. The distance of the north route from the intersection of Plum Orchard road and the Main Road to the intersection of the North Cut beach access and the Main Road was 7.2 miles. The north route had many areas that were nearly impassable. There had been very few days with no rainfall. Standing water was unable to soak into saturated soils. Evaporation was not enough to dry these low spots prior to the next rainfall.

The results of the survey were an average of 6.3 deer per night (2 to 9) along the north route and 18.3 deer per night along the south route (14 to 23). The average deer per night for the entire length of the island was 23 (16 to 27). This count results in a density of 14.2 deer per square mile. The data for each night's survey is included in Table I.

During the fall, the bucks have developed their antlers, thus it is easier to differentiate them from the does. Very few bucks (6) were observed during the survey. Only 8.7% of the observed deer were recorded as bucks. One of the bucks had four points.

On the south end around Dungeness, the white fawn was observed during two of the survey nights. There were 4.6 does for every fawn. This is a fawn to doe ratio of 1:4.6.

Results for 1994

The 1994 survey was conducted over four consecutive nights in September, from the 12th through the 15th. The results of the survey were an average of 5.8 deer per night (2 to 8) along the north route and 8.5 deer per night (8 to 11) along the south route. The average deer per night for the entire length of the island was 14.3 (8 to 19). This count results in a density of 8.8 deer per square mile. The data for each night's survey is included in Table II.

Two measurements of the health of the population are the number of bucks with racks and a high fawn to doe ratio. Only 14% of the observed deer were recorded as bucks. The fawn to doe ratio was 1:3.8.

Discussion

More deer were counted in the 1995 annual spot-light survey than in the 1994 survey. Less deer were counted during both of these annual surveys as compared to those in 1986. The average count per night in the fall of 1994 was 14.3 deer. In 1995, it was 23 deer. In the spring and fall of 1986, the average count per night was 60.8 and 67.2 deer respectfully. Graph I summarizes these data. This decline appears to indicate a downward trend in the population, although there are too few data points for this to be definite.

A predominance of spike antlered bucks and/or a low doe to fawn ratio could suggest a herd in poor condition. During 1994 and 1995, very few bucks were seen at all. In 1995, recorders only commented on one buck with four points. Most other bucks observed had spikes or two points. This suggests a predominance of spike antlered bucks in the population, thus a younger population.

The fawn to doe ratio seems to be increasing, meaning less does are having fawns or the fawn mortality is increasing. It was one fawn to 4.6 does in the fall count of 1995 and 1:3.8 in the fall count of 1994. In 1986, it was slightly greater than 1:2 in the spring and 1:3.8 in the fall.

The numbers seem to indicate a population in decline. There may be several factors that caused the low counts in 1994 and 1995:

- bobcat and hunter pressure may have made the deer more skittish and shy
- bobcat and hunter pressure may have significantly reduced numbers of deer
- rainfall and standing water in 1995 made some areas inaccessible to the deer along the survey transects
- noisy trucks might have scared some deer out of the counter's range. In 1995, a four-wheel drive diesel truck was used on the north route for its high clearance capability and a smaller truck without a muffler was used on the south route. Some deer were not afraid and slowly stood or paraded in the vehicle headlights.

Legislation for Cumberland Island National Seashore allows hunting. Presently the park uses deer hunts as a recreational activity, not as a management tool to regulate population numbers.

Managed quota hunts began in 1980 for the southern end of the island and in 1981 for the northern end. Bag limits and dates of the hunts must comply with the regulations set by the Georgia Department of Natural Resources. From approximately 90 to 160 deer are taken annually, initially thought to be approximately 10% of the herd. Deer are not as readily visible. This may not mean that there are less deer, but that they have become more secretive treating man as a predator.

Bobcats were reintroduced to the island in 1988 and 1989. Bobcats prey on fawns and occasionally adult deer. Historically, bobcat are known as important deer predators along the coastal plain (Newson, 1984). Reintroduction of this native predator may be restoring the ecological balance on the island. This may affect the deer population changing the population size, age structure and other population related features.

Recommendations

1. Repeat the spotlight survey in the spring of 1996.
2. Continue to use annual fall spotlight surveys and deer harvest data to determine age, sex and health trends in the deer population.
3. Encourage a researcher to resample the existing four forest vegetation exclosures. Compare this data to previous data, especially looking at oak sprout recovery and browse line.
4. Encourage a researcher to evaluate predator-prey relationships between the bobcat and real and perceived prey sources including deer, rabbits and turkey.
5. Encourage a researcher to analyze all of the data on the Cumberland Island deer herd in order to identify trends and offer management suggestions.

White-tailed Deer Spotlight Survey
North Route, September 1995

Mileage	27 September					28 September					29 September				
	B	D	S	U	Tot.	B	D	S	U	Tot.	B	D	S	U	Tot.
0-0.5	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2
0.5-1	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0
1-1.5	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2
1.5-2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
2-2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.5-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3-3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
3.5-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4-4.5	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1
4.5-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5-5.5	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
5.5-6	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
6-6.5	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
6.5-7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7-7.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7.5-8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	2	0	0	2	0	3	0	0	3	2	5	0	2	9

A buck was seen on the
way back, so did not count.

One buck is a 4-point.

White-tailed Deer Spotlight Survey
 South Route, September 1995
 Racoon Keys to Plum Orchard Road

Mileage	27 September					28 September					29 September				
	B	D	S	U	Tot.	B	D	S	U	Tot.	B	D	S	U	Tot.
0-0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.5-1	0	2	1	0	3	0	0	0	0	0	0	2	1	3	6
1-1.5	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
1.5-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2-2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2.5-3	0	3	0	1	4	0	0	0	6	6	0	2	1	0	3
3-3.5	1	0	0	0	1	0	0	0	3	3	0	0	0	0	0
3.5-4	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
4-4.5	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2
4.5-5	0	0	0	0	0	2	0	0	1	3	0	0	0	0	0
5-5.5	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
5.5-6	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
6-6.5	0	0	0	0	0	0	0	0	0	0	0	2	3	1	6
6.5-7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7-7.5	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
7.5-8	0	0	0	2	2	0	2	0	4	6	0	0	0	0	0
8-8.5	0	1	1	0	2	0	0	0	0	0	1	0	0	0	0
TOTAL	1	8	2	3	14	2	6	0	15	23	1	8	5	4	18

1 buck and 1 doe paraded
 in front of the truck for a
 good show

Cumberland Island National Seashore
White-tailed Deer Spotlight Survey
North Route, September 1994

Mileage	12 September				Tot.	13 September				Tot.	14 September				Tot.	15 September				Tot.
	B	D	S	U		B	D	S	U		B	D	S	U		B	D	S	U	
0-0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
0.5-1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0		
1-1.5	0	2	1	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0		
1.5-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2-2.5	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	2		
2.5-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
3-3.5	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	1		
3.5-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
4-4.5	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0		
4.5-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5-5.5	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0		
5.5-6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
6-6.5	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0		
6.5-7	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0		
7-7.5	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0		
7.5-8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8-8.5	0	1	0	0	1	0	0	0	0	0	1	1	1	0	0	2	0	2		
TOTAL	0	4	1	3	8	1	0	0	1	2	2	4	1	1	1	4	1	5		

1 doe w/lame R leg (mile 1)

White-tailed Deer Spotlight Survey
South Route, September 1994
Raccoon Keys to Plum Orchard Road

Mileage	12 September					13 September					14 September					15 September				
	B	D	S	U	Tot.	B	D	S	U	Tot.	B	D	S	U	Tot.	B	D	S	U	Tot.
0-0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
0.5-1	2	0	0	4	6	0	0	0	0	0	0	1	0	0	2	0	0	0	0	1
1-1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.5-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2-2.5	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
2.5-3	0	0	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0
3-3.5	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5-4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
4-4.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4.5-5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5-5.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.5-6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2
6-6.5	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
6.5-7	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7-7.5	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3	0	0	0	2	3
7.5-8	0	0	0	2	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
8-8.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
TOTAL	2	2	0	7	11	1	2	0	3	6	2	3	2	2	9	0	4	1	3	8



