

1995 FERAL HORSE POPULATION SURVEY
Cumberland Island National Seashore, Georgia

By Jennifer Bjork, Resource Management Specialist

ABSTRACT:

A remnant population of feral horses is roaming freely on Cumberland Island. Information was needed to better understand: total horse population trends, horse herd distribution on the island and sex and age structure of the current population. A combination of ground and aerial count was used during the one day fall census on the morning of September 17, 1995. Two hundred and three horses were counted by eighteen people divided into seven teams. The trend has been one of slow increase in the population. Population size may now be leveling off. The minimum population size is between 203 and 239 horses. There were fifty-three bands of horses ranging in size from one to ten individuals. Forty-eight percent of the horses were found north of Stafford Plantation. Three quarters of the horses were adults. ~~Nineteen~~ ^{Fifteen} foals were counted. There were almost two adult mares to every adult stallion.

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INTRODUCTION

A remnant population of feral horses were introduced to Cumberland Island before the area became a National Park. Research has been conducted to determine grazing and habitat preferences, grazing impacts and feral horse population structure. As Cumberland Island National Seashore designs a management plan for the feral horses, a more current examination of the population was necessary.

Several censuses of the horse population have been undertaken. Ambrose (1983) and Lenarz (1983) both conducted ground surveys. In 1985, Marlene Finely added an aerial census to the ground counts to develop a more accurate technique for the one-day count. It is her technique that we used to conduct the 1995 census. Information was needed to better understand:

- total horse population trends
- horse herd distribution on the island
- sex and age structure of the current population

METHODS

The Cumberland Island feral horse survey was initially scheduled for August 25, 1995. Heavy rains forced a cancellation of that census and rescheduling for September 17.

Volunteer counters were elicited from press releases. Sixteen volunteers were transported to the island the afternoon of Saturday, September 16. After an hour long slide talk and review of the data sheets, the volunteers spent the night in the park's research dormitory in Dungeness.

The entire island was divided into six sections for the ground counters based on the distance that could be hiked in four hours. Each team of three counters had a leader who was familiar with the terrain and responsible for ensuring that the group completed their count area in the allotted time. The six ground count areas were as follows:

- A) South End marshes and Dungeness plantation. (walk)
- B) Greyfield to Stafford including Old House road and the Parallel trail (walk)
- C) Willow Pond trail and Duck House trail including the Hunt Camp (walk)
- D) Table Point, Kings Bottom and Plum Orchard area (walk)
- E) South Cut trail, North Cut trail, Terrapin Point trail, the Settlement and High Point (walk)
- F) Beach interdune areas, Long Point, Main Road and Stafford field (vehicle/walk)
at every kilometer, counters got out and walked into the dunes

The counters were in their count area by 7 am on Sunday, September 17. The ground count began at 7 am and lasted for four hours. All trails and roads that were passable were hiked. The count was scheduled when there would be a morning low tide to allow the horses access to the more open salt marsh for observation. Low tide was at 9:27 am with mean high water at 0.7 feet.

The aerial count was conducted from a Bell Jet Ranger III helicopter (Group G). The helicopter landed at Dungeness (Research Lab lawn). The aerial count began at 8:15 am and lasted for two hours. It was flown at an elevation of between 500 and 800 feet and a ground speed of 60 mph. The route was north along the marshes on the west side of the island to Christmas Creek and then south along the beach. The flight path was a slight zig-zag from the water to the center of the island and back. The helicopter hovered over a concentration of horses for better observation and more accurate counts. At 500 feet, horses were not disturbed and did not cease their feeding activities.

Field data was collected by band. A band is defined as a family or close-knit gathering of horses that stay together for feeding, sleeping and traveling. It can be a uni-sex or multi-sex grouping. The total number of horses in each band was documented as was individual horse gender (male or female) and age (adult, juvenile or foal). Juveniles were distinguished from adults from their smaller stature and shorter tail length. Horses were also described by their color and markings to distinguish specific bands. The time and location of each band observation was also documented. A data sheet is included in the Appendix.

In analyzing the data, band sightings were first plotted on a master map. Ground survey data was plotted first with the aerial survey information superimposed. Double sightings were eliminated at this time using all of the available data collected. If a band was observed in both the ground and aerial surveys, it was referenced in the ground count data so that sex and age class information could be included.

A recensus was conducted to verify previous results and approximate the variation involved in the previous one day census. On September 18, the ground survey was repeated for a randomly selected area. From 7:30 am to 10:30 am, horses were recounted in Area A, the South End.

RESULTS AND DISCUSSION

The number of horses counted on September 17 was 203 individuals in 53 bands. Band size ranged from 1 to 10 individuals. The average band size was 3.8 individuals. Appendix B lists all of the observations from the September 17 count by band number. The band number is an arbitrary number assigned to each band to keep them separate and unique. The letter reflects the count area and team.

During the aerial survey, 49 horses not counted by ground counters were observed. Ground counters counted 53 horses not observed from the air. Both count techniques are important to increasing the accuracy of the count.

The comparison of the results from this census to previous ones can only describe trends, not exact horse population size. The count methods varied. The trend appears to have been a slow growth that is levelling off.

Table 1. Results of all feral horse censuses, Cumberland Island.

<u>Year</u>	<u>Season</u>	<u>Area</u>	<u>Method</u>	<u># of Days</u>	<u>Team Size</u>	<u># of Horses</u>	<u># of Bands</u>
1981	Unknown	Entire island	Ground	21	1	144	36
1983	March	Entire island	Ground	4	4-7	154	33
1985	May	Entire island	Ground/Air	2	14	181	55
1987	May	Entire island	Ground/Air	2	13	197	51
1990		Entire island				240	
1995	Sept.	Entire island	Ground/Air	2	17	203	53

An attempt to ascertain the distribution of the feral horses by geographic area was made. It had been reported that the horse bands utilizing the south end of the island were rarely found on the north end and visa versa. The Stafford area was described as the division point. Horses were grouped accordingly. Horses found in the Stafford plantation area and Willow Pond were identified as an intermediate group that may visit both ends of the island. Using those divisions, almost half of the herd is on the north end of the island.

Table 2. Geographic distribution of horses, Cumberland Island.

<u>Area</u>	<u># of horses</u>	<u>% of herd</u>
South end	74	36%
Intermediate area	31	15%
North end	98	48%

Two maps of the distribution of the horses is included in Appendix B. Based on former studies, it was anticipated that horses would be found predominantly in the salt marsh, interdune and historic pastures. Since it was low tide and it had rained heavily over the previous three weeks, it was anticipated that the horses would seek forage in the salt-marsh and inter-dune habitats. They were found predominantly in the salt-marsh.

Table 3. Habitat use by feral horses on Cumberland Island on September 17, 1995.

<u>Habitat</u>	<u># of horses</u>	<u>% of horses</u>
Salt marsh	138	68%
Pasture/historic lawn	42	21%
Forest	12	6%
Dune/inter-dune	10	5%
Lake	1	-

Horse location and habitat preferences appear unchanged. Although all habitat types were occupied, horses were definitely concentrated in the salt marsh. Since much of the island still held standing water from the previously heavy rains, other areas utilized by horses may not have been available.

Only data from the ground counts was used to differentiate gender. The gender of 43% of the observed horses was identified. There were almost two females for every male. The sex ratio of the horses is biased towards females 1 male:1.8 females.

Table 4. Comparison of adult feral horse sex ratios, Cumberland Island.

Year	Males	Females	Ratio (M:F)
1981	35	51	1:1.5
1983	44	62	1:1.4
1985	40	43	1:1.1
1987	42	63	1:1.5
1990			
1995	31	55	1:1.8

All 203 horses observed were placed in a category to define the age structure. They were classified as adult, juvenile or foal. Three-quarters of the horses were identified as adults. There were fifteen foals in the September 17 count.

Table 5. Comparison of feral horses by age structures, Cumberland Island

Year	Adult	Sub-Adult	# of Foals
1981	63%	37%	11
1983	80%	20%	5
1985	80%	20%	9
1987	72%	28%	19
1990			
1995	75%	25%	15

Four counts were used to estimate the variation inherent in a one-day survey. The ground count was repeated the following morning. A single band of 6 individuals was not present during that count. During the aerial survey, the same area was counted at the beginning and end of the two hour flight. There was a difference in 3 individuals. A band may have moved into the marsh by mid-morning. This level of variation is similar to previous counts.

The minimum population size, is somewhere between 203, the actual count, and 239. If six horses were missed from each count area, then 36 horses may have been missed (6 count areas times the variance of 6).

Table 6. Estimate of variance from recounts, Cumberland Island.

<u>Date</u>	<u>Times</u>	<u>Count Type</u>	<u># of Horses</u>
9/17	845 - 930	Ground	25
9/18	800 - 900	Ground	19
9/17	820 - 835	Air	20
9/17	1030-1040	Air	23

RECOMMENDATIONS

1. Conduct two surveys a year, one in the late spring and the second in the early fall. The first survey will develop trends for the number of pregnant mares and the second, the number of surviving foals.
2. Continue to use the combination of ground count and aerial survey.
3. Continue to conduct the survey in the early morning, beginning at sunrise and ending at approximately 1100. A second survey period could commence at approximately 1700 lasting until dark. These are the cooler times of day and the times when the horses are feeding and moving about.
4. Continue to conduct the pre-count training reviewing terminology on the data sheet and using slides for examples. This technique ensures that all data is collected the same way.

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Feral Horse Census Data Sheet
Cumberland Island National Seashore

Date _____

Group

Name _____

[illegible]

Marks:
star = a
socks = b
wht nose = c

Colors:
white = 1 tan = 4
black = 2 roan = 5
grey = 3 brown = 6

Eating = 1
Resting = 2
Walking = 3

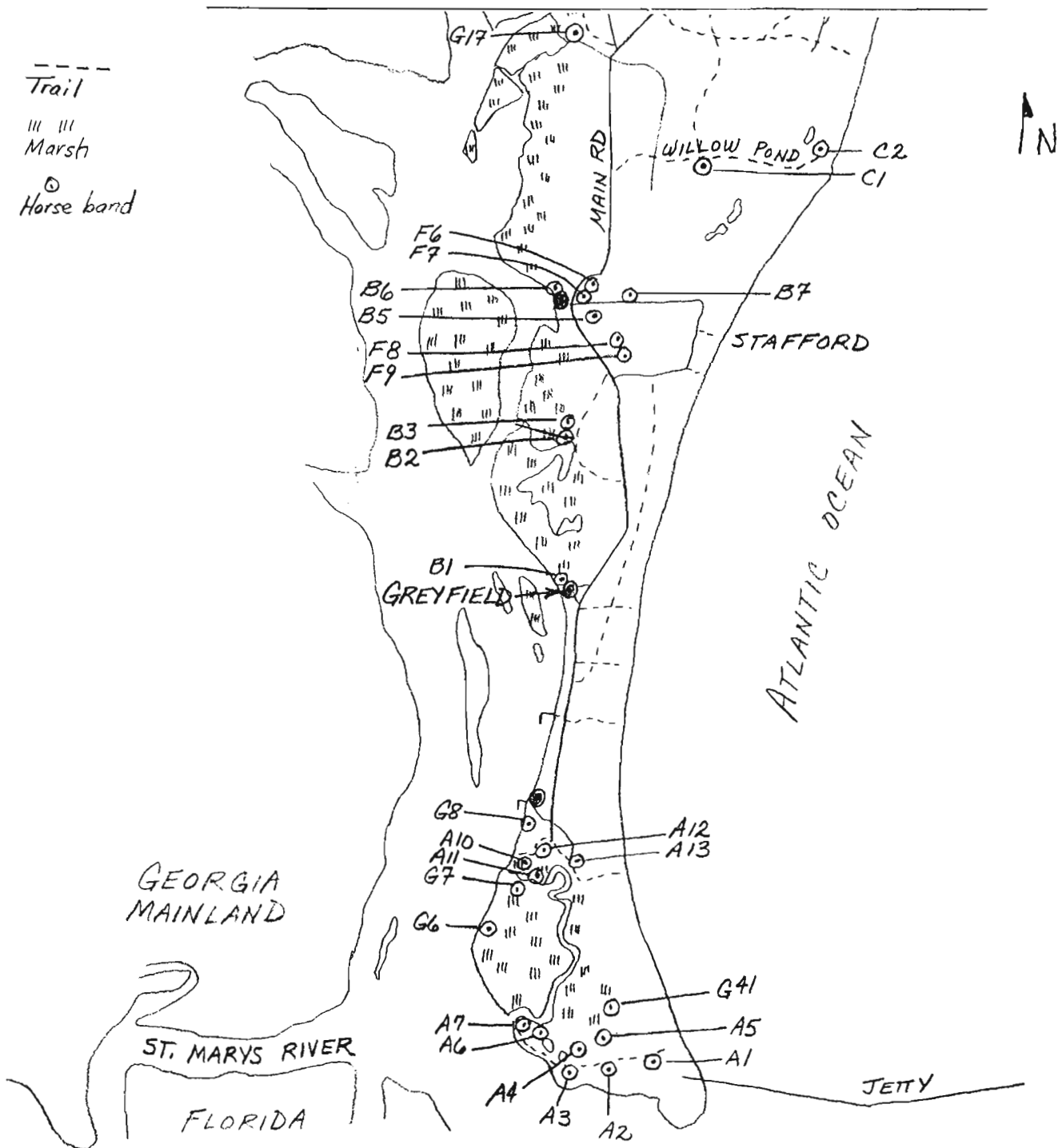
Feral Horse Census - September 17, 1995
Cumberland Island, Georgia

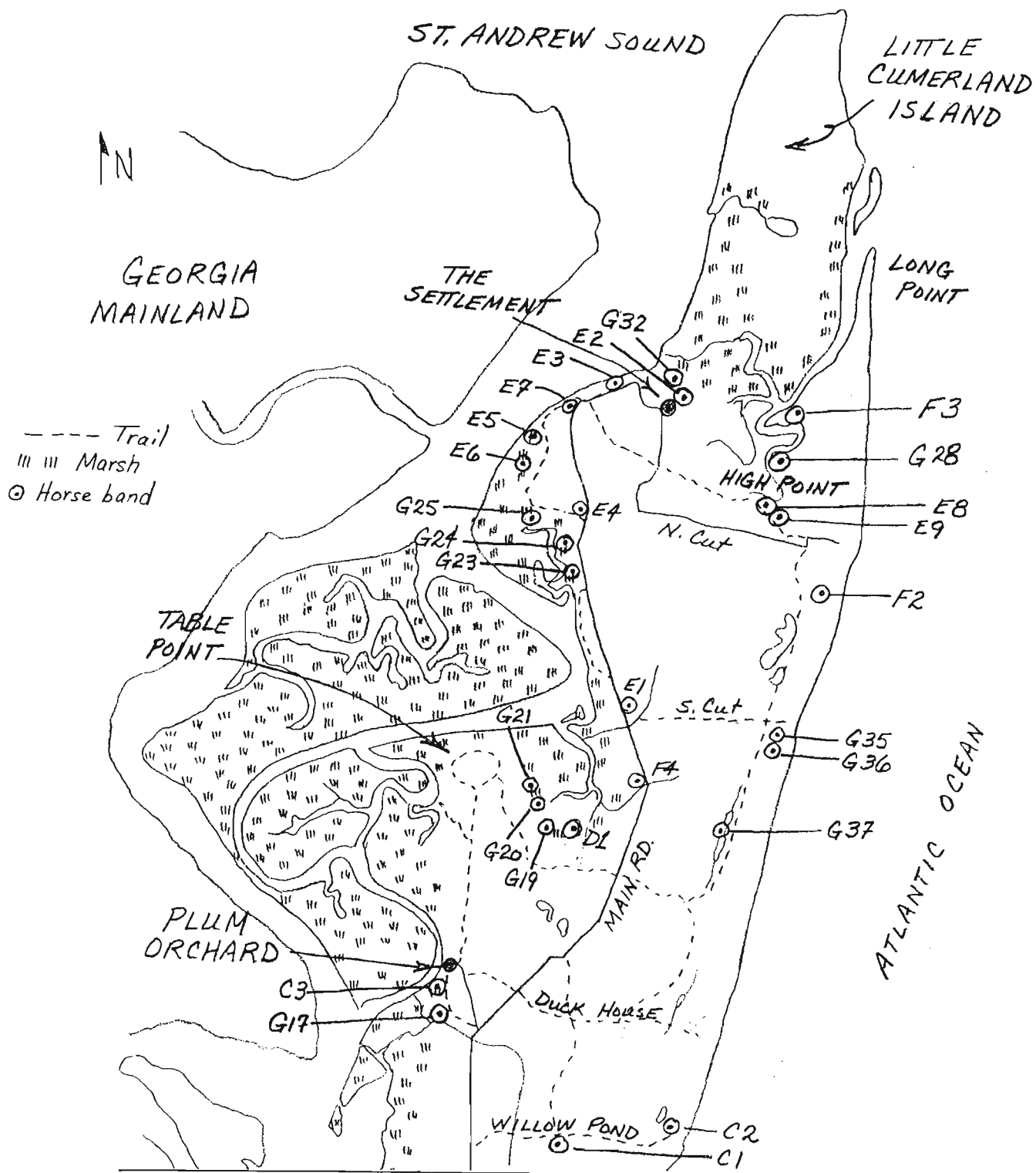
Group/			TOTAL Horses in Band	GENDER			AGE STRUCTURE			Habitat		Recount w/Groups
#	Band #	Location		Male	Female	Unknown	Adult	Juvenile	Foal	Area	Time	
1	A1	South End	1	0	1	0	1	0	0	M	S	847 G3; G38
2	A2	South End	4	1	2	1	3	0	1	M	S	900
3	A3	South End	8	1	5	0	3	2	1	M	S	900 G2; G39
4	A4	South End	2	0	0	2	1	0	1	M	S	930 G1; G40
5	A5	South End	4	0	0	4	3	0	1	M	S	930 G5
6	A6	South End	8	0	3	5	7	0	1	M	S	930 G42
7	A7	South End	3	1	2	0	3	0	0	M	S	947
8	G6	South End	1	0	0	1	1	0	0	M	S	828
9	G7	Raccoon Keys	3	0	0	3	3	0	0	M	S	828
10	G8	Dungeness Dock	3	0	0	3	2	1	0	M	S	828
11	G41	South End	8	0	0	8	5	1	0	M	S	1030
12	A10	Dung. Greenhouse	5	2	2	0	5	0	0	M	S	900
13	A11	Raccoon Keys	4	0	0	4	4	0	0	M	S	810
14	A12	Dungeness Ruins	2	1	1	0	2	0	0	P	S	835
15	A13	Dung. Carriage Hs	3	2	1	0	1	1	1	P	S	845
16	B1	Greyfield Lawn	4	1	3	0	3	1	0	P	S	1053 G9
17	B2	Old House	5	0	0	5	5	0	0	M	S	814 G10
18	B3	Old House	10	0	0	10	6	1	3	M	S	814 G11
19	B5	Stafford Airfield	5	1	4	0	3	1	1	P	I	920 F5; G13/14
20	B6	Stafford Mansion	3	3	0	0	3	0	0	P	I	940
21	B7	Stafford Road	3	0	0	3	3	0	0	P	I	955
22	F6	Stafford field N	4	2	2	0	4	0	0	P	I	1053 G12
23	F7	Stafford field N	4	1	2	1	3	0	1	P	I	1058 G15
24	F8	Stafford field	8	1	7	0	5	1	2	P	I	1100 B3
25	F9	Stafford field	4	1	3	0	3	0	1	P	I	1110
26	C1	Hickory Hill	5	1	3	1	4	1	0	F	N	1030
27	C3	Plum Orchard	2	0	2	0	2	0	0	P	N	1045 G16
28	G17	Plum Orchard	3	0	0	3	2	1	0	M	N	903
29	D1	Kings Bottom	10	2	1	7	9	0	1	M	N	835 G18
30	G19	E Table Point	3	0	0	3	2	1	0	M	N	906
31	G20	E Table Point	3	0	0	3	3	0	0	M	N	912
32	G21	E Table Point	4	0	0	4	3	1	0	M	N	912
33	F4	Main Rd/Culvert	5	0	0	5	5	0	0	F	N	1020
34	E1	Main Rd/S. Cut	2	1	1	0	1	1	0	M	N	920 G22
35	G23	Brickhill Bluff N	5	0	0	5	4	1	0	M	N	922
36	G24	Brickhill Bluff N	1	0	0	1	1	0	0	M	N	922
37	G25	Brickhill Bluff N	5	0	0	5	5	0	0	M	N	925
38	E4	Terrapin Pt. trail N	2	0	1	1	2	0	0	M	N	711
39	E5	Terrapin Pt. marsh	3	2	1	0	1	1	0	M	N	805 G28
40	E6	Terrapin Pt. marsh	4	2	2	0	3	1	0	M	N	818 G28
41	E7	Cumberland wharf	1	1	0	0	1	0	0	F	N	808
42	E3	Burbank Pt.	1	1	0	0	1	0	0	F	N	900 G33
43	E2	N of Settlement	4	0	0	4	4	0	0	M	N	729 G31
44	G32	N of Settlement	1	0	0	1	1	0	0	M	N	955
45	E8	High Point marsh	1	0	1	0	1	0	0	M	N	828 G27

Group/			TOTAL Horses in Band	GENDER			AGE STRUCTURE			Habitat		Recount	
#	Band #	Location		Male	Female	Unknown	Adult	Juvenile	Foal	Area	Time	w/Groups	
46	E9	High Point marsh	3	1	2	0	3	0	0	M	N	930	G30
47	G28	High Point marsh	5	0	0	5	3	2	0	M	N	923	
48	F3	Long Point marsh	7	0	0	7	0	0	0	M	N	923	G28
49	F2	Long Point marsh	7	0	0	7	0	0	0	M	N	923	G34
50	G35	S of So. Cut	4	0	0	4	4	0	0	B	N	1010	
51	G36	S of So. Cut	1	0	0	1	1	0	0	B	N	1018	
52	G37	Retta Lake	1	0	0	1	1	0	0	L	N	1020	
53	C2	Willow Pond trail	5	2	3	0	4	1	0	B	N	845	

TOTALS 203 31 55 116 153 20 15

Map 1. Distribution of horses, Cumberland Island, Stafford and south end.





Map 2. Distribution of horses, Cumberland Island, north of Stafford.