

INTRODUCTION

This survey was conducted for the National Park Service and Booker T. Washington National Monument to aid in the revision and enactment of the Resource Management Plan.

A field survey was conducted from October, 1984, to September, 1985, to determine the mammal species inhabiting Booker T. Washington National Monument. The study area, in the piedmont region of Virginia, is located 20 miles southeast of Roanoke, Virginia, 17 miles northeast of Rocky Mount, Virginia, and 20 miles southwest of Bedford, Virginia. The study site is characterized by four major habitats: fallow fields, pine forests, oak-hickory forests, and riparian forests. The southwest corner of the 223.9 acre monument is traversed by Gills Creek, creating a 12 acre area isolated from the main body of the property. All major habitats were sampled to achieve an accurate census of the mammals using the park. Ecotones in this study area were not considered as major habitats and were not sampled.

Sampling for small mammals can be accomplished by using various techniques. The most common is the use of snap traps. Schemnitz (1980) reports that Museum-Special snap traps can be used when sampling small rodents, due to the sensitivity and durability of this type of trap. Larger snap traps may be used to sample mammals slightly larger than rodents.

Larger mammal species can be sampled by means of scent stations as described by Coggin (1981). This technique samples large wary mammals, without killing or disturbing the animal. Scat analysis can also provide evidence of mammal species inhabiting an area. Murie (1946) showed that the number of rabbit-sized animals can be judged from scats, whereas mouse-sized animals may be underestimated. A field guide by Murie (1954) contains many clues for identification for spoor and scats, but considerable experience required for positive scat identification.

Direct field observations of animals, individual species traits such as nests, dens, or visual signs left by an animal for reproductive purposes, and tracks can supplement the identification of mammals within the area to be surveyed.

The objectives of this survey were to:

1. Sample all habitats for large and small mammals.
2. Prepare a study skin of each species of small mammal.
3. Construct casts of tracks of the large mammal species.

MATERIALS AND METHODS

Sampling mammals within the historic area was forbidden, due to the possibility visitors might encounter the traps. Trapping was done in the development and natural zones of the park.

Small mammal populations were sampled by transects of one hundred M4 Victor rat traps, Museum-Special snap traps, and Victor Spear mole traps. Each trapline was chosen to allow coverage of all four habitats for maximum sampling of species diversity. Six traplines were set from October 1984 to April 1985 (Fig. I.). Each trapline of 100 snap traps was active for three consecutive nights. One rat trap and two Museum-Specials were set at each station along each trapline. The snap traps were baited with a mixture of peanut butter and uncooked oatmeal (Schemnitz 1980). During the same sampling periods, mole traps were set where recent tunnel activity was detected. Study skins were made of all species trapped.

Mammal species larger than rodents were sampled by construction of scent stations developed by Joe Coggin of the Virginia Commission of Game and Inland Fisheries (Coggin 1981). Each station was constructed by placing a plastic ring, one meter in diameter, on the ground and removing all vegetation within the site for proper identification of tracks in the soil. A scent tablet was placed at the center of each station as an attractant to lure animals into the station. Ten stations were constructed in various habitats within the park (Fig. I.).

Each station was activated on identical dates as the traplines and, after verification of the tracks present, plaster casts were made whenever possible. The station was then cleared of all prior tracks.

Scat analysis for the larger mammals was conducted throughout the study area. Only positively identified scats were used as reliable data. Any uncertainty on the identification of scats was not included in this study. Field observations were made of individual species and species characteristics such as tracks, dens, nests, and bedding areas.

Bat sampling was not conducted due to the inability to acquire the specific tools needed for sampling. Buildings, rock crevices, and hollow trees were examined for possible roosting sites.

RESULTS

The species and numbers of small mammals trapped are expressed in Table I. as a percentage of the total number captured. Forty-six small mammals from eight species were trapped.

Deer mice and whitefooted mice were most diverse in habitat use. They accounted for 63% of all small mammals trapped. The golden mouse was trapped only within the riparian habitat in thick cover. Six of the seven individuals of this species were captured along trapline E across Gill's Creek (Fig. I.). Only one golden mouse was captured on the opposite side of Gill's Creek along trapline B (Fig. I.). Fields adjacent to buildings were found to be the only habitats containing the house mouse. Least shrews were also confined to the field habitat.

Although mole activity was detected throughout the park, trapping success was poor. One hairytail mole was captured on the field edge along trapline A.

One cottontail rabbit was also captured on the field edge along trapline A in a Victor rat trap. However observations indicated that this species inhabited all four major habitats.

One woodland jumping mouse was captured along trapline A (Fig. I.) near Jack-O-Lantern Branch.

Scent stations and field observations revealed twelve larger mammal species inhabiting the park.

Red fox tracks were observed in scent stations located in the field and along roads leading to Gills Creek. The gray fox used all habitats at the same frequency.

Raccoon tracks were observed primarily within the riparian ecosystem, although signs indicated some activity in the oak-hickory forest.

The whitetail deer population used all four habitats with the oak-hickory, field, and riparian habitats used as feeding grounds and the pine forests as bedding areas.

Gray squirrels and eastern chipmunks occurred mostly in the pine and oak-hickory forests, although one gray squirrel was sighted in the field.

Scent stations along Gills Creek were visited frequently by opossums.

Domestic dogs and striped skunks were found in all parts of the park.

Mink and muskrat tracks were only observed along the edge of Gills Creek.

Although bats were observed flying within the study area, none were captured and no roosting sites were found on the park property.

All animal species inhabiting Booker T. Washington National Monument and the habitat where they occurred are listed in Table II.

DISCUSSIONS

Twenty mammal species were sampled in Booker T. Washington National Monument. Most mammals are not restricted to one habitat but are ubiquitous. The golden mouse, muskrat, woodland jumping mouse, and mink use only one habitat, the riparian ecosystem. All other mammals sampled were found not to be habitat specific. As described by Burt (1976), the woodland jumping mouse has been found to inhabit the study area, which is the far eastern edge of its range.

Another habitat specific species is the least shrew, found only in the field habitat. This habitat is in a constant state of perturbation which recently has been left unmowed, providing a rich habitat for insects.

Problems occurred with the sampling of moles in this area. Trap size and design was found to be the factor inhibiting proper sampling of this species. Trap size of the Victor Spear Mole trap used was found to be too large. Moles would burrow beneath the trap triggering it and each of the two spears would hit just in front and just behind the animal creating a miss. A smaller type mole trap should produce a greater success rate in capturing this mammal. Although the hairy-tail mole was captured, it is possible, due to the difficulties described, that others of this species are present within the park's boundaries.

Although no sampling was conducted in the historic area, future arrangements should be made to ensure proper coverage of this zone. This area consists of buildings, feed bins, and fields which could contain a previously undetected species.

An additional survey is essential to sample bats, moles, and mammals of the historic area. New methods should be implemented such as smaller mole traps, and mist nets for the capturing of bats, so more thorough samplings can be obtained of these species to complete the mammal survey at Booker T. Washington National Monument.

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Table I. List of Mammals Trapped and Trapping Data.

<u>Species</u>	<u>Number Trapped</u>	<u>% of Total Trapped</u>
1. Deer Mouse (<u>Peromyscus maniculatis</u>)	19	41.3%
2. Whitefooted Mouse (<u>Peromyscus leucopus</u>)	10	21.7%
3. Golden Mouse (<u>Peromyscus nuttalli</u>)	7	15.2%
4. House Mouse (<u>Mus musculus</u>)	4	8.6%
5. Woodland Jumping Mouse (<u>Napeozapus insignis</u>)	1	2.1%
6. Least Shrew (<u>Cryptotis parva</u>)	3	6.5%
7. Hairytail Mole (<u>Parascalops breweri</u>)	1	2.1%
8. Cottontail Rabbit (<u>Sylvilagus floridanus</u>)	1	2.1%
Total	46	100%

Table II. List of Mammals and Habitats Where They Were Sampled.

<u>Species</u>	<u>HABITAT</u>			
	<u>Field</u>	<u>Pine</u>	<u>Oak-Hickory</u>	<u>Riparian</u>
1. Deer Mouse (<u>Peromyscus maniculatis</u>)	X	X	X	X
2. Whitefooted Mouse (<u>Peromyscus leucopus</u>)	X	X	X	X
3. Golden Mouse (<u>Peromyscus nuttalli</u>)				X
4. House Mouse (<u>Mus musculus</u>)	X			
5. Woodland Jumping Mouse (<u>Napeozapus insignis</u>)				X
6. Least Shrew (<u>Cryptotis parva</u>)	X			
7. Hairytail Mole (<u>Parascalops breweri</u>)	X			
8. Cottontail Rabbit (<u>Sylvilagus floridanus</u>)	X	X	X	X
9. Eastern Chipmunk (<u>Tamias striatus</u>)		X	X	
10. Muskrat (<u>Ondatra zibethica</u>)				X
11. Domestic Dog (<u>Canis domestica</u>)	X	X	X	X
12. Eastern Grey Squirrel (<u>Sciurus carolinensis</u>)	X	X	X	
13. Striped Skunk (<u>Mephitis mephitis</u>)	X	X	X	X

Table II. (Continued)

<u>Species</u>	<u>HABITAT</u>			
	<u>Field</u>	<u>Pine</u>	<u>Oak-Hickory</u>	<u>Riparian</u>
14. Woodchuck (<u>Marmota monax</u>)	X			
15. Opossum (<u>Didelphus marsupialis</u>)	X			X
16. Raccoon (<u>Procyon lotor</u>)			X	X
17. Grey Fox (<u>Urocyon cinereoargenteus</u>)	X	X	X	X
18. Red Fox (<u>Vulpes fulva</u>)	X			X
19. Mink (<u>Mustela vison</u>)				X
20. Whitetail Deer (<u>Odocoileus virginianus</u>)	X	X	X	X

Figure 1. Map Showing Locations of Trapping Lines and Scent Stations.

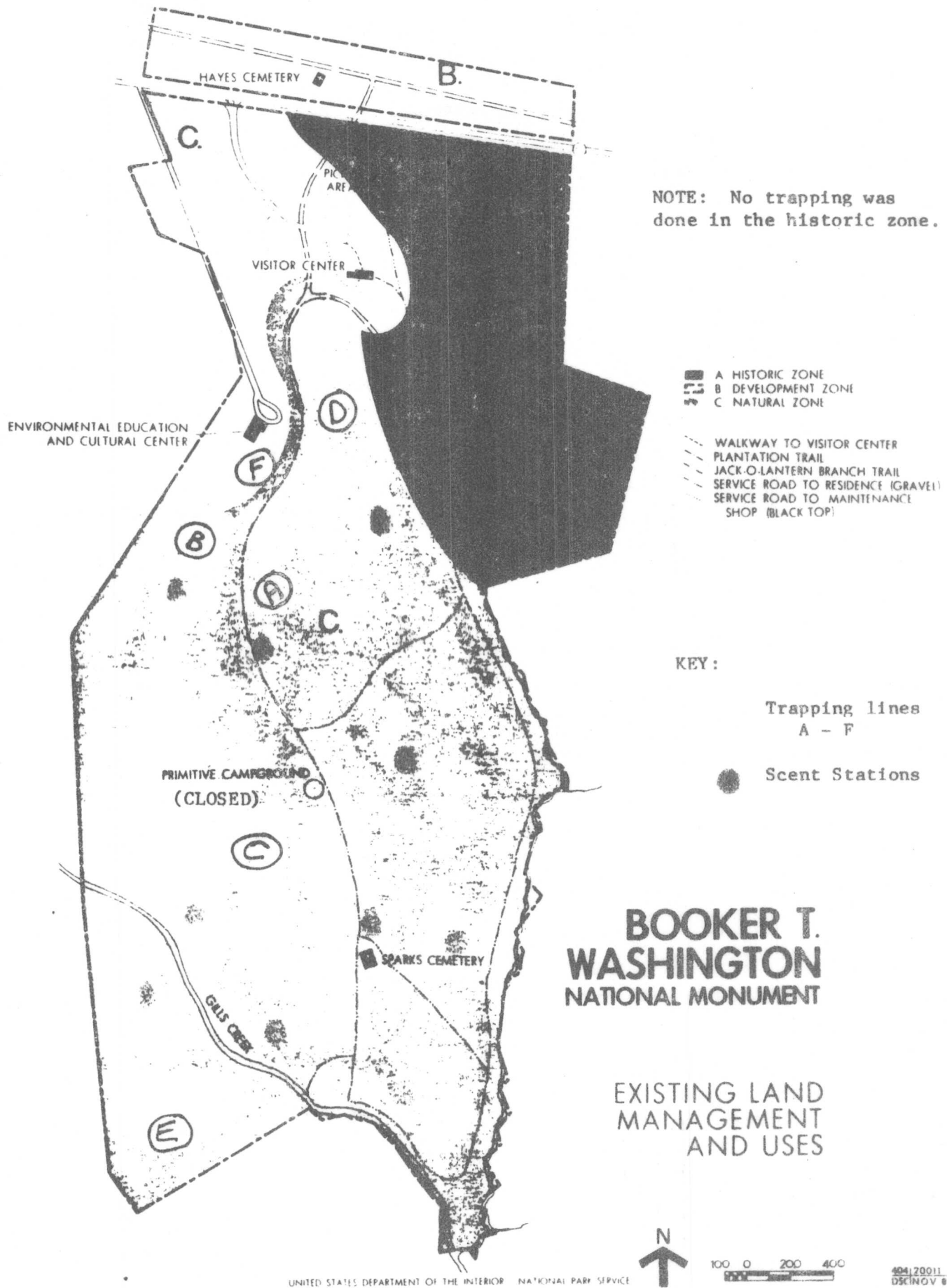


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