Terrestrial Mammal Inventory for the Chickamauga and Chattanooga National Military Park

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Abstract

Terrestrial mammals were inventoried for the Moccasin Bend National Historic Site, Lookout Mountain Battlefield and Point Park, and the Chickamauga and Chattanooga National Military Park. We recorded 21 species belonging to 10 families and six orders. Future investigations should attempt to document the terrestrial mammal species not recorded in the present inventory as well as the volant mammal species that are likely to occur therein.

Introduction

The south central region of the United States boasts an impressive diversity of mammals (Choate et al. 1994; Wilson and Ruff 1999). These vertebrates have been well studied in the past, and their distributions have been described by various authorities (Choate et al. 1994; Golley 1962; Hall 1981; Kennedy and Harvey 1980; Laerm et al. 1981; Wilson and Ruff 1999). However, as development proceeds in the region, suitable habitat declines, potentially leading to negative effects for some mammal species, especially those that are considered uncommon, rare, or are habitat specialists (Whitaker and Hamilton 1998). For this reason, mammal species should be inventoried and their populations monitored in order to determine if managerial steps are needed (Wilson et al. 1996).

The National Park Service (NPS) has developed programs to inventory and monitor the biological diversity found within national parks and reserves in order to conserve the biodiversity associated with lands managed by NPS whether or not that is the mission of that given park (NPS 2004). The present project represented an inventory

of the terrestrial mammals inhabiting the 3,634-hectare Chickamauga and Chattanooga National Military Park (CHCH NMP), including the Lookout Mountain Battlefield and Point Park (LMB) and the Moccasin Bend National Historic Site/Archeological District National Historic Landmark (MB NHS).

Our objectives for this research project were: 1) to review existing literature in order to develop a list of target mammal species that are likely present in the CHCH NMP and associated areas (Table 1), 2) to provide baseline information on the occurrence of terrestrial mammals and their associated habitats that presently inhabit the CHCH NMP and associated areas consistent with the goals set forth by the NPS (NPS 2004), and 3) to detect the presence of mammal species of special concern and describe their associated habitats.

Study Areas

The MB NHS consists of a 316-hectare tract of land found in Hamilton County, TN along the northern banks of the Tennessee River (Figure 1), where it protects the cultural significance of important Native American and Civil War Sites (CITA 2004). The MB NHS is situated in the flood plain of the Tennessee River and contains ephemeral to permanent wetlands, a monoculture Loblolly pine forest, mixed hardwood-pine forests, and a transmission line right-of-way, creating an open field habitat (Figure 1; Tables 2 and 3).

The 1,214-hectare LMB is found on the northern end of Lookout Mountain in the Lookout Plateau physiographic regions of Hamilton County, TN and Dade County, GA (Golley 1962; Figure 2). The habitat consists largely of steep rock faces at higher

elevations and rocky outcrops and boulders at lower elevations, both being surrounded by mature, secondary growth mixed hardwood forests (Figure 2; Tables 2 and 3).

The CHCH NMP consists of a 2,104-hectare tract of land in the Ridge and Valley physiographic regions of Walker and Catoosa Counties, GA (Golley 1962; Figure 3). The CHCH NMP along with LMB serves to preserve the cultural significance of Civil War sites, where several battles took place in 1863 (Hanson and Blythe 1999). Historically, agriculture was the primary use of the lands that are now within the park. Much of the land was used as pasture for some 40,000 head of cattle (John Ogden, *pers. comm.*). Currently, the only agricultural activity taking place is the harvesting of hay (Hanson and Blythe 1999). The various habitats found in the CHCH NMP include cultivated and uncultivated fields, mixed hardwood forests, cedar glades, flood plains of West Chickamauga Creek, and wetland or swamp areas created by the activities of the American Beaver [*Castor canadensis* (Figure 3; Tables 2 and 3)].

Methods

We inventoried the terrestrial mammal species at MB NHS, LMB, and CHCH NMP following standard protocols and criteria as suggested for particular taxa (Wilson et al. 1996). The methodologies that we employed can be broadly categorized as either direct or indirect methods of observation. Direct methods of observation included the capture of terrestrial mammals using a variety of trapping techniques (see below) with a quantifiable number of trap nights, as well as any chance sightings, including road mortalities, in which the mammal could be readily identified to the species level by the observer. Indirect methods of observation consisted of the interpretation of mammalian

sign (e.g., track and scat surveys, gnaw marks on vegetation, etc.) through which the species' identity could be reliably deduced without an actual animal sighting (Wemmer et al. 1996).

Our sampling strategies consisted of transect arrangements in 18 sites of differing habitat types for MB NHS (sites 1 – 6, Figure 1), LMB (sites 7 – 10, Figure 2), and CHCH NMP (sites 11 – 18, Figure 3). We selected the sampling sites prior to investigations and consulted with Jim Szyjkowski, Cultural Resource Manager of CHCH NMP, in order to avoid trapping in culturally sensitive areas. We obtained geographic coordinates for each collection site followed by a brief description of the associated vegetation (Tables 2 and 3). Our sampling methods for rodents (Family Muridae) included placement of a varying number of 339A non folding Sherman live traps and museum special snap traps in transects along mammal runways. We baited the Sherman live traps with sunflower seeds and oats, and we baited the museum special snap traps with peanut butter. For insectivores (Family Soricidae), we used water-filled pitfall traps [946 cm^3 plastic cup (11 cm lip diameter x 14 cm depth)] and museum special snap traps, as Sherman traps are generally unreliable for detecting long-tailed soricids (Francl et al. 2002). We placed a varying number of the water-filled pitfall traps and museum special snap traps in transects along runways underneath logs. We took standard metric measurements (i.e., total length, tail length, hindfoot length, ear length, and mass) for all captured rodents and soricids (Martin et al. 2001). For small to medium sized mammalian herbivores and browsers, carnivores, and other small mammalian predators [Families Muridae (Genus *Neotoma*), Sciuridae, Leporidae, Procyonidae, Mustelidae, and Didelphidae, respectively], we used Tomahawk live traps (model #102, #106, and #108),

and in one instance, an infrared camera (PhotoSpy™ Infrared, Highlander Sports, Inc., Huntsville, AL), placed in optimal habitats and along travel ways. We baited the Tomahawk live traps with peanut butter, lettuce, carrots, and fruit. We opened all traps on the first day of each of the three sampling periods (see Results), and we checked each trap the following morning throughout the duration of each sampling period. We removed all the traps on the final day of each sampling period. In the event that a chance sighting occurred within a designated sampling site, we recorded that species as being present within the site; however, if a chance sighting occurred outside of a designated sampling site (i.e., > 50m away from a given site), we obtained separate geographic coordinates for the sighting.

For indirect methods of observation, our sampling strategies included searching for mammal sign during each sampling period. When mammalian sign was discovered within a designated sampling site, we recorded that species presence within the site; however, if we detected mammalian sign outside of a designated site (i.e., > 50m away from a given site), we obtained separate geographic coordinates for the sighting.

Because many small, terrestrial mammals (e.g., families Soricidae and Muridae) are not readily identified in the field or are collected using traps that kill the animal quickly (e.g., museum special snap traps and water-filled pitfall traps), we obtained vouchers in order to make proper and permanent identifications using skin and skeletal material. Vouchers were also collected to establish a permanent record for a given species in these localities. We took accidental trap mortalities as vouchers as well. However, no more than five individuals of a particular species per local population were vouchered, and no federally or state-listed mammal species were collected. All vouchers

are being stored in The University of Tennessee at Chattanooga Natural History Museum. When possible, we took photographs of captured mammals that could be readily identified in the field, including chance sightings of mammal species and mammalian sign.

Dr. Robert Keller initiated the present inventory for the terrestrial mammals of the CHCH NMP. His laboratory conducted small mammal surveys using Sherman live traps, infrared camera surveys, and spot light surveys (see Appendix A).

Results

We inventoried the terrestrial mammals in three different sampling periods: from 30 March 2007 through 12 April 2007 at MB NHS, from 20 April 2007 through 22 April 2007 and again from 3 May 2007 through 14 May 2007 at LMB, and from 18 June 2007 through 2 July 2007 at CHCH NMP. We accrued a total of 2,831 trap nights and recorded a total of 112 mammals from the 18 sampling sites either by direct or indirect methods of observation. Taxonomically, these mammals represent 21 different species, 10 families, and six orders. Hereafter, we provide an annotated list of the terrestrial mammal species documented in MB NHS, LMB, and CHCH NMP. A complete record of the mammals recorded during the study can be found in Table 4. Taxonomy follows Baker et al. (2003).

Dr. Robert Keller's laboratory performed small mammal surveys in October 2003 and April 2003, camera surveys in November 2003 and January and March 2004, and spotlight surveys in November 2003 and May 2004. Dr. Keller observed two species [i.e., *Ochrotomys nuttalli* (Golden Mouse) and *Felis catus* (Domestic Cat)] not recorded

by this study and should be regarded as present within CHCH NMP considering that suitable habitat exists therein. A complete record of the mammals recorded during this survey can be found in Appendix A.

Species List

Didelphis virginiana, Virginia Opossum. This is a ubiquitous species occurring statewide in Tennessee and Georgia in a variety of habitats (Golley 1962; Hall 1981; Laerm et al. 1981). We detected tracks belonging to the species at MB NHS in an ephemeral wetland (site 3, Figure 1), and we captured and released one specimen at CHCH NMP in a riparian habitat (site 11, Figures 3 and 4). This species is certainly present in LMB as well, though we did not record its presence from that locale.

Sorex longirostris, Southeastern Shrew. This species occurs statewide in Tennessee and in Georgia (Golley 1962; Hall 1981; Kennedy and Harvey 1980; Laerm et al. 1981). We took two specimens at LMB from moist hardwood forest habitat (site 10, Figure 2), but it likely occurs at MB NHS and CHCH NMP as well.

Sorex fumeus, Smoky Shrew. This species is found in the eastern mountainous regions of Tennessee and along the Cumberland Plateau in moist habitats with deep leaf litter (Hall 1981; Kennedy and Harvey 1980). In Georgia, this species reaches its southeastern range limit in the Blue Ridge physiographic region (Golley 1962; Hall 1981; Laerm et al. 1981). We took one specimen at LMB from moist hardwood forest habitat (site 10, Figure 2). It likely occurs south of here into Dade and Walker Counties, Georgia in similar habitat along the slopes of the Lookout Plateau.

Blarina brevicauda, Northern Short-tailed Shrew. This is a common shrew in Tennessee, where it occurs throughout middle Tennessee, in the Cumberland Plateau north and west of the Tennessee River and in easternmost Tennessee in the Blue Ridge physiographic region and is more-or-less replaced by *B. carolinensis* in the Ridge and Valley physiographic province south and east of the Tennessee River (Gaudin et al. 2001; Hall 1981; Jeffries *Unpub. Honors Thesis*; see also Braun and Kennedy 1983). In Georgia, *B. brevicauda* is found throughout the Piedmont physiographic region, north of the fall line, and in the northeastern Blue Ridge physiographic region, being absent from the northwest Ridge and Valley and Coastal Plain provinces (Golley 1962; Laerm et al. 1981). We took three specimens at MB NHS from open field habitat in a transmission line right-of-way (site 4, Figure 1). We do not believe that *B. brevicauda* occurs at either LMB or CHCH NMP.

Blarina carolinensis, Southern Short-tailed Shrew. This smaller *Blarina* species is restricted to an area south and east of the Tennessee River in the Ridge and Valley physiographic province of eastern Tennessee (see notes on *B. brevicauda* above). It is also found in west Tennessee, west of the Tennessee River in the Mississippi River Basin (Kennedy 1991). In Georgia, it is found in the northwest Ridge and Valley province and south of the fall line in the Coastal Plain physiographic region (Laerm et al. 1981). We took five specimens at LMB from moist hardwood forest habitat (sites 7 and 10, Figure 2) and two specimens from a cedar glade and open field habitat (sites 12 and 13, respectively, Figure 3) at CHCH NMP. We do not believe that *B. carolinensis* occurs at MB NHS. We distinguished the two species of *Blarina* by geographical distribution (Jeffries *Unpub. Honors Thesis*) and external measurements, where *B. brevicauda* was

recorded for specimens with a total body length greater than 90 mm and a hindfoot length greater than 13 mm, and *B. carolinensis* was recorded for specimens with a total body length less than 90 mm and a hindfoot length less than 13 mm (Whitaker and Hamilton 1998).

Scalopus aquaticus, Eastern Mole. This fossorial species is a common inhabitant of a variety of habitats in Tennessee and Georgia (Hall 1981; Laerm et al. 1981). We detected *S. aquaticus* in open field habitat (site 13, Figure 3) at CHCH NMP from the presence of recent mole tunnels. Though we did not record its presence elsewhere, it likely occurs in MB NHS and LMB.

Sylvilagus floridanus, Eastern Cottontail. This is a statewide resident of Tennessee and Georgia (Hall 1981; Laerm et al. 1981). We observed one specimen in hardwood forest habitat (site 18, Figure 3) at CHCH NMP, though it certainly occurs at MB NHS and LMB as well.

Sylvilagus aquaticus, Swamp Rabbit. This species occupies flood plains and creeks in the western third of Tennessee and throughout the Piedmont and Ridge and Valley provinces in Georgia (Golley 1962; Hall 1981; Kennedy 1991; Kennedy and Harvey 1980; Laerm et al. 1981). We detected *S. aquaticus* via indirect observation in a riparian area (site 11, Figure 3) at CHCH NMP based upon the presence of rabbit pellets on a log, which is considered to be indicative of its presence (Whitaker and Hamilton 1998). We also detected it at CHCH NMP in the flood plains of the West Chickamauga Creek (site 16, Figure 3), where cane [*Arundinaria* sp (Radford et al. 1968)] was abundant. As one of its common names ("cane cutter") implies, *S. aquaticus* commonly feeds on cane (Whitaker and Hamilton 1998). We found several cane stalks cut at a 45°

angle, which is a typical feeding sign of leporids and *S. aquaticus* in particular (Rezendes 1999; Whitaker and Hamilton 1998; Figure 5). We believe it is reasonable to assume that *S. aquaticus* could be found at LMB, especially on the western side of the plateau in the flood plains of Lookout Creek and at MB NHS, considering its agility in the water (Whitaker and Hamilton 1998) although there are currently no records of the species from eastern Tennessee.

Tamias striatus, Eastern Chipmunk. This species occurs throughout Tennessee and large portions of Georgia, being uncommon in the upper Coastal Plain and entirely absent from the lower Coastal Plain (Golley 1962; Hall 1981). We observed *T. striatus* at LMB along rock faces and rocky outcrops in hardwood forest habitat (sites 8 and 9, Figure 2) and captured it in moist hardwood habitat (site 10, Figure 2). *Tamias striatus* is certainly present at MB NHS and CHCH NMP as well.

Sciurus carolinensis, Eastern Gray Squirrel. This species is found throughout Tennessee and Georgia (Hall 1981; Laerm et al. 1981). We observed *S. carolinensis* at LMB along rock faces and rocky outcrops in hardwood forest habitat (sites 8 and 9, Figure 2), and we captured it in hardwood forest habitat (site 15, Figure 3) at CHCH NMP. This species is certainly present at MB NHS, though we did not record its presence there.

Castor canadensis, American Beaver. This species is found throughout Tennessee and most of Georgia (Golley 1962; Hall 1981), although it was once less common in the lower Coastal Plain and Ridge and Valley provinces (Laerm et al. 1981). We detected its presence at MB NHS in a riparian area (site 3, Figure 1) from tracks and gnaw marks on trees and saplings. We observed it swimming in Lookout Creek near site

7 of LMB (Figure 2), and we noted its presence in a riparian area (site 11, Figure 3) at CHCH NMP from a constructed dam (Figure 6), tracks, and felled trees.

Peromyscus leucopus, White-footed Mouse. This is a very common statewide resident in Tennessee and is commonly found north of the Coastal Plain in Georgia (Golley 1962; Hall 1981; Laerm et al. 1981). We captured four specimens at CHCH NMP in hardwood forest habitat (sites 15 and 16, Figure 3).

Peromyscus gossypinus, Cotton Mouse. This larger *Peromyscus* species occurs throughout Tennessee, except in the higher elevations in the eastern portion of the state (Hall 1981), and all of Georgia (Golley 1962; Laerm et al. 1981). We captured two specimen at MB NHS in hardwood-pine forest habitat (site 2, Figure 1). We captured 17 specimens at LMB in hardwood forest-rocky outcrop habitat and moist hardwood forest (sites 8 and 10, Figure 2). At CHCH NMP, we captured five specimens in a cedar glade (site 12; Figures 3 and 7), one from open field habitat (site 13; Figure 3), and two from hardwood forest habitat (sites 15 & 16; Figure 3). We distinguished the two species of *Peromyscus* in the field by external measurements, where *P. gossypinus* was recorded with a hindfoot length of 22 mm and above, and *P. leucopus* was recorded with a hindfoot length of 20 mm and below (Whitaker and Hamilton 1998; see also Reed et al. 2004). Specimens with hindfoot lengths of approximately 21 mm were assigned *Peromyscus* sp. (Table 4). Skull measurements (i.e., greatest skull length and maxillary toothrow length) were taken on vouchered specimens to differentiate between the two species (see Laerm and Boone 1994).

Sigmodon hispidus, Hispid Cotton Rat. This species is common throughout much of Tennessee and occurs statewide in Georgia, especially in open fields (Hall 1981;

Laerm et al. 1981). We captured one specimen at MB NHS in hardwood-pine forest habitat (site 2, Figure 1), and we recorded eight specimens at CHCH NMP in open field habitat (site 17, Figure 3). *Sigmodon hispidus* likely occurs at LMB as well. Golley (1962) recorded the species from Dade County, Georgia.

Neotoma floridana, Eastern Woodrat. This species is common in some parts of its range in Tennessee and Georgia, where it prefers rocky, wooded habitat, but its relative abundance and distribution are poorly known (Hall 1981; Kennedy and Harvey 1980; Laerm et al. 1981). We discovered tracks at LMB along the steep rock faces of the Lookout Mountain Plateau (site 9, Figures 2 and 8) and were unsuccessful in our attempt to trap the species. The tracks may be those of *Tamias striatus* rather than *N. floridana*, as the former was abundant in the area (Figure 8). As such, *N. floridana* should be considered unconfirmed for the present study. *Neotoma floridana* has a historical presence in Dade County, Georgia, as noted by Golley (1962), and likely occurs at LMB in the appropriate habitat.

Microtus pinetorum, Woodland Vole. This semi-fossorial species occurs in a variety of habitats statewide in Tennessee and throughout all but the extreme southeastern portion of Georgia (Hall 1981; Laerm et al. 1981). We collected four specimens at MB NHS in hardwood-pine forest and open field habitat (sites 2 and 4, Figure 1), one specimen at LMB in moist hardwood forest habitat (site 10, Figure 2), and two specimens at CHCH NMP in open field habitat (site 13, Figures 3 and 9). We also collected the skeletal remains of two partial specimens at CHCH NMP from a discarded bottle in hardwood forest habitat (site 15, Figure 3).

Ondatra zibethicus, Common Muskrat. This species is found in aquatic habitats throughout Tennessee and most of Georgia (Golley 1962; Hall 1981). We observed one specimen swimming in Lookout Creek (near site 7 at LMB, Figure 2); however, it is likely present at MB NHS and CHCH NMP in the appropriate habitats (Golley 1962).

Procyon lotor. Raccoon. This is a very common species found in a variety of habitats throughout Tennessee and Georgia (Hall 1981; Laerm et al. 1981). We recorded tracks of this species in a riparian area (site 3, Figure 1) at MB NHS and recorded one specimen that had been struck by a vehicle at MB NHS near the entrance to the Blue Blazes Trail parking lot. We trapped four specimens at CHCH NMP in riparian areas (sites 11 and 16, Figures 3 and 10). *Procyon lotor* likely occurs at LMB as well.

Canis latrans, Coyote. This species is now found throughout Tennessee and Georgia (Whitaker and Hamilton 1998). We recorded tracks and scat from this species in the riparian areas of MB NHS (site 3, Figure 1), LMB (site 7, Figure 2), and CHCH NMP (sites 11 and 12, Figures 3 and 11).

Canis familiaris, Domestic Dog. We observed two unleashed specimens at CHCH NMP in hardwood forest habitat (site 15, Figure 3), where they caused much trap disturbance.

Odocoileus virginianus, White-tailed Deer. This species is common throughout Tennessee and Georgia in a variety of habitats (Whitaker and Hamilton 1998). We observed *O. virginianus* and its sign (i.e., tracks and scat) at several sites throughout MB NHS and CHCH NMP (Figures 1, 3, and 12). It is certainly present at LMB as well, though we did not record its presence.

Discussion

We recorded the presence of 21 of 33 targeted different terrestrial mammal species belonging to 10 families and six orders in 2,831 trap nights. *Sorex fumeus* (Smoky Shrew) and *Canis familiaris* (Domestic Dog) represents the only species recorded that were not listed as a target species (Table 1). All of the mammal species that we detected have a secure global conservation status and are considered to be widespread and abundant within all or part of Tennessee and Georgia (NatureServe 2007).

The success of any taxa inventory is a function of the time allotted and the methodologies employed, and several of the mammal species described in Table 1 were not recorded during the present study. At least two of these, *Sorex hoyi* (Pygmy Shrew) and *Cryptotis parva* (Least Shrew), represent uncommon, but locally abundant species that are difficult to capture under ideal circumstances and proved impossible to capture within the specified time range of the present study. Though the remaining, undocumented mammal species are considered relatively common (Table 1), we were unable to document the presence of *Marmota monax* (Woodchuck), *Glaucomys volans* (Southern Flying Squirrel), *Oryzomys palustris* (Marsh Rice Rat), *Reithrodontomys humulis* (Eastern Harvest Mouse), *Peromyscus polionotus* (Oldfield Mouse), *Ochrotomys nuttalli* (Golden Mouse), *Vulpes vulpes* (Red Fox), *Urocyon cinereoargenteus* (Gray Fox), *Mustela frenata* (Long-tailed Weasel), *Mustela vison* (American Mink), *Mephitis mephitis* (Striped Skunk), and *Lynx rufus* (Bobcat). However, recent inventories recorded *O. nuttalli* and *F. cattus* in the CHCH NMP and *R. humulis* on properties adjacent to the LMB (Appendix A and B).

We suggest that future research in the CHCH NMP and associated areas attempt to confirm the presence of the mammal species not recorded in the present inventory (Table 1). The occurrence of these mammal species is contingent upon the availability of suitable or favorable habitat. While we were unable to confirm their presence, we are confident that the remaining, undocumented mammal species reside within the CHCH NMP and associated areas (Table 1). Likewise, more research is ultimately needed to confirm the presence of those species identified only by sign. Of these, we are confident in our identification of *Canis latrans* (Coyote) and *Scalopus aquaticus* (Eastern Mole) and less so in our identification of *Neotoma floridana* (Eastern Woodrat) and *Sylvilagus aquaticus* (Swamp Rabbit). A more intensive survey directed at recording the presence of these species might be successful.

Exotic or nonnative mammals are known to occur in the region (Choate et al. 1994). The domestic or feral dog (*C. familiaris*) is a common denizen of Tennessee and Georgia and the only nonnative mammal species that we detected. Other nonnative mammal species known to occur in this region include the black rat (*Rattus rattus*), the Norway rat (*Rattus norvegicus*), the house mouse (*Mus musculus*), and the domestic or feral cat (*Felis catus*), all usually found in close association with human habitation (Laerm et al. 1981). Both domestic and feral representatives of *C. familiaris* and *F. catus* can have detrimental effects on biodiversity, especially the diversity and abundance of small vertebrates (Crooks and Soule 1999). However, leashing dogs and actively removing feral cats can minimize these effects.

Future research should also include an inventory of the volant mammals of the CHCH NMP and associated areas. The results of such an inventory could substantially

increase our knowledge of the mammalian diversity in the park. Chiroptera is the second largest order of mammals, and contains the second highest number of species for Tennessee and Georgia, including many threatened and endangered species (NatureServe 2007). Though it was out of the scope of the present inventory, we searched many of the culverts in the CHCH NMP for bats and found no signs of activity. Nevertheless, several volant species may occur on the park for at least part of the year, considering their foraging abilities and migratory behavior (Barbour and Davis 1969). *Eptesicus fuscus* (Big Brown Bat) was recorded in a previous inventory of properties adjacent to LMB (Appendix B).

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Use Committee 1998), and methods were approved by The University of Tennessee at Chattanooga Institutional Animal Care and Use Committee Welfare, #0107TJG-01.

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Figures



Figure 1. Moccasin Bend National Historic Site showing the relative positions of sites 1 – 6 (Google Earth 2007). See Tables 2 and 3 for site coordinates and descriptions.

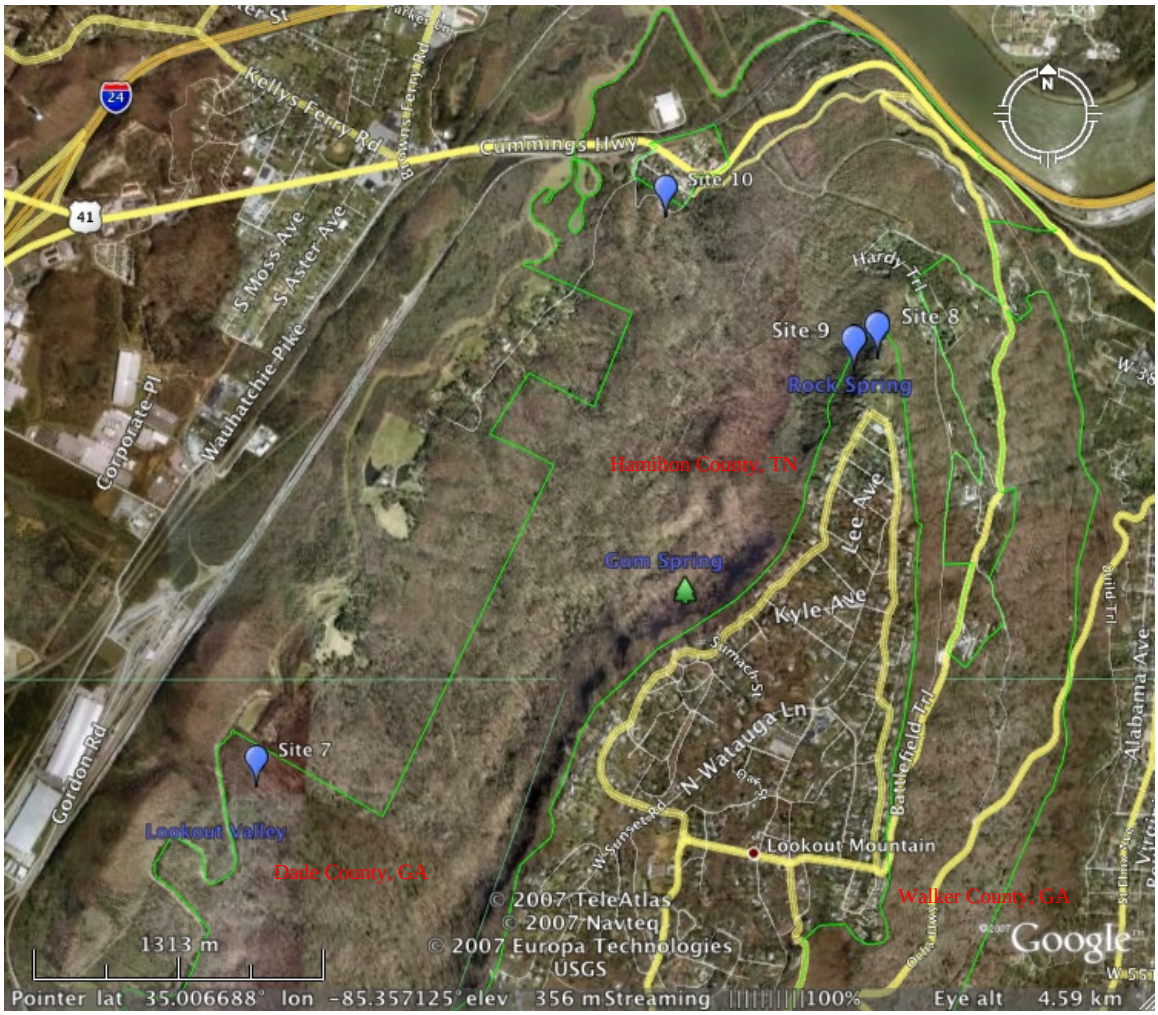


Figure 2. Lookout Mountain Battlefield/ Point Park showing the relative positions of sites 7 – 10 (Google Earth 2007). See Tables 2 and 3 for site coordinates and descriptions.



Figure 3. Chickamauga and Chattanooga National Military Park showing the relative positions of sites 11 – 18 (Google Earth 2007). See Tables 2 and 3 for site coordinates and descriptions.



Figure 4. *Didelphis virginiana* in Tomahawk live trap at site 11 of CHCH NMP.

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Figure 5. Likely feeding sign of *Sylvilagus aquaticus* at site 16 of CHCH NMP.



Figure 6. *Castor Canadensis* dam at site 11 of CHCH NMP.



Figure 7. *Peromyscus gossypinus* from site 12 (Cedar Glade) of CHCH NMP.



Figure 8. Possible *Neotoma floridana* tracks in dirt along the steep rock faces at site 9 of LMB.


Figure 9. *Microtus pinetorum* from site 13 of CHCH NMP.



Figure 10. *Procyon lotor* in Tomahawk live trap from site 11 of CHCH NMP.



Figure 11. *Canis latrans* track in mud from site 11 of CHCH NMP.



Figure 12. *Odocoileus virginianus* in CHCH NMP.

Tables

Table 1. Target list of 33 terrestrial mammal species generated prior to the 2007 inventory for the Chickamauga and Chattanooga National Military Park and associated areas.

Didelphimorphia	Didelphidae	*Didelphis virginiana*	Virginia Opossum
Insectivora	Soricidae	*Sorex longirostris*	Southeastern Shrew
	Soricidae	*Sorex hoyi*	Pygmy Shrew
	Soricidae	*Blarina brevicauda*	Northern Short-tailed Shrew
	Soricidae	*Blarina carolinensis*	Southern Short-tailed Shrew
	Soricidae	*Cryptotis parva*	Least Shrew
	Talpidae	*Scalopus aquaticus*	Eastern Mole
Lagomorpha	Leporidae	*Sylvilagus floridanus*	Eastern Cottontail
	Leporidae	*Sylvilagus aquaticus*	Swamp Rabbit
Rodentia	Sciuridae	*Tamias striatus*	Eastern Chipmunk
	Sciuridae	*Marmota monax*	Woodchuck
	Sciuridae	*Sciurus carolinensis*	Eastern Gray Squirrel
	Sciuridae	*Glaucomys volans*	Southern Flying Squirrel
	Castoridae	*Castor canadensis*	American Beaver
	Muridae	*Oryzomys palustris*	Marsh Rice Rat
	Muridae	*Reithrodontomys humulis*	Eastern Harvest Mouse
	Muridae	*Peromyscus polionotus*	Oldfield Mouse
	Muridae	*Peromyscus leucopus*	White-footed Mouse
	Muridae	*Peromyscus gossypinus*	Cotton Mouse
	Muridae	*Ochrotomys nuttalli*	Golden Mouse
	Muridae	*Sigmodon hispidus*	Hispid Cotton Rat
	Muridae	*Neotoma floridana*	Eastern Woodrat
	Muridae	*Microtus pinetorum*	Woodland Vole
	Muridae	*Ondatra zibethicus*	Common Muskrat
Carnivora	Canidae	*Canis latrans*	Coyote
	Canidae	*Vulpes vulpes*	Red Fox
	Canidae	*Urocyon cinereoargenteus*	Common Gray Fox
	Procyonidae	*Procyon lotor*	Raccoon
	Mustelidae	*Mustela frenata*	Long-tailed Weasel
	Mustelidae	*Mustela vison*	American Mink
	Mustelidae	*Mephitis mephitis*	Striped Skunk
	Felidae	*Lynx rufus*	Bobcat
Artiodactyla	Cervidae	*Odocoileus virginianus*	White-tailed Deer

Note: List represents those mammal species that are likely to occur in the CHCH NMP and associated areas. List excludes rare species, species believed to be extirpated, exotic species, and domestic or feral species. List compiled from Choate et al. (1994), Golley (1962), Hall (1981), Laerm et al. (1981), and Whitaker and Hamilton (1998). Taxonomy follows Baker et al. (2003).

Table 2. Sample site locations for the terrestrial mammal inventory for the Chickamauga and Chattanooga National Military Park and associated areas.

Moccasin Bend

Site	State	County	Latitude	Longitude	Elevation (m)
1	TN	Hamilton	35.04008°N	085.33581°W	203
2	TN	Hamilton	35.03921°N	085.33502°W	214
3	TN	Hamilton	35.04003°N	085.34193°W	204
4	TN	Hamilton	35.04022°N	085.34522°W	209
5	TN	Hamilton	35.03326°N	085.33403°W	239
6	TN	Hamilton	35.03959°N	085.34050°W	210

Lookout Mountain

Site	State	County	Latitude	Longitude	Elevation (m)
7	GA	Dade	34.99566°N	085.37275°W	268
8	TN	Hamilton	35.01205°N	085.34415°W	628
9	TN	Hamilton	35.0116°N	085.3451°W	595
10	TN	Hamilton	35.01807°N	085.35304°W	261

Chickamauga & Chattanooga NMP

Site	State	County	Latitude	Longitude	Elevation (m)
11	GA	Catoosa	34.9009°N	085.2623°W	224
12	GA	Catoosa	34.90667°N	085.24255°W	217
13	GA	Catoosa	34.9012°N	085.2628°W	219
14	GA	Walker	34.9172°N	085.2704°W	237
15	GA	Walker	34.94065°N	085.26641°W	248
16	GA	Catoosa	34.90588°N	085.24184°W	235
17	GA	Walker	34.9129°N	085.2662°W	231
18	GA	Catoosa	34.94188°N	085.25151°W	237

Table 3. Sample site descriptions for the terrestrial mammal inventory for the Chickamauga and Chattanooga National Military Park and associated areas. Taxonomy follows Radford et al. (1968).

Moccasin Bend		
Site	Habitat	Vegetation
1	Pine Forest-near parking area	Loblolly Pine (*Pinus taeda*)-Cherry (*Prunus* sp)-Hickory (*Carya* sp) & Sweetgum [*Liquidambar styraciflua* (scattered)]-Privet (*Ligustrum* sp)-Poison Ivy (*Rhus radicans*)-Virginia Creeper (*Parthenocissus quinquefolia*)
2	Hardwood-Pine Forest with a sandy substrate	Loblolly Pine (*Pinus taeda*)- Sycamore (*Platanus occidentalis*)-Red Maple (*Acer rubrum*)-Elm (*Ulmus* sp)-Sweetgum (*Liquidambar styraciflua*)-Privet (*Ligustrum* sp)-Poison Ivy (*Rhus radicans*)
3	Ephemeral Wetland	Sycamore (*Platanus occidentalis*)-Sweetgum (*Liquidambar styraciflua*)-Elm (*Ulmus* sp)-Maple (*Acer* sp)
4	Transmission Line-Open field	Various Grasses
5	Stringer's Ridge-Hardwood Forest	Oak (*Quercus* sp)-Hickory (*Carya* sp)-Tulip Poplar (*Liriodendron tulipifera*)
6	Wetland-Marsh	Grasses-Sycamore (*Platanus occidentalis*)
Lookout Mountain		
Site	Habitat	Vegetation
7	Hardwood Forest-Lookout Creek riparian area adjacent to Reflection Riding	Water Oak (*Quercus nigra*)-Sweetgum (*Liquidambar styraciflua*)-Maple (*Acer* sp)-Hickory (*Carya* sp)-Black Cherry (*Prunus serotina*)-Tulip Poplar (*Liriodendron tulipifera*)-Dogwood (*Cornus florida*)-Poison Ivy (*Rhus radicans*)
8	Hardwood Forest-Rocky Outcrop at Point Park	Elm (*Ulmus* sp)-Red Maple (*Acer rubrum*)-Chestnut Oak (*Quercus prinus*)-Hickory (*Carya* sp)-Red Oak (*Quercus rubra*)-Mountain Laurel (*Kalmia latifolia*)-Greenbriar (*Smilax* sp)-Virginia Pine (*Pinus virginiana*)
9	Point Park-Rock Face on western side of plateau	Oak (*Quercus* sp)-English Ivy (*Hedera helix*)-Mountain Laurel (*Kalmia latifolia*)
10	Hardwood Forest with rocky outcrops-below Point Park	Oak (*Quercus* sp)-Hickory (*Carya* sp)-Maple (*Acer* sp)-Tulip Poplar (*Liriodendron tulipifera*)-Sassafras (*Sassafras albidum*)-Virginia Creeper (*Parthenocissus quinquefolia*)-Poison Ivy (*Rhus radicans*)-*Trillium* sp
Chickamauga & Chattanooga NMP		
Site	Habitat	Vegetation
11	Wetland-Riparian Area	Privet (*Ligustrum* sp)-Muscadine (*Vitis* sp)-Hickory (*Carya* sp)-Red Maple (*Acer rubrum*)-Pine (*Pinus* spp)-Sugarberry (*Celtis laevigata*)-Cedar (*Juniperus* spp)-Poison Ivy (*Rhus radicans*)-Virginia Creeper (*Parthenocissus quinquefolia*)
12	Cedar Glade	Various Grasses-Cedar (*Juniperus* spp)-Pine (*Pinus* sp)-Privet (*Ligustrum* sp)-Oak (*Quercus* spp)
13	Open field	Various Grasses on edge of Hickory (*Carya* sp)-Pine (*Pinus* sp)-Oak (*Quercus* sp) Forest
14	Open field-Orchard	Various Grasses-Cherry (*Prunus* sp)
15	Hardwood Forest	Oak (*Quercus* sp)-Pine (*Pinus* sp)-Hickory (*Carya* sp)
16	Hardwood Forest/Riparian area of W. Chick. Creek	Oak (*Quercus* sp)-Hickory (*Carya* sp)-Cane (*Arundinaria* sp)
17	Open field near a drainage ditch	Various Grasses
18	Hardwood Forest	Oak (*Quercus* sp)-Hickory (*Carya* sp)-Pine (*Pinus* sp)

Table 4. List of terrestrial mammals of the inventory for the Chickamauga and Chattanooga National Military Park and associated areas. List includes those captured and observed by sight or sign and where applicable, the sampling site. Where given, measurements (TtL = Total Length, TL = Tail Length, HFL = Hindfoot Length, EL = Ear Length) are in millimeters and mass in grams. Refer to tables 2 and 3 for site locales and descriptions. All mammals were collected and identified by the authors. All mammals retained as vouchers are being stored in the UTC Natural History Museum. Taxonomy follows Baker et al. (2003).

SPECIES	GENDER	AGE	TtL	TL	HFL	EL	MASS	SITE	DAY	MONTH	YEAR	METHOD	NOTES	PICTURE	MUSEUM NUMBER
Microtus pinetorum	M		108	21	15	9	23	2	5	April	2007	Sherman			UTCM 1242
Microtus pinetorum	F		112	25	16	9	21.5	2	7	April	2007	Sherman			UTCM 1324
Microtus pinetorum	M		105	22	16	9	20	2	9	April	2007	Sherman			UTCM 1322
Peromyscus gossypinus	F		159	69	24	18	25	2	5	April	2007	Sherman	Lactating		UTCM 1241
Peromyscus gossypinus	M		143	70	22	19		2	6	April	2007	Sherman	Scrotal		UTCM 1297
Sigmodon hispidus								2	12	April	2007	Sherman	Escaped before measurements		N/A
Canis latrans								3	31	March	2007	Sign: Track	Took Picture	P4070007	N/A
Castor canadensis								3	31	March	2007	Sign: Track and gnaw marks			N/A
Didelphis virginiana								3	31	March	2007	Sign: Track			N/A
Odocoileus virginianus								3	31	March	2007	Sign: Track	Many Tracks/ Scat Present		N/A
Odocoileus virginianus								3	31	March	2007	Sign: Track			N/A
Procyon lotor								3	31	March	2007	Sign: Track	Took Picture	P4130004	N/A
Blarina brevicauda	M		93	27	15	5	17	4	4	April	2007	Sherman			UTCM 1244
Blarina brevicauda			110	24	14	5	17	4	7	April	2007	Snap			UTCM 1248
Blarina brevicauda	M		96	21	14	5	18	4	8	April	2007	Snap			UTCM 1246
Microtus pinetorum	M		100	20	16	4	27	4	9	April	2007	Sherman	Released		N/A
Odocoileus virginianus								5	29	March	2007	Sight	Stringer's Ridge		N/A
Blarina carolinensis			88	16	12	6	7	7	22	April	2007	Pitfall			UTCM 1325

Canis latrans								7	21	April	2007	Sign: Scat			N/A
Castor canadensis								7	19	April	2007	Sight	Swimming in Lookout Creek		N/A
Ondatra zibethicus								7	19	April	2007	Sight	Swimming in Lookout Creek		N/A
Peromyscus gossypinus	M		165	78	23	18	26	8	4	May	2007	Sherman	Released		N/A
Peromyscus gossypinus	M	Adult	161	81	24	17	26	8	6	May	2007	Sherman	Released		N/A
Peromyscus gossypinus	M		173	81	23	18	25	8	7	May	2007	Snap			UTCM 1296
Peromyscus gossypinus	F		158	71	21.5	17	20	8	7	May	2007	Snap			UTCM 1305
Peromyscus sp	F	Subadult	129	59	21	15	20	8	7	May	2007	Sherman	Released		N/A
Neotoma floridana								9	4	May	2007	Sign: Track	Poss. Neotoma tracks	NeotomaTrack2	N/A
Blarina carolinensis			84	22	11	3	6	10	5	May	2007	Pitfall			UTCM 1266
Blarina carolinensis	F		90	18	11	4	12	10	10	May	2007	Pitfall			UTCM 1245
Blarina carolinensis			80	19	12	4	10	10	13	May	2007	Pitfall			UTCM 1288
Blarina carolinensis			77	19	12	3	8	10	13	May	2007	Pitfall			UTCM 1289
Microtus pinetorum	M		102	19	14	9	20	10	13	May	2007	Pitfall			UTCM 1382
Peromyscus gossypinus	M		169	84	23	19	30	10	5	May	2007	Sherman	Released		N/A
Peromyscus gossypinus	F	Adult	160	82	23	19	26	10	6	May	2007	Sherman	Lactating: Released		N/A
Peromyscus gossypinus	M		159	76	23	17	27	10	7	May	2007	Sherman	Released		N/A
Peromyscus gossypinus	F	Adult	174	81	23	15	24	10	7	May	2007	Sherman	Lactating: Released		N/A
Peromyscus gossypinus	F	Adult	165	79	22	17	22	10	7	May	2007	Sherman	Released		N/A
Peromyscus gossypinus	M		173	84	24	18	28	10	7	May	2007	Sherman	Released		N/A
Peromyscus gossypinus	F	Adult	158	75	22	18	27	10	7	May	2007	Sherman	Lactating: Released		N/A
Peromyscus gossypinus	F	Adult	171	77	22	16	24	10	8	May	2007	Sherman	Released		N/A
Peromyscus	M		162	78	23	17	29	10	8	May	2007	Sherman	Released		N/A

gossypinus															
Peromyscus gossypinus	M		154	78	23	15	28	10	8	May	2007	Sherman	Released		N/A
Peromyscus gossypinus	M		170	85	23	19	30	10	8	May	2007	Sherman	Released		N/A
Peromyscus gossypinus	F		152	78	22	17	23	10	8	May	2007	Sherman	Released		N/A
Peromyscus sp	M		161	73	21	19	32	10	5	May	2007	Sherman	Released		N/A
Peromyscus sp	F		160	79	21	18	27	10	5	May	2007	Sherman	Lactating: Released		N/A
Peromyscus sp	F		132	53	21	16	22	10	5	May	2007	Sherman	Part of tail missing: Released		N/A
Peromyscus sp	M	Subadult	142	69	21	17	18	10	5	May	2007	Sherman	Released		N/A
Peromyscus sp	M	Subadult	145	70	21	17	18	10	6	May	2007	Sherman	Released		N/A
Peromyscus sp	F	Adult	160	81	21	16	22	10	6	May	2007	Sherman	Lactating: Released		N/A
Peromyscus sp	M		152	75	21	17	22	10	6	May	2007	Sherman	Released		N/A
Peromyscus gossypinus	F	Adult	163	77	22	16	23	10	6	May	2007	Sherman	Lactating: Released		N/A
Peromyscus sp								10	6	May	2007	Sherman	Escaped before measured		N/A
Peromyscus sp	F							10	6	May	2007	Sherman	Part of tail missing; Recapture & Released		N/A
Peromyscus sp	F							10	7	May	2007	Sherman	Part of tail missing; Recapture & Released		N/A
Peromyscus sp	F	Adult	160	79	21	17	23	10	7	May	2007	Sherman	Lactating: Released		N/A
Peromyscus sp	F	Juvenile	131	65	20	15	15	10	5	May	2007	Sherman	Gray pelage: Released		N/A
Peromyscus sp	F	Juvenile	128	63	21	14	13	10	6	May	2007	Sherman	Gray pelage: Released		N/A
Peromyscus sp		Subadult						10	7	May	2007	Sherman	Escaped before measured		N/A
Peromyscus sp	M	Juvenile	121	57	20	12	9	10	7	May	2007	Sherman	Released		N/A
Peromyscus sp	F	Juven	129	68	21	13	15	10	8	May	2007	Sherman	Released		N/A

		ile													
Sorex fumeus			103	48	14	8	5	10	12	May	2007	Pitfall			UTCM 1381
Sorex longirostris			72	31	9	4	2	10	5	May	2007	Pitfall			UTCM 1379
Sorex longirostris			73	32	9	5	3	10	8	May	2007	Pitfall			UTCM 1378
Tamias striatus	F							10	5	May	2007	Sherman	Lactating; Released without measuring		N/A
Canis latrans								11	19	June	2007	Sign: Tracks	Took Picture	P6190006	N/A
Castor canadensis								11	19	June	2007	Sign: Tracks, Dam, Felled trees	Took Picture of dam	P6190011	N/A
Didelphis virginiana								11	23	June	2007	Tomahawk	Released without measuring	P6230018	N/A
Procyon lotor								11	19	June	2007	Tomahawk	Released without measuring	P6190001	N/A
Procyon lotor								11	19	June	2007	Tomahawk	Released without measuring	P6190008	N/A
Sylvilagus aquaticus								11	18	June	2007	Sign: Scat	Scat on log		N/A
Blarina carolinensis			84	18	12	4	5	12	22	June	2007	Sherman			UTCM 1265
Canis latrans								12	19	June	2007	Sign: Scat			N/A
Peromyscus gossypinus	F		130	64	23	17	20	12	20	June	2007	Sherman	Released	P6200017	N/A
Peromyscus gossypinus	F		148	59	23	18	19	12	21	June	2007	Snap			UTCM 1304
Peromyscus gossypinus	F		168	68	23	16	23	12	23	June	2007	Snap			UTCM 1295
Peromyscus gossypinus								12	19	June	2007	Snap	mutilated by ants		UTCM 1258
Peromyscus gossypinus								12	19	June	2007	Snap	mutilated by ants		UTCM 1259
Blarina carolinensis								13	22	June	2007	Sherman	mutilated by ants		UTCM 1261
Microtus pinetorum	M		90	15	16	9	19	13	20	June	2007	Sherman	Released	P6200015	N/A
Microtus								13	25	June	2007	Snap	Body badly		UTCM 1262

pinetorum													mutilated by ants		
Peromyscus gossypinus								13	22	June	2007	Sherman	Body badly mutilated by ants		UTCM 1384
Scalopus aquaticus								13	18	June	2007	Sign: Mole Tunnels	Tunnels seen throughout field		N/A
Canis familiaris								15	23	June	2007	Sight	Probably caused much of the noted trap disturbance		N/A
Microtus pinetorum								15	20	June	2007	Bottle-collected	Skeletal elements & two partial skulls found in bottle		UTCM 1263
Peromyscus gossypinus	F		155	71	22	16	22	15	25	June	2007	Sherman	Released		N/A
Peromyscus leucopus	F		159	79	20	18	26	15	25	June	2007	Sherman	Released		N/A
Peromyscus sp			149					15	22	June	2007	Sherman	Escaped before being measured; Tick on nose		N/A
Sciurus carolinensis								15	22	June	2007	Sherman	Released without measuring		N/A
Odocoileus virginianus								16	28	June	2007	Skeletal remains	Skeletal elements & two partial skulls		UTCM 1260
Peromyscus leucopus	F		149	69	20	17	22	16	26	June	2007	Sherman	Released		N/A
Peromyscus leucopus	M		164	69	20	17	28	16	27	June	2007	Sherman	Scrotal; Botfly larvae: Released		N/A
Peromyscus gossypinus	F		159	71	22	17	25	16	27	June	2007	Sherman	Botfly larvae		UTCM 1316
Peromyscus leucopus	M		161	70	20	15	28	16	29	June	2007	Sherman	Released		N/A
Procyon lotor								16	27	June	2007	Tomahawk	Released	P6270039	N/A
Procyon lotor								16	28	June	2007	Tomahawk	Released	P6280052	N/A
Sylvilagus aquaticus								16	25	June	2007	Sign: Cane	Cane stalks eaten	P6250020	N/A
Sigmodon								17	26	June	2007	Sherman	Released		N/A

hispidus													without measuring		
Sigmodon hispidus	F		208	87	27	18	50	17	27	June	2007	Sherman			UTCM 1335
Sigmodon hispidus								17	28	June	2007	Sherman	Released without measuring		N/A
Sigmodon hispidus								17	28	June	2007	Sherman	Released without measuring		N/A
Sigmodon hispidus								17	29	June	2007	Sherman	Released without measuring		N/A
Sigmodon hispidus								17	29	June	2007	Sherman	Released without measuring		N/A
Sigmodon hispidus	M	Adult	227	101	30	20	104	17	29	June	2007	Sherman	Scrotal		UTCM 1342
Sigmodon hispidus	M	Adult	221	88	30	21	114	17	29	June	2007	Sherman	Scrotal		UTCM 1333
Sylvilagus floridanus								18	29	June	2007	Sight			N/A
Odocoileus virginianus								11 but ubiquitous	19	June	2007	Sight	Directly observed in field		N/A
Sciurus carolinensis								8 & 9, but ubiquitous	4	May	2007	Sight	Directly observed		N/A
Tamias striatus								8 & 9, but ubiquitous	4	May	2007	Sight	Directly observed		N/A
Odocoileus virginianus									30	March	2007		Skeletal Remains: Pelvic Bone		UTCM 1291
Odocoileus virginianus									8	April	2007	Sight	Field at Blue Blazes Trail		N/A
Procyon lotor									7	April	2007	Roadkill	Near parking lot to Blue Blazes Trail	P4070002	N/A

Appendices

Appendix A

Prior to this investigation, Robert Keller initiated an inventory of the mammals of the Chickamauga and Chattanooga National Military Park by means of small mammal surveys in October 2003 and April 2003, camera surveys in November 2003 and January and March 2004, and spotlight surveys in November 2003 and May 2004. Hereafter, we present tables with the preliminary results of each survey, respectively. Much of the associated data (e.g., geographic coordinates) was not located and is presumed lost. Likewise, we can only assume that vouchers were not taken during this study. *Note*: TtL = Total Length, BL = Body Length, TL = Tail Length, HFL = Hindfoot Length, EL = Ear Length; in millimeters and mass in grams.

KELLER'S SMALL MAMMAL SURVEY RESULTS – SHERMAN LIVE TRAPPING

SPECIES	TAG	RECAPTURE	GENDER	TtL	BL	TL	HFL	EL	MASS	DAY	MONTH	YEAR	PLOT	TRAP	NOTES
Peromyscus leucopus	122		M	167		75	23	17	22	26	October	2003	25	A5	
Peromyscus leucopus	241		F	182		80	21	15	32	26	October	2003	23	A5	Pregnant
Peromyscus sp										26	October	2003	22	A1	Escaped Juvenile
Peromyscus leucopus	169		F	148		62	21	12	21	27	October	2003	23	C1	
Peromyscus leucopus		Y								27	October	2003	23	A5	Recapture Tag# 241
Peromyscus leucopus		Y								28	October	2003	25	A5	Recapture Tag# 122
Peromyscus leucopus		Y								28	October	2003	23	A3	Recapture Tag# 169
Ochrotomys nuttalli	236		M	153		82	19	12	17	28	October	2003	23	A1	Took Photos
Peromyscus sp	253		F							29	October	2003	23	C1	Had 5 new borns in trap
Peromyscus leucopus		Y								29	October	2003	23	A5	Recapture Tag# 241
Peromyscus gossypinus	281		M	169		70	21	13	30	29	October	2003	23	A3	Took Photos
Ochrotomys nuttalli		Y								29	October	2003	23	A1	Recapture Tag# 236
Peromyscus leucopus		Y								30	October	2003	25	C3	Recapture Tag# 122
Peromyscus gossypinus	178		M	175		77	22	12	26	30	October	2003	23	A3	
Peromyscus leucopus		Y								30	October	2003	23	B3	Recapture Tag# 169
Peromyscus gossypinus		Y								30	October	2003	23	A4	Recapture Tag# 281
Peromyscus leucopus		Y								30	October	2003	23	A6	Recapture Tag# 241 had 3 babies(pinkies)
Peromyscus sp		Y								30	October	2003	23	B3	Recapture Tag# 253
Peromyscus gossypinus										31	October	2003	25	C4	LBB Escaped
Peromyscus leucopus		Y								31	October	2003	25	C2	Recapture Tag# 169
Peromyscus gossypinus		Y								31	October	2003	25	B3	Recapture Tag# 281
Peromyscus leucopus		Y								31	October	2003	25	C4	Recapture Tag# 241
Peromyscus gossypinus	145		M				23	15		31	October	2003	25	A5	Escaped
Ochrotomys nuttalli		Y								31	October	2003	25	A4	Recapture Tag# 236

Peromyscus sp		Y								31	October	2003	25	A3	Recapture Tag# 253
Peromyscus gossypinus	390		M	177		77	24	15	29	31	October	2003	23	A1	Scrotal
Peromyscus leucopus			M		84.5	73	18	17	24	27	April	2004	2	B3	Ticks
Peromyscus gossypinus			M		94.5	78.5	24.5	17	28	27	April	2004	2	A4	Ticks
Peromyscus gossypinus			F		94	77	22.5	17	25	27	April	2004	2	C6	
Peromyscus gossypinus			F		84	72	21	16	20	27	April	2004	3	B1	
Peromyscus gossypinus			M		99.5	77	22	17.5	33	27	April	2004	3	C1	
Peromyscus gossypinus			M		79	66	20.5	16	19	27	April	2004	4	A1	Juvenile
Tamias striatus			F		105	95.5	32	13	65	27	April	2004	4	C2	
Peromyscus gossypinus			F		92	78.5	22	17	29	27	April	2004	5	B6	Pregnant with ticks
Peromyscus leucopus			F	164	91	73	21	16	25	28	April	2004	2	C5	
Peromyscus leucopus			M	160	90	70	22	15	23	28	April	2004	2	A4	ticks
Peromyscus leucopus			F	158	90	68	21	14	22	28	April	2004	3	C1	
Peromyscus sp			F	150	84	66	21	14	20	28	April	2004	4	A4	
Peromyscus gossypinus			M	167	95	72	23	15	28	28	April	2004	4	B4	
Peromyscus gossypinus			F	169	94	75	22	16	28	28	April	2004	4	A1	Ticks
Peromyscus leucopus	477		M	161	88	73	22	16	24	29	April	2004	2	B3	
Peromyscus leucopus	404		F	160	89	71	22	16	20	29	April	2004	3	C5	
Peromyscus gossypinus	450		M	172	98	74	23	13	30	29	April	2004	3	C1	
Peromyscus leucopus	413		M	148.5	81	61.5	22	14.5	19.5	29	April	2004	4	B5	
Peromyscus gossypinus	406		F	161	95	70.5	22	14.5	28	29	April	2004	4	A3	3 Ticks
Peromyscus leucopus	476		M	175.5	96.5	69	21.5	14.5	27	29	April	2004	4	B3	
Peromyscus gossypinus	403		F	149	83	66	21.5	15.5	20	29	April	2004	4	B1	Juvenile
Peromyscus sp	451		M							30	April	2004	2	A3	Escaped
Peromyscus leucopus	409		F		89	76	21	15	24	30	April	2004	2	B3	
Peromyscus leucopus		Y								30	April	2004	2	A4	Recapture Tag# 477
Peromyscus leucopus		Y								30	April	2004	3	C5	Recapture Tag# 404
Peromyscus gossypinus		Y								30	April	2004	3	C1	Recapture Tag# 450
Peromyscus leucopus		Y								30	April	2004	4	A4	Recapture Tag# 476
Peromyscus gossypinus		Y								30	April	2004	4	A2	Recapture Tag# 406
Peromyscus leucopus	479		M		83	62	21	14	21	30	April	2004	4	C1	

KELLER'S CAMERA SURVEY RESULTS								
SPECIES	**GENDER**	**NUMBER IN PICTURE**	**DAY**	**MONTH**	**YEAR**	**TIME**	**PLOT**	**PICTURE**
Odocoileus virginianus		1	20	November	2003	2:30	21	PS000001
Odocoileus virginianus		1	20	November	2003	6:58	21	PS000002
Odocoileus virginianus		1	20	November	2003	7:26	21	PS000003
Odocoileus virginianus		2	20	November	2003	8:27	21	PS000004
N/A		0	20	November	2003	8:32	21	PS000005
Odocoileus virginianus		1	20	November	2003	9:26	21	PS000006
N/A		0	20	November	2003	17:49	21	PS000007
Odocoileus virginianus		1	20	November	2003	17:55	21	PS000008
N/A		0	20	November	2003	21:10	21	PS000009
Odocoileus virginianus		1	21	November	2003	9:16	21	PS0000010
Odocoileus virginianus		1	21	November	2003	10:36	21	PS0000011
Odocoileus virginianus		1	21	November	2003	11:30	21	PS0000012
N/A		0	21	November	2003	19:12	21	PS0000013
N/A		0	22	November	2003	11:07	21	PS0000014
Odocoileus virginianus		0.5	22	November	2003	11:40	21	PS0000015
Odocoileus virginianus		1	22	November	2003	15:11	21	PS0000017
Odocoileus virginianus		1	22	November	2003	17:16	21	PS0000018
Species Unknown		0	22	November	2003	23:53	21	PS0000019
Didelphis virginiana		1	23	November	2003	1:49	21	PS0000020
N/A		0	23	November	2003	8:39	21	PS0000021
Odocoileus virginianus		2	24	November	2003	8:22	21	PS0000022
Odocoileus virginianus		1	24	November	2003	12:34	21	PS0000023
Odocoileus virginianus		0.5	24	November	2003	12:45	21	PS0000024
Robert Keller		1	19	November	2003	14:34	23	PS000001
Brian Yates		1	19	November	2003	14:38	23	PS000002
Unknown Person		1	20	November	2003	15:58	23	PS000003
Odocoileus virginianus		1	21	November	2003	15:32	23	PS000004
Brian Yates		1	19	November	2003	14:10	25	PS000001
Odocoileus virginianus		1	21	November	2003	8:06	25	PS000002
NO PICTURES TAKEN		0	24	March	2004		1	
NO PICTURES TAKEN		0	24	March	2004		2	

N/A		0	27	March	2004	14:59	3	PS000001
Canis familiaris		1	24	March	2004	17:54	5	PS000001
Odocoileus virginianus		1	30	March	2004	21:52	5	PS000002
N/A		0	16	January	2004	3:41	20	PS000001
N/A		0	16	January	2004	7:45	20	PS000002
Canis familiaris		1	15	January	2004	13:07	4	PS000001
Odocoileus virginianus		1	16	January	2004	22:03	4	PS000002
Odocoileus virginianus		3	16	January	2004	22:09	4	PS000003
Odocoileus virginianus		1	16	January	2004	22:20	4	PS000004
Odocoileus virginianus		1	16	January	2004	22:50	4	PS000005
Odocoileus virginianus		1	16	January	2003	23:35	4	PS000006
Odocoileus virginianus		1	19	January	2004	2:20	4	PS000007
Canis familiaris		1	19	January	2004	8:47	4	PS000008
N/A		0	20	January	2004	9:30	4	PS000009
Unkown Person		1	14	January	2004	17:16	8	PS000001

KELLER'S SPOT LIGHT SURVEY RESULTS

SPECIES	GENDER	DAY	MONTH	YEAR	SITE	CALL
none observed		20	November	2003	CB1	none
Canis familiaris		20	November	2003	CB2	none
Canis familiaris		20	November	2003	CB2	none
Odocoileus virginianus	F	20	November	2003	CB2	none
Odocoileus virginianus	F	20	November	2003	CB2	none
Odocoileus virginianus	F	20	November	2003	CB2	none
Didelphis virginiana		20	November	2003	CB3	none
Odocoileus virginianus	F	20	November	2003	CB4	none
Odocoileus virginianus	F	20	November	2003	CB4	none
Odocoileus virginianus	F	20	November	2003	CB4	none
Odocoileus virginianus	F	20	November	2003	CB4	none
Odocoileus virginianus	F	20	November	2003	CB4	none
Odocoileus virginianus	F	20	November	2003	CB4	none
Odocoileus virginianus	F	20	November	2003	CB5	none
Odocoileus virginianus	YOY	20	November	2003	CB5	none

none observed		20	November	2003	CB6	none
none observed		20	November	2003	CB7	none
Odocoileus virginianus	F	20	November	2003	CB8	none
Odocoileus virginianus	F	20	November	2003	CB8	none
none observed		20	November	2003	CB9	none
Odocoileus virginianus	F	20	November	2003	CB10	none
Odocoileus virginianus	F	20	November	2003	CB10	none
Odocoileus virginianus	F	20	November	2003	CB10	none
none observed		6	May	2004	CB11	Rabbit
none observed		6	May	2004	CB12	none
none observed		6	May	2004	CB13	Rabbit
none observed		6	May	2004	CB14	Rabbit
none observed		6	May	2004	CB15	Rabbit
Sylvilagus sp		6	May	2004	CB16	none
none observed		6	May	2004	CB17	none
none observed		6	May	2004	CB18	none
none observed		6	May	2004	CB19	none
Felis catus		6	May	2004	CB20	Rabbit
Odocoileus virginianus	F	6	May	2004	CB21	Rabbit
Odocoileus virginianus	F	6	May	2004	CB21	Rabbit
Odocoileus virginianus	F	6	May	2004	CB21	Rabbit
Odocoileus virginianus	F	6	May	2004	CB21	Rabbit
Odocoileus virginianus	F	6	May	2004	CB21	Rabbit
Odocoileus virginianus		6	May	2004	CB22	none
Odocoileus virginianus		6	May	2004	CB22	none
Odocoileus virginianus		6	May	2004	CB23	Rabbit
Odocoileus virginianus		6	May	2004	CB23	Rabbit
Odocoileus virginianus		6	May	2004	CB23	Rabbit
Odocoileus virginianus		6	May	2004	CB23	Rabbit
Odocoileus virginianus		6	May	2004	CB23	Rabbit
Odocoileus virginianus		6	May	2004	CB23	Rabbit
Odocoileus virginianus		6	May	2004	CB23	Rabbit
Odocoileus virginianus		6	May	2004	CB24	Rabbit

Odocoileus virginianus		6	May	2004	CB24	Rabbit
Odocoileus virginianus		6	May	2004	CB24	Rabbit
Odocoileus virginianus		6	May	2004	CB24	Rabbit
Odocoileus virginianus		6	May	2004	CB24	Rabbit
Odocoileus virginianus		6	May	2004	CB25	none
none observed		6	May	2004	CB26	none
Odocoileus virginianus		6	May	2004	CB27	none
Odocoileus virginianus		6	May	2004	CB27	none
Odocoileus virginianus		6	May	2004	CB27	none
Odocoileus virginianus		6	May	2004	CB27	none

Appendix B

The authors served as mammal team leaders for the 2007 Chattanooga BioBlitz held at the Chattanooga Nature Center and Reflection Riding Arboretum in Hamilton County, TN from 19 April through 22 April 2007. We surveyed mammals in Sites 1 through 6 [see figure below (Note that site 4 is also site 7 for the LMB survey)]. We report our findings in the following table because many of the mammals recorded during this survey may also be found on the adjacent NPS lands in appropriate habitat.



Results of Mammal BioBlitz

Species	Gender	TtL	TL	HFL	EL	Mass	Notes	Site	Habitat
Eptesicus fuscus	F							Mist Net 2	Canopy Opening
Peromyscus gossypinus	M	152	65	23	125	21.5		5	Hardwood Forest
Peromyscus gossypinus	F	180	87	25	16	27	Lactating	5	Hardwood Forest
Blarina carolinensis		81	13	11	5	9		3	Meadow

Reithrodontomys humulis	F	121	56	16	12	12		3	Meadow
Microtus pinetorum	F	118	15	16	7	29		3	Meadow
Peromyscus gossypinus	M	173	76	23	18	28		5	Hardwood Forest
Peromyscus leucopus	F	154	61	21	16	32	Lactating	5	Hardwood Forest
Peromyscus gossypinus	F	171	72	22	18	28	Lactating	5	Hardwood Forest
Blarina carolinensis		88	16	12	6	7		4 and 7	Hardwood Forest
Peromyscus leucopus	F	152	76	22	16	18	Juvenile	5	Hardwood Forest
Sciurus carolinensis							Sight	Ubiquitous	
Sylvilagus floridanus							Sight	2	Riparian area
Castor canadensis							Sight	3	Meadow
Odocoileus virginianus							Scat & Tracks	Ubiquitous	
Castor canadensis							Sacrum	1	Riparian of Lookout Creek
Ondatra zibethicus							Sight	3	Meadow
Procyon lotor							Tracks	1	Riparian of Lookout Creek
Tamias striatus							Sight	Ubiquitous	
Didelphis virginiana							Tracks	1	Riparian of Lookout Creek
Mephitis mephitis							Sight	Near Mist Net 2	Canopy Opening
Lasiurus borealis							Unconfirmed		
Scalopus aquaticus							Mole tunnels	Near Wolf Cages	
Canis latrans							Scat	4 and 7	Hardwood Forest

Appendix C

During the terrestrial mammal inventory for the Chickamauga and Chattanooga National Military Park and associated areas, we made notes of captured or observed nontarget species present in or near sampling sites. Those found deceased are being stored or are being prepared for storage in the UTC Natural History Museum. We report our findings in the following table. Refer to tables 2 and 3 for site locales and descriptions. Identifications were made by the authors and Thomas Wilson.

SPECIES	COMMON NAME	GENDER	AGE	RELEASED	DAY	MONTH	YEAR	SITE	METHOD/ TRAP	MUSEUM NUMBER
Thryothorus ludovicianus	Carolina Wren			Y	6	April	2007	1	Sherman	
Plethodon glutinosis	Northern Slimy Salamander			N	1	April	2007	2	Pitfall	
Plethodon glutinosis	Northern Slimy Salamander		YOY	N	2	April	2007	2	Pitfall	UTCA 190
Plethodon glutinosis	Northern Slimy Salamander	M		N	4	April	2007	2	Pitfall	
Plethodon glutinosis	Northern Slimy Salamander	F		N	4	April	2007	2	Pitfall	
Plethodon glutinosis	Northern Slimy Salamander	M		N	5	April	2007	2	Pitfall	UTCA 192
Ambystoma opacum	Marbled Salamander	F		Y	12	April	2007	2	Pitfall	
Ambystoma opacum	Marbled Salamander	F		N	10	April	2007	3		UTCA 191
Plethodon glutinosis	Northern Slimy Salamander			N	7	May	2007	10	Pitfall	
Plethodon glutinosis	Northern Slimy Salamander			N	7	May	2007	10	Pitfall	
Lampropeltis triangulum triangulum	Eastern Milk Snake			N	7	May	2007	10		
Plethodon glutinosis	Northern Slimy Salamander			Y	9	May	2007	10	Pitfall	
Plethodon glutinosis	Northern Slimy Salamander			Y	10	May	2007	10	Pitfall	
Plethodon glutinosis	Northern Slimy Salamander		YOY	N	12	May	2007	10	Pitfall	
Plethodon glutinosis	Northern Slimy Salamander	M		N	13	May	2007	10	Pitfall	
Terrapene carolina	Eastern Box Turtle			Y	1	April	2007	Between 3 & 4	Sight	
Terrapene carolina	Eastern Box Turtle			Y	31	March	2007	Near 3	Sight	

Appendix D

At least one of the nontarget species (i.e., *Abystoma opacum*) listed in appendix C represented a Hamilton County, TN record and the following description was submitted as such for publication in the *Herpetological Review* by the authors and Thomas Wilson.

AMBYSTOMA OPACUM (Marbled Salamander). USA: TENNESSEE: HAMILTON CO: Moccasin Bend National Park/ Archaeological District, Chattanooga (35.04003°N, 085.34193°W). 10 April 2007. Matthew B. Smith, Timothy J. Gaudin, and Thomas P. Wilson. Verified by Enrico Walder, Senior Herpetologist and Assistant Curator of Forests, Tennessee Aquarium. The University of Tennessee at Chattanooga Natural History Museum (UTCA 191). Adult female collected posthumously from leaf litter while surveying mammals. A second live female *A. opacum* collected two days later from a pitfall trap and released in same area. Represents first verified record for Hamilton County (Redmond and Scott 1996. Atlas of Amphibians in Tennessee. The Center for Field Biology, Austin Peay State University, Clarksville, Tennessee. 94 pp. http//www.apsu.edu/amatlas/; Petranka 1998. Salamanders of the United States and Canada. Smithsonian Institution Press, Washington and London, 587 pp). Collection made under Tennessee Wildlife Resources Agency Permits 1534 and 1944 and National Park Service Scientific Research and Collecting Permit CHCH-2007-SCI-0002.

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Ambystoma opacum