

THE HERPETOFAUNA OF THE UPPER DUCK RIVER WATERSHED IN COFFEE COUNTY, TENNESSEE

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ABSTRACT—The Duck River watershed in middle Tennessee is one of the most biologically diverse river drainages in the United States. Over 500 species of aquatic plants, vertebrates and invertebrates have been documented, many of which are endemic. Several inventories on the mussel and fish fauna of the watershed have been conducted, but little attention has been directed towards herpetofauna. A herpetological inventory was conducted using a variety of field techniques including visual encounter surveys, drift-fence/pitfall traps, aquatic turtle traps, and road cruising. The inventory documented 51 species (26 amphibian and 25 reptile) within the watershed accounting for 68.9% of the 74 potential herpetofaunal species. Between this study and a recent herpetofaunal survey of Arnold Air Force Base in Coffee County, 64 (31 amphibian and 33 reptile) herpetofaunal species were documented accounting for 86.4% of the potentially encountered species in Coffee County.

Many ecosystems throughout the southeastern United States are rich in species of herpetofauna. Herpetofauna may constitute the greatest vertebrate biomass in many forest ecosystems (Congdon et al., 1986). They are important nodes in ecological food webs (Vitt et al., 1990), and are of potential value as biological indicators of environmental health of habitats (Bury et al., 1995). As such, herpetofauna may act as an early warning sign for other populations of organisms in danger of decline or possible extinction.

In recent years, concerns have increased over amphibian and reptile population declines and extinctions worldwide (Blaustein and Wake, 1990; Richards et al., 1993; Young et al., 2001; Carey and Alexander, 2003). Human-related factors such as habitat fragmentation and destruction (Dodd and Smith, 2003), timber harvesting (Petranka et al., 1993), habitat acidification (Blaustein et al., 2003), environmental contamination such as pesticides, herbicides, and metals (Blaustein et al., 2003; Boone and Bridges, 2003), and the introduction of exotic species that compete or predate on native species (Knapp and Matthews, 2000) have been associated with documented population declines.

The United States Fish and Wildlife Service (USFWS) currently lists 21 species of amphibians and 37 species of reptiles as either endangered or threatened within the United States with an additional 11 species of amphibians and 6 species of reptiles as candidates for federal listing (<http://endangered.fws.gov>, 2004). At the state level in Tennessee, 1 species of amphibian and 3 species of reptiles are listed as threatened with 10 species of amphibians and 4 species of reptiles deemed in need of management (Tennessee Dept. of Environment and Conservation, Division of Natural Heritage, 2004). As human encroachment continues on already fragmented and degraded areas, these figures are likely to increase.

Few species have been adequately inventoried and monitored over a long period of time (Bury et al., 1995). Consequently, there exists a significant need to inventory and monitor amphibian and reptile populations to better understand the distri-

bution of herpetofaunal declines, their associated factors, and influence on biological and ecological interactions. Inventories provide baseline data needed to develop effective monitoring programs and management strategies for individual species, habitats, and geographic areas.

For this study, a herpetological inventory was conducted for the upper Duck River watershed within Coffee County, Tennessee, to compile a species list for the area. The Duck River is one of the most biologically diverse river systems in the United States with over 500 documented species of aquatic plants, vertebrates and invertebrates including several endemic mussels and fish species. While several surveys have been conducted on the mussel and fish fauna of the watershed (Isom and Yokley, 1968; Jenkinson, 1988; Nieland, 1982; Scott and Gardner, 1995), little attention has been given to herpetofauna.

MATERIALS AND METHODS

Study Area—The upper portion of the Duck River watershed, beginning at its origin in northern Coffee County, encompasses 1553 sq. miles of land in four counties in south-central Tennessee: Bedford, Coffee, Marshall, and Williamson (Fig. 1). One major impoundment, Normandy Reservoir, is found within the region with a surface area of 3230 acres at full pool. Dammed near the Bedford-Coffee county-line in 1976, the reservoir is located entirely within Coffee County and aids in flood control, water supply, and recreation (Tennessee Valley Authority, 2000). Most of the watershed located within Coffee County lies within the Eastern Highland Rim Physiographic Province; however, land surrounding Normandy Reservoir is part of the Outer Central Basin (Miller, 1974). The Eastern Highland Rim averages 305 m elevation and is characterized by gently rolling to nearly level terrain with limestone sinks and other karst features. Along its periphery, the Eastern Highland Rim is characterized by steep-sloping valleys marking the transition into the Outer Central Basin. The watershed exists

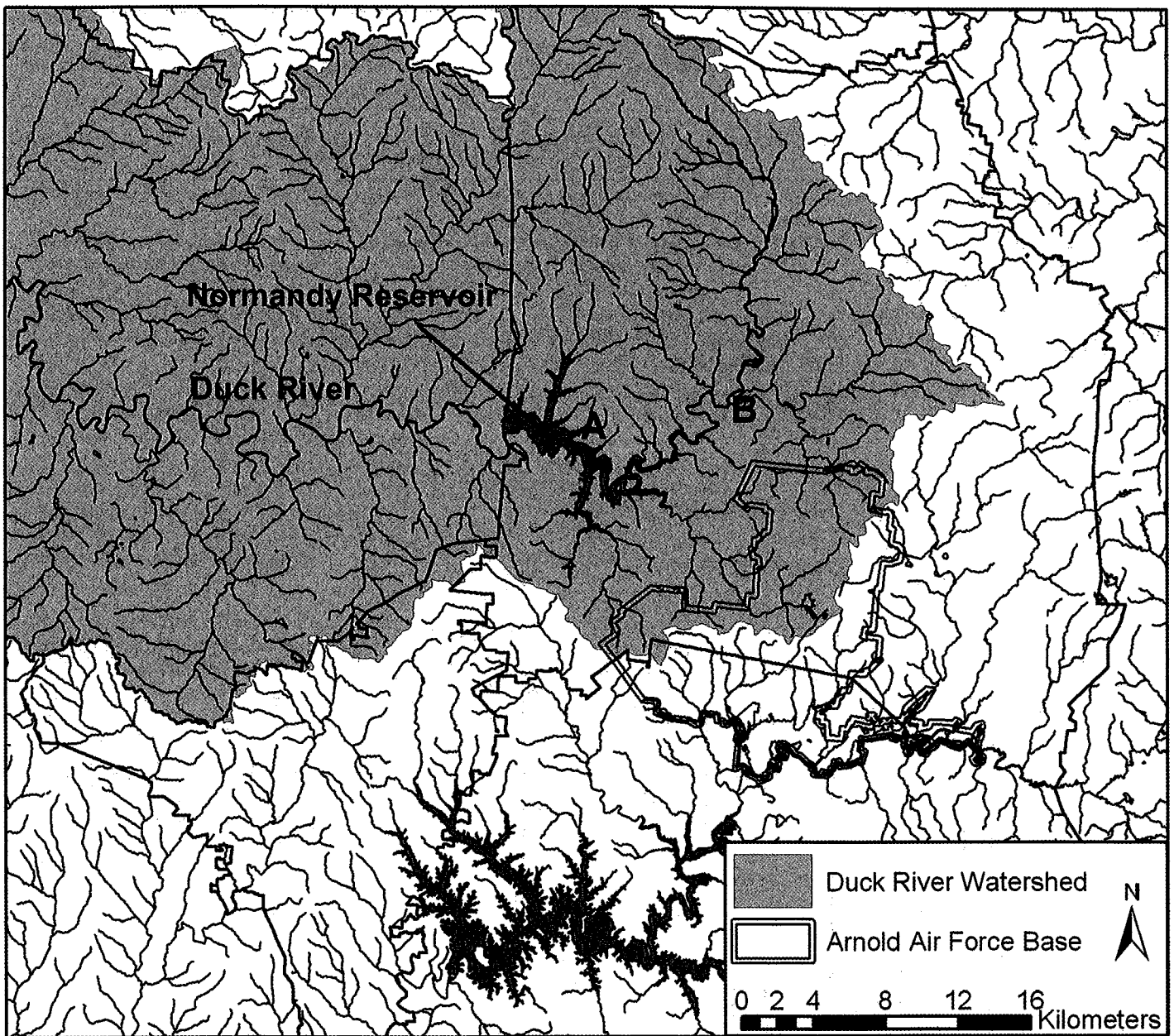


FIG. 1. Location of the upper Duck River watershed (shaded gray) in Coffee County. One impoundment, Normandy Reservoir, is found on the upper Duck River. The two primary sites for this study were (A) TVA and privately-owned land located 3 km northeast of Barton Springs Public Use Area on Davidson Branch and (B) Old Stone Fort State Archaeological Park in Manchester, Tennessee. Note the close proximity of Arnold Air Force Base in south-central Coffee and northern Franklin County.

within the Western Mesophytic Forest Region and is dominated by oak and hickory species (Braun, 1950). Several habitats are found within the watershed in Coffee County, including bottomland hardwood, mixed hardwood, seepage areas, bluff areas, agricultural lands, brushy thicket, barrens, cedar-hardwood, and caves (Tennessee Valley Authority, 2000).

Two primary sites were chosen as focal areas for visual encounter surveys (VES). Primary sites were chosen based on diversity of natural habitat, accessibility, and historical herpetofaunal distribution records. The first primary site was located on Davidson Branch 3 km northeast of Barton Springs Public Use Area and 6 km east of the city of Normandy, Tennessee, just north of Riley Creek Road (Fig. 1, Site A). Privately-owned, the

site consists of numerous streams and seeps which flow into Normandy Reservoir cutting through mixed hardwood forest; however, portions of the area are owned by the Tennessee Valley Authority. Pockets of cedar-hardwood and brushy thicket can be found in addition to prairie, bluff, and pasture habitat on top of several ridges. The second primary site, Old Stone Fort State Archaeological Park (Fig. 1, Site B), is a 705-acre, 2000 year-old Native American site located just upstream from Normandy Reservoir at the confluence of the Duck and Little Duck River within the city of Manchester as they cut into the western edge of the Highland Rim forming distinct bluff and cliff areas intermixed in mixed hardwood forest. Most of the 50-acre area enclosed by the ancient wall on top of a ridge at this site is open

TABLE 1. Herpetofaunal diversity of the Duck River Watershed within Coffee County, Tennessee. The list includes species documented in the current study (CS), species documented within Coffee County (CC), species documented via drift fence/pitfall array (DF), species documented via road cruising or aural surveys while driving (RC), and species documented via visual encounter surveys and incidental observations (VS).

Scientific Name	Common Name	CS	CC	DF	RC	VS
Order Anura						
<i>Bufo americanus americanus</i> (Holbrook)	Eastern American Toad	•	•	•	•	•
<i>Bufo fowleri</i> (Hinckley)	Fowler's Toad	•	•	•	•	
<i>Acris crepitans crepitans</i> (Baird)	Eastern Cricket Frog	•	•		•	•
<i>Hyla chrysocelis/versicolor</i> (Cope/LeConte)	Cope's Gray/Gray Treefrog	•	•		•	•
<i>Hyla gratiosa</i> (LeConte) ^b	Barking Treefrog		•			
<i>Pseudacris crucifer crucifer</i> (Wied-Neuwied)	Northern Spring Peeper	•	•		•	•
<i>Pseudacris feriarum feriarum</i> (Baird)	Upland Chorus Frog	•	•		•	•
<i>Gastrophryne carolinensis</i> (Holbrook)	Eastern Narrow-mouthed Toad	•	•		•	•
<i>Rana capito</i> (LeConte) ^a	Gopher Frog		•			
<i>Rana catesbeiana</i> (Shaw)	American Bullfrog	•	•	•	•	•
<i>Rana clamitans melanota</i> (Rafinesque)	Northern Green Frog	•	•	•	•	•
<i>Rana palustris</i> (LeConte)	Pickerel Frog	•	•	•	•	•
<i>Rana sphenocephala utricularia</i> (Cope)	Southern Leopard Frog	•	•	•	•	•
<i>Scaphiopus holbrookii</i> (Harlan)	Eastern Spadefoot	•	•	•		
Order Caudata						
<i>Ambystoma maculatum</i> (Shaw)	Spotted Salamander	•	•	•		•
<i>Ambystoma opacum</i> (Gravenhorst)	Marbled Salamander	•	•	•		
<i>Ambystoma talpoideum</i> (Holbrook)	Mole Salamander	•	•	•		
<i>Ambystoma texanum</i> (Matthes)	Small-mouthed Salamander		•			
<i>Ambystoma tigrinum</i> (Green)	Tiger Salamander	•	•		•	
<i>Cryptobranchus alleganiensis alleganiensis</i> (Daudin) ^b	Eastern Hellbender		•			
<i>Desmognathus fuscus</i> sp. (Green)	Northern Dusky Salamander	•	•			•
<i>Desmognathus ochrophaeus</i> sp. (Cope)	Mountain Dusky Salamander	•	•			•
<i>Eurycea cirrigera</i> (Green)	Southern Two-lined Salamander	•	•	•		•
<i>Eurycea longicauda longicauda</i> (Green)	Long-tailed Salamander	•	•	•		•
<i>Eurycea lucifuga</i> (Rafinesque)	Cave Salamander	•	•			•
<i>Gyrinophilus palleucus</i> (McCrary) ^c	Tennessee Cave Salamander		•			
<i>Gyrinophilus porphyriticus</i> (Green)	Spring Salamander	•	•			•
<i>Hemidactylium scutatum</i> (Temminck and Schlegel) ^b	Four-toed Salamander		•			
<i>Plethodon dorsalis</i> (Cope)	Northern Zigzag Salamander	•	•	•		•
<i>Plethodon glutinosus</i> (Green)	Northern Slimy Salamander	•	•	•		•
<i>Pseudotriton montanus diastictus</i> (Bishop)	Midland Mud Salamander		•			
<i>Pseudotriton ruber ruber</i> (Latreille)	Northern Red Salamander	•	•	•	•	•
<i>Necturus maculosus maculosus</i> (Rafinesque)	Common Mudpuppy					
<i>Notopthalmus viridescens viridescens</i> (Rafinesque)	Red-spotted Newt	•	•			•
Order Squamata (Suborder Lacertilia)						
<i>Ophisaurus attenuatus longicaudus</i> (McConkey) ^b	Eastern Slender Glass Lizard		•			
<i>Sceloporus undulatus</i> (Bosc and Daudin)	Eastern Fence Lizard	•	•	•		•
<i>Eumeces fasciatus</i> (Linnaeus)	Common Five-lined Skink	•	•	•	•	•
<i>Eumeces inexpectatus</i> (Taylor)	Southeastern Five-lined Skink					
<i>Eumeces laticeps</i> (Schneider)	Broad-headed Skink					
<i>Scincella lateralis</i> (Say)	Little Brown Skink	•	•	•		•
<i>Aspidoscelis sexlineata sexlineata</i> (Linnaeus)	Eastern Six-lined Racerunner		•			
Order Squamata (Suborder Serpentes)						
<i>Cemophora coccinea copei</i> (Jan)	Northern Scarletsnake					
<i>Coluber constrictor constrictor</i> (Linnaeus)	Northern Black Racer	•	•		•	•
<i>Elaphe guttata</i> (Linnaeus)	Red Cornsnake		•			
<i>Elaphe spiloides</i> (Dumeril, Bibron, and Dumeril)	Gray Ratsnake	•	•		•	•
<i>Lampropeltis calligaster calligaster</i> (Harlan)	Prairie Kingsnake	•	•		•	
<i>Lampropeltis getula niger</i> (Yarrow)	Eastern Black Kingsnake	•	•		•	
<i>Lampropeltis triangulum</i> (Lacepede)	Milksnake					

TABLE 1. Continued.

Scientific Name	Common Name	CS	CC	DF	RC	VS
Order Squamata (Suborder Serpentes)						
<i>Ophedrys aestivus aestivus</i> (Linnaeus)	Northern Rough Greensnake	•	•			•
<i>Pituophis melanoleucus melanoleucus</i> (Daudin) ^c	Northern Pinesnake		•			
<i>Tantilla coronata</i> (Baird and Girard)	Southeastern Crowned Snake		•			
<i>Nerodia erythrogaster flavigaster</i> (Conant)	Yellow-bellied Watersnake		•			
<i>Nerodia sipedon pleuralis</i> (Cope)	Midland Watersnake	•	•			•
<i>Regina septemvittata</i> (Say)	Queen Snake	•	•			•
<i>Storeria dekayi wrightorum</i> (Trapido)	Midland Brownsnake	•	•	•		•
<i>Storeria occipitomaculata occipitomaculata</i> (Storer)	Northern Red-bellied Snake	•	•	•		
<i>Thamnophis sauritus sauritus</i> (Linnaeus)	Common Ribbonsnake	•	•		•	•
<i>Thamnophis sirtalis sirtalis</i> (Linnaeus)	Eastern Gartersnake	•	•	•	•	•
<i>Virginia valeriae valeriae</i> (Baird and Girard)	Eastern Smooth Earthsnake	•	•	•		
<i>Agkistrodon contortrix mokasen</i> (Palisot de Beauvois)	Northern Copperhead	•	•		•	
<i>Agkistrodon piscivorus piscivorus</i> (Lacepede)	Eastern Cottonmouth		•			
<i>Crotalus horridus</i> (Linnaeus)	Timber Rattlesnake	•	•		•	
<i>Carphophis amoenus helenae</i> (Kennicott)	Midwestern Wormsnake	•	•	•		•
<i>Diadophis punctatus edwardsii</i> (Merrem)	Northern Ring-necked Snake	•	•	•	•	•
<i>Heterodon platirhinos</i> (Latreille)	Eastern Hog-nosed Snake					
Order Testudines						
<i>Chelydra serpentina serpentina</i> (Linnaeus)	Eastern Snapping Turtle	•	•			•
<i>Chrysemys picta marginata</i> (Agassiz)	Midland Painted Turtle					
<i>Graptemys geographica</i> (LeSueur)	Northern Map Turtle	•	•			•
<i>Pseudemys concinna concinna</i> (LeConte)	Eastern River Cooter		•			
<i>Terrapene carolina carolina</i> (Linnaeus)	Eastern Box Turtle	•	•	•	•	•
<i>Trachemys scripta elegans</i> (Wied-Neuwied)	Red-eared Slider	•	•			•
<i>Kinosternon subrubrum subrubrum</i> (Lacepede)	Eastern Mud Turtle		•			
<i>Sternotherus odoratus</i> (Latreille)	Stinkpot	•	•			•
<i>Apalone spinifera spinifera</i> (LeSueur)	Eastern Spiny Softshell	•	•			•

^a Tracked by Tennessee Department of Environment and Conservation (TDEC), Natural Heritage Program.

^b Deemed in need of management by TDEC.

^c Listed as threatened by TDEC.

field habitat. Below the ridge, a floodplain is found between the Duck and Little Duck River.

Survey Methods—At each primary site, two pitfall trap-drift fence arrays were constructed using 0.91 m (3 ft) construction silt fencing and 19-L (5 gallon) pitfall traps (Corn, 1994). A typical array consisted of four 19-L pitfall traps arranged into a 'Y' shape with 10–15 m sections of silt fencing connecting the four pitfall traps. Pitfall traps were checked at least every other day during active months (April–October) and checked at least once every three days at other times from May 2003 to June 2004.

Primary sites were periodically surveyed from May 2002 to October 2004 via visual encounter surveys (VES). Visual encounter surveys were performed at different times of day and at lengths ranging from 1 to 4 person-h. In as many terrestrial habitats as possible, VES were employed in surveying both natural and artificial microhabitats. Aquatic habitats such as streams and wetlands were first surveyed by VES before other survey methods such as trapping were incorporated. Surface cover objects such as rocks, logs and artificial structures were lifted to search for species that hide under cover when environmental conditions

are not suitable for surface activity. All objects lifted were returned to their original positions to reduce habitat disturbance. In addition to VES, day and night road cruises were conducted periodically along paved and unpaved roads within the watershed throughout the duration of the inventory (Karns, 1986). Road cruises were coupled with aural surveys for calling frogs. Baited hoop traps and modified deep-water crawfish nets also were used to capture aquatic turtles.

Historical distribution records and ranges of amphibians and reptiles were acquired from published literature (Conant and Collins, 1998; Ernst et al., 1994; Petranks, 1998; Redmond and Scott, 1996). Nomenclature is based on Crother et al. (2000) and Crother et al. (2003). In most cases, a single voucher specimen of each species observed during the inventory was taken. Specimens were accessioned into the Herpetology Collection at Middle Tennessee State University. For species in which a voucher specimen was not taken, a photographic voucher was taken and accessioned into the Herpetology Collection at Austin Peay State University. Vouchers were not obtained from two species of turtles, *Graptemys geographica* and *Apalone spinifera spinifera*, which were observed, but could not be photographed.

TABLE 2. Herpetofaunal diversity documented at Old Stone Fort State Archaeological Park in Manchester, Tennessee.

Scientific Name	Common Name
Order Anura	
<i>Bufo americanus americanus</i>	Eastern American Toad
<i>Bufo fowleri</i>	Fowler's Toad
<i>Hyla chrysoscelis/versicolor</i>	Cope's Gray/Gray Tree-frog
<i>Pseudacris crucifer crucifer</i>	Northern Spring Peeper
<i>Pseudacris feriarum feriarum</i>	Upland Chorus Frog
<i>Rana catesbeiana</i>	American Bullfrog
<i>Rana clamitans melanota</i>	Northern Green Frog
<i>Rana palustris</i>	Pickerel Frog
<i>Rana sphenoccephala utricularia</i>	Southern Leopard Frog
Order Caudata	
<i>Ambystoma maculatum</i>	Spotted Salamander
<i>Ambystoma opacum</i>	Marbled Salamander
<i>Ambystoma talpoideum</i>	Mole Salamander
<i>Desmognathus fuscus</i>	Northern Dusky Salamander
<i>Eurycea cirrigera</i>	Southern Two-lined Salamander
<i>Eurycea longicauda longicauda</i>	Long-tailed Salamander
<i>Eurycea lucifuga</i>	Cave Salamander
<i>Plethodon dorsalis</i>	Northern Zigzag Salamander
<i>Plethodon glutinosus</i>	Northern Slimy Salamander
<i>Pseudotriton ruber ruber</i>	Northern Red Salamander
<i>Notophthalmus viridescens viridescens</i>	Red-spotted Newt
Order Squamata (Suborder Lacertilia)	
<i>Sceloporus undulatus</i>	Eastern Fence Lizard
<i>Eumeces fasciatus</i>	Common Five-lined Skink
<i>Scincella lateralis</i>	Little Brown Skink
Order Squamata (Suborder Serpentes)	
<i>Coluber constrictor constrictor</i>	Northern Black Racer
<i>Elaphe spiloides</i>	Gray Ratsnake
<i>Lampropeltis getula niger</i>	Eastern Black Kingsnake
<i>Ophedrys aestivus aestivus</i>	Northern Rough Green-snake
<i>Nerodia sipedon pleuralis</i>	Midland Watersnake
<i>Regina septemvittata</i>	Queen Snake
<i>Storeria dekayi wrightorum</i>	Midland Brownsnake
<i>Storeria occipitomaculata occipitomaculata</i>	Northern Red-bellied Snake
<i>Thamnophis sauritus sauritus</i>	Common Ribbonsnake
<i>Thamnophis sirtalis sirtalis</i>	Eastern Gartersnake
<i>Carphophis amoenus helenae</i>	Midwestern Wormsnake
<i>Diadophis punctatus edwardsii</i>	Northern Ring-necked Snake
Order Testudines	
<i>Chelydra serpentina serpentina</i>	Eastern Snapping Turtle
<i>Graptemys geographica</i>	Northern Map Turtle
<i>Terrapene carolina carolina</i>	Eastern Box Turtle
<i>Trachemys scripta elegans</i>	Red-eared Slider
<i>Sternotherus odoratus</i>	Stinkpot
<i>Apalone spinifera spinifera</i>	Eastern Spiny Softshell

RESULTS

Based on historical distribution records and expected ranges, 34 species of amphibians and 40 species of reptiles potentially inhabit the upper Duck River watershed in Coffee County, Tennessee (Conant and Collins, 1998; Ernst et al., 1998; Petranka, 1998; Redmond and Scott, 1996). This baseline inventory documented 26 of 34 (76.5%) species of amphibians found within the Duck River watershed in Coffee County, Tennessee, including 12 of 14 (85.7%) frog and 14 of 20 (70.0%) salamander. The inventory documented 25 of 40 (62.5%) species of reptiles, including 3 of 7 (42.9%) lizard, 16 of 24 (66.7%) snake, and 6 of 9 (66.7%) turtle species (Table 1). Fifteen species of amphibians (7 frog and 8 salamander) and ten species of reptiles (3 lizard, 6 snake, and 1 turtle) were documented via the drift fence/pitfall trap array method. Road cruising (including aural surveys for frogs) detected thirteen species of amphibians (11 frog and 2 salamander) and eleven species of reptiles (1 lizard, 9 snake, and 1 turtle). Visual encounter surveys and incidental observations documented 21 amphibian species (10 frog and 11 salamander) and 19 species of reptiles (3 lizard, 10 snake, and 6 turtle). Twenty species of amphibians (9 frog and 11 salamander) and 21 species of reptiles (3 lizard, 12 snake, and 6 turtle) were detected within the boundaries of Old Stone Fort State Archaeological Park (Table 2).

DISCUSSION

The number of herpetofaunal species inhabiting the upper Duck River watershed in Coffee County is undoubtedly greater than that reported in this inventory. Several species whose ranges include the watershed, are found in adjacent counties, or are found in habitats found within the watershed were not found during the inventory (Conant and Collins, 1998; Ernst et al., 1994; Petranka, 1998; Redmond and Scott, 1996). Species that most likely occur in the watershed, but were not documented include the Barking Treefrog (*Hyla gratiosa*), Small-mouthed Salamander (*Ambystoma texanum*), Eastern Hellbender (*Cryptobranchus a. alleganiensis*), Four-toed Salamander (*Hemidactylium scutatum*), Midland Mud Salamander (*Pseudotriton montanus diastictus*), Common Mudpuppy (*Necturus m. maculosus*), Eastern Slender Glass Lizard (*Ophisaurus attenuatus longicaudus*), Southeastern Five-lined Skink (*Eumeces inexpectatus*), Broad-headed Skink (*Eumeces laticeps*), Eastern Six-lined Race-runner (*Aspidoscelis sexlineata sexlineata*), Northern Scarlet Snake (*Cemophora coccinea copei*), Red Cornsnake (*Elaphe guttata*), Milksnake (*Lampropeltis triangulum*), Southeastern Crowned Snake (*Tantilla coronata*), Eastern Hog-nosed Snake (*Heterodon platirhinos*), Eastern River Cooter (*Pseudemys c. concinna*), and the Eastern Mud Turtle (*Kinosternon s. subrubrum*). Future studies within the area should document species absent from the current inventory.

Several species not documented during this inventory have patchy distributions throughout south-central Tennessee, such as *H. gratiosa*, *A. texanum*, *H. scutatum*, *P. montanus diastictus*, *E. guttata*, and *K. s. subrubrum*. These species most likely exist within the watershed. Others have more continuous ranges within the southeastern United States but either occur in low densities or are very secretive in nature (*C. a. alleganiensis*, *N. m. maculosus*, *O. attenuatus longicaudus*, *C. coccinea copei*, and *T. coronata*). Species such as *E. laticeps*, *A. s. sexlineata*, and *L.*

triangulum are more common in the Central Basin of middle Tennessee just to the north of the study area (personal observation). Although not detected, these species should occur within the upper Duck River watershed in Coffee County.

Fourteen herpetofaunal species not documented during this inventory have been observed at nearby Arnold Air Force Base located in portions of Coffee and adjacent Franklin County (Miller et al., 2005). Arnold Air Force Base comprises ca. 15,800 ha in the Barrens region of the Eastern Highland Rim (Fig. 1). The Barrens is characterized as gently sloping topography and low relief with fragipan associated in the soils that cause seasonal wetlands (DeSelm, 1994; Pyne, 2000). The fourteen species not documented include the Barking Treefrog (*Hyla gratiosa*), Gopher Frog (*Rana capito*), Small-mouthed Salamander (*Ambystoma texanum*), Four-toed Salamander (*Hemidactylium scutatum*), Midland Mud Salamander (*Pseudotriton montanus diasticus*), Eastern Slender Glass Lizard (*Ophisaurus attenuatus longicaudus*), Eastern Six-lined Racerunner (*Aspidoscelis sexlineata*), Broad-headed Skink (*Eumeces laticeps*), Red Cornsnake (*Elaphe guttata*), Yellow-bellied Watersnake (*Nerodia erythrogaster flavigaster*), Northern Pinesnake (*Pituophis m. melanoleucus*), Southeastern Crowned Snake (*Tantilla coronata*), Eastern River Cooter (*Pseudemys c. concinna*), and Eastern Mud Turtle (*Kinosternon s. subrubrum*). Conversely, this inventory documented fourteen species that Miller et al. (2005) did not document within Coffee County, such as Fowler's Toad (*Bufo fowleri*), Upland Chorus Frog (*Pseudacris feriarum*), Northern Dusky Salamander (*Desmognathus fuscus*, undescribed form), Mountain Dusky Salamander (*Desmognathus ochrophaeus*, undescribed form), Cave Salamander (*Eurycea lucifuga*), Spring Salamander (*Gyrinophilus porphyriticus*), Northern Zigzag Salamander (*Plethodon dorsalis*), Little Brown Skink (*Scincella lateralis*), Midland Watersnake (*Nerodia sipedon pleuralis*), Northern Rough Greensnake (*Opheodrys a. aestivus*), Queen Snake (*Regina septemvittata*), Timber Rattlesnake (*Crotalus horridus*), Northern Map Turtle (*Graptemys geographica*), and the Stinkpot (*Sternotherus odoratus*). By combining totals between this study and Miller et al. (2005), 31 species of amphibians (14 frog and 17 salamander) and 33 species of reptiles (5 lizard, 20 snake, and 8 turtle) have been documented within Coffee County (Table 1).

A few species documented during this inventory have distinct distributions when compared to their primary ranges. First, the presence of *Gyrinophilus porphyriticus* in the Eastern Highland Rim beckons further investigation. The record from this study is the southernmost and only the second reported from the Eastern Highland Rim (Niemiller, 2004). The Spring Salamander, *G. porphyriticus*, is found primarily on the Cumberland Plateau eastward into the Blue Ridge Mountains in Tennessee (Redmond and Scott, 1996; Petranks, 1998). Second, a disjunct population of a member of the *Desmognathus ochrophaeus* complex first discovered by Miller (1991) was reconfirmed during this study. In addition to the original site discovered by Miller, two additional localities were confirmed in nearby streams. Based on allozyme analyses, this population may represent another undescribed form of the *D. ochrophaeus* complex (Anderson and Tilley, 2003).

Several species have been documented within the watershed and the county outside of the two aforementioned studies. Miller and Miller (in press) collected Eastern Hellbenders (*C. a. alleganiensis*) in the early 1990s from the confluence of the Duck and Little Duck Rivers within Old Stone Fort State Archaeolog-

ical Park. There also are unconfirmed reports of the Common Mudpuppy (*Necturus m. maculosus*) caught by fishermen from the Duck River in the 1970s and 1980s. The Tennessee Cave Salamander (*Gyrinophilus palleucus*) has recently been discovered in two caves on the Western Escarpment of the Cumberland Plateau in southeast Coffee County (Miller and Niemiller, unpub. data). This species also has been observed in a cave near Normandy Reservoir in adjacent Bedford County ca. 7 km northwest of Site 1 (Samoray and Garland, 2002). Two female Eastern Cottonmouths (*Agkistrodon p. piscivorus*) were collected from Morton's Lake, a small impoundment on the Duck River just north of Old Stone Fort State Archaeological Park, in 1984 (Bingham, 1985). It has yet to be determined whether this population is a remnant of a larger distribution in south-central Tennessee or was introduced. The dam responsible for filling Morton's Lake has since been removed. However, unconfirmed reports of *A. p. piscivorus* are occasionally reported downstream within state park boundaries although many are undoubtedly misidentifications of the Midland Watersnake (*Nerodia sipedon pleuralis*).

The upper Duck River watershed, biologically diverse in fish and mussel faunas (Isom and Yokley, 1968; Jenkinson, 1988; Nieland, 1982; Scott and Gardner, 1995), also is very diverse in herpetofauna with over sixty species documented within Coffee County. Although diverse, the status and distribution of populations within the watershed remains largely unknown. Consequently, there exists a need to document and monitor herpetofaunal populations to determine their status and identify species, populations, and habitats that are or are becoming imperiled due to increasing land development and habitat destruction within the watershed. This inventory provides baseline data that can be used to design effective monitoring programs and/or management strategies for sensitive or imperiled herpetofaunal species within the watershed.

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