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JOURNAL INFORMATION

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The principal function of Catesbeiana is to publish observations and original research about Virginia herpetology. Rarely will articles be reprinted in Catesbeiana after they have been published elsewhere. All correspondence relative to the suitability of manuscripts or other editorial matters should be directed to: Dr. Paul Sattler, Co-Editor, Catesbeiana, Biology/Chemistry Department, Liberty University, MSC Box 710155, 1971 University Blvd., Lynchburg, VA 24515, (email: psattler@liberty.edu).

Major Papers

Manuscripts for consideration of publication in Catesbeiana should be submitted to the Co-Editors electronically. Consult the style of articles in this issue for additional information, including the appropriate format for literature citations. The metric system should be used for reporting all types of measurement data. Email attachments in Word format is desired for all papers. Submissions concerning the herpetofauna of selected areas, such as a park, city or county, should be prepared in article rather than field note format. Articles will be refereed by the editor and one or more qualified reviewers. All changes must be approved by the author before publication; therefore, manuscripts must be received by the editor before March 1 and August 1 to be considered for publication in the spring and fall issues, respectively, of Catesbeiana. Reprints of articles are not available, but authors may reprint their own articles to meet professional needs.

(Editorial policy continued on inside back cover)

Cover Photo: (*Tantilla coronata* see p 32).

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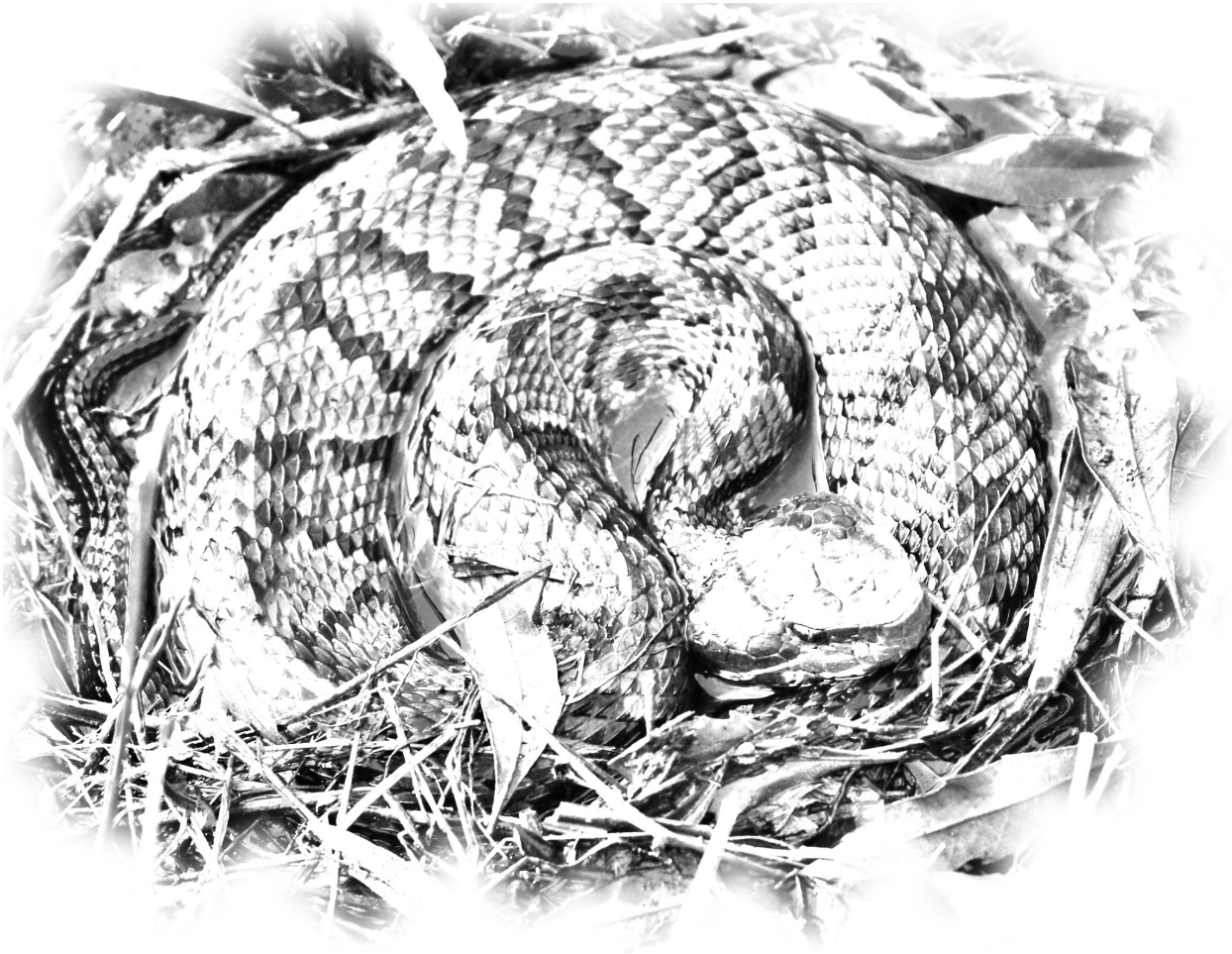

Northern Cottonmouth John White

Thirty Years of Monitoring Herpetofauna at Fort Eustis, Virginia, 1995-2025

Timothy P. Christensen
Adam S. Priestley
Joseph P. Gentry

Joint Base Langley-Eustis (Eustis),
Natural Resources & Integrated Pest Management Team, Environmental Element,
733d Civil Engineer Squadron, 1407 Washington Boulevard,
Fort Eustis, Virginia 23604

Abstract. Natural resources professionals have monitored and documented herpetofauna taxa at Joint Base Langley-Eustis (Eustis), Fort Eustis, Virginia, for the past 30 years. This has been accomplished through several formal surveys as well as installation staff observations, with the details being consolidated into an official record. This information supports the execution of the Fort Eustis Integrated Natural Resources Management Plan required by the Sikes Act. Furthermore, this record serves to refute inaccuracies and misconceptions. Several external sources indicate the presence of specific reptiles and amphibians on the installation. These suggestions sometimes contradict data derived by the natural resources staff working at Fort Eustis. This is a common theme among contractors preparing environmental assessments or joint permit applications for various projects and federal and state agencies that review these documents. In some cases, these sources suggest federal or state threatened or endangered taxa as existing or possibly existing at Fort Eustis. As of the date of this article, no listed taxa have been documented. Additionally, installation community members frequently suggested the presence of medically significant venomous snakes (Northern Cottonmouth and Eastern Copperhead and to a lesser extent the Timber Rattlesnake) without evidence. None of these taxa have been documented on the installation.

Key words: Cantonment, Main Post, Mulberry Island, Goose Island, Integrated Natural Resources Management Plan

Introduction

Fort Eustis is a military installation located on the Virginia Peninsula adjacent to the independent city of Newport News. As part of the Department of Defense (DoD), it is subject to the provisions of the Sikes Act, which allow for the sustainable management of natural resources while supporting military readiness. Fort Eustis developed and implemented Integrated Natural Resources Management Plans (INRMPs) to meet these provisions. These plans include game and nongame wildlife management with herpetofauna included. Monitoring of the herpetofauna resources has been in effect since 1995, covering 30 years.

Fort Eustis has a long history as a military installation dating back to 1918 supporting various national security missions. Changes in missions and subsequent infrastructure over the years since the installation's inception have thus led to landscape alterations.

Fort Eustis as an ecosystem can be classified based on the National Hierarchical Framework of Ecological Units (based on Ecoregions of the United States, U.S. Forest

Service, U.S. Department of Agriculture, 2014):

- Domain: Humid Temperate.
- Division: Subtropical.
- Province: Outer Coastal Plain Mixed Forest.
- Section: Middle Atlantic Coastal Plain.

Currently, Fort Eustis consists of 3,186 hectares, of which 1,478 hectares are wetlands and 1,073 hectares are upland forested areas. The remaining acreage consists of the cantonment area, playing areas of the golf course, riparian areas, and early successional habitats. The installation consists of the areas called Main Post, Mulberry Island, Goose Island, and Training Area 30. Main Post constitutes the cantonment area represented by development including office buildings, athletic fields, parade fields, lodging, warehouses, motor pools, and supporting facilities. It also includes some outdoor training areas, the Fort Eustis Nature Trail, a port facility, and two conservation areas referred to as the North and South Seeps. These two unique habitat types exist on the eastern edge of Main Post within the installation boundary, but outside of the security fence, essentially protected from both Newport News by the Warwick River and from Fort Eustis by the security fence. Because of this fence, built in 2005, little is known about this habitat type. It is under contract with the US Fish & Wildlife Service to be surveyed for amphipods and other unique wildlife species. This habitat can be described as forested hardwood overstory with little to no understory. Deep leaf litter collects on the forest floor and is persistently wet due freshwater underground water seeping up through the hillside. This serves as a potential location for other terrestrial salamanders to occur. Training Areas 1 and 2 are located immediately on the north boundary of Main Post and constitute approximately 51 hectares of predominantly hardwood forest. This area has approximately 90% canopy with Tulip Poplar, American Beech, and mixed oaks. The remainder of the installation forested areas is mixed hardwood-pine, with Loblolly Pine being the dominant species. Mulberry Island is located south of Milstead Island Creek and includes most training areas, the Impact Area, a golf course, and an airfield. Forested areas of Mulberry Island are Loblolly-mixed hardwood. Goose Island is located on the west border of the installation at the confluence of Skiffes Creek and the James River. It was originally a dredge spoils site dating back to the early 1960s and was later owned by the state of Virginia until August 2022 when the installation reacquired the land area. This 19.8-hectare land mass includes marsh, riparian areas, a pond, and early successional and upland forest habitats. No military activities or structures exist on this landmass. Training Area 30 is a 25.9-hectare land mass located on the north side of Skiffes Creek adjacent to James City County. This area consists primarily of mixed hardwood upland forest with some interior freshwater wetlands, and estuarine wetlands with emergent vegetation. Fort Eustis manages a former impact area (ranges for live firing) consisting of approximately 567 hectares of upland forest and several wetland types including tidal creeks and ephemeral pools. It serves as a buffer to encroachment with very little anthropogenic activity. Additionally, Fort Eustis contains four named freshwater ponds as well as several ponds associated with the golf course. Several named tidal creeks traverse Mulberry Island. An estimated 32 hectares of ephemeral pools exist throughout Fort Eustis. The installation is bordered by the James River, the Warwick River and Skiffes Creek with a small portion of the land area connected to Newport News property. The installation manages the 31.2-hectare Fort Eustis Dredge Material

Management Area (FEDMMA) facility which stores dredge materials removed from Skiffes Creek at the port facility. The facility often contains the invasive grass Common Reed (*Phragmites australis*). During periods between disposal operations, maintenance, and Common Reed control efforts, some wildlife access the area, though it is not considered a natural area.

The natural resources staff documented 41 mammals, 186 birds, 39 herpetofauna species, and 726 arthropods species to date (Fort Eustis Integrated Natural Resources Management Plan, 2024). Management of native species and habitats has been challenged by the presence of 43 adventive plant species, red imported fire ants, coyotes, and recently, the sighting of nutria.

Historically, natural resources management has been a component of the environmental programs at Fort Eustis. This responsibility resided in the Environmental Element of the 733 Civil Engineer Squadron. The Natural Resources & Integrated Pest Management Team (a subordinate organization of the Environmental Element) managed the natural resources and pest management programs. Herpetofauna have been included in the installation natural resources program with documentation of herpetofauna taxa beginning in 1995. This report consolidates data recorded for herpetofauna taxa since that year.

Materials and Methods

Study site. The study encompasses all properties managed by Fort Eustis. This includes Goose Island and Training Area 30, which are not contiguous with the installation land area. It excludes data pertaining to Langley Air Force Base and the former sub-installation, Fort Story, located in Virginia Beach. See Figure 1.

Data sources. The installation natural resources staff recorded herpetofauna taxa and observations through formal wildlife surveys, documented wildlife incidents, and visual/auditory encounters. Data from 1995 through 2025 has been reviewed and consolidated using the following sources.

1. Natural Resources and Integrated Pest Management Team staff observations. These observations include opportunistic encounters, wildlife incident responses, and staff surveys. Natural resources staff spent considerable time afield for various projects and tasks, and typically noted wildlife observed during such activities. In 2005, the staff began formally recording their responses to wildlife-human conflicts or incidents. Herpetofauna, especially snakes and snapping turtles were associated with these response actions. Additionally, the staff performed internal informal surveys for herpetofauna to document presence/absence in specified locations utilizing various techniques including pitfall traps with drift fences, anuran calling recordings/auditory encounters, turtle traps, and visual encounters.

2. Formal wildlife planning level surveys. Several contracted wildlife surveys have been executed during the 1995-2024 period. The objective of these surveys was to document presence/absence of vertebrate wildlife including herpetofauna taxa in selected areas. Field data collection was performed via pitfall traps with drift fences, point counts, anuran calling recordings/auditory encounters, dipnet sweeps, turtle traps, and visual encounters. The following formal surveys specifically included herpetofauna or noted herpetofauna taxa observed during the survey.

Allender M.C., et. al. 2023. DoD snake fungal disease survey: natural resource manager training and data collection.

Bessler A. 2010. Assessment of vernal pools on Ft Eustis - 2008-2009. Technical Report, US Fish and Wildlife Service.

Christensen T. and W. Mooring. 2016. An insect and flora inventory of Goose Island Wildlife Management Area, Newport News, Virginia.

Dolan J.D. and T.P. Christensen. 2007. Turtle diversity of U.S. Army installation, Fort Eustis, Virginia.

Kelley F., et. al. 2006. Planning level surveys for amphibians and reptiles, mammals, birds, and fish, as well as pest insects and invasive plants, at Fort Eustis, Virginia, in

Lannoo M., et. al. 2014. Department of Defense amphibian disease survey: natural resource manager training and data collection.

Lowe W., el. al. 2021. Natural resources support for Joint Base Langley-Eustis and Joint Base Andrews, FY19.
2004 and 2005.

Parsons Government Servies. 2015. Faunal survey for amphibians, reptiles, small mammals, and birds at Joint Base Langley-Eustis, Fort Eustis, Virginia.

Roble S.M. 1997. A natural heritage zoological inventory of Fort Eustis, Virginia. Natural Heritage Technical Report 97-14.

Since 1995, 16 species of amphibians and 24 species of reptiles have been observed at Fort Eustis. This includes 4 species of salamanders, 12 species of anurans, 9 species of turtles, 12 species of snakes, and 3 species of lizards. Table 1-1 identifies all amphibian taxa and Table 1-2 identifies all reptile taxa observed between 1995 and 2025, respectively.

Herpetofauna taxa occurrences have remained relatively consistent since 1995 except for carpenter frogs being documented for the first time in 2021 (in Training Area 30) and a red-bellied snake in 2024 (on Main Post).

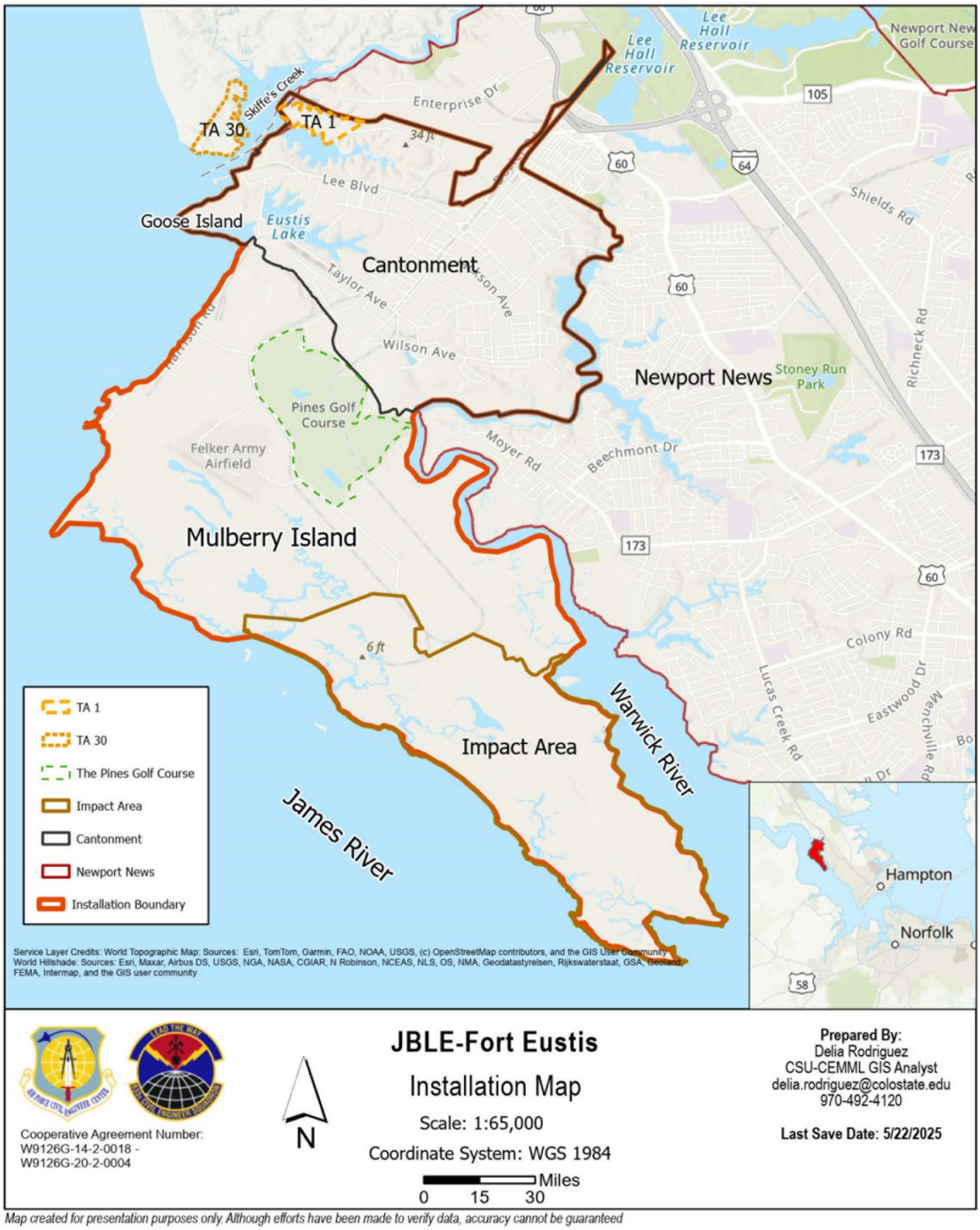

Figure 1. Map of Fort Eustis.

Results

Table 1. Amphibians observed at Fort Eustis, Virginia, 1995 – 2025

Salamanders

Scientific name	Common name
Ambystoma opacum	Marbled Salamander
Notophthalmus viridescens viridescens	Red-Spotted Newt
Plethodon cinereus	Eastern Red-Backed Salamander
Amphiuma means	Toe-toed Amphiuma

Anurans

Scientific name	Common name
Anaxyrus americanus americanus	Eastern American Toad
Anaxyrus fowleri	Fowler's Toad
Gastrophryne carolinensis	Eastern Narrow-Mouthed Toad
Dryophytes chrysoscelis	Cope's Gray Treefrog
Dryophytes cinereus	Green Treefrog
Dryophytes squirellus	Squirrel Treefrog
Lithobates catesbeianus	American Bullfrog
Lithobates clamitans	Green Frog
Lithobates sphenocephalus utricularius	Coastal Plains Leopard Frog
Lithobates virgatipes	Carpenter Frog
Pseudacris crucifer	Spring Peeper
Pseudacris feriarum	Upland Chorus Frog

Table 2. Reptiles observed at Fort Eustis, Virginia, 1995 – 2025

Turtles

Scientific name	Common name
Chelydra serpentina	North American Snapping Turtle
Chrysemys picta picta	Eastern Painted Turtle
Clemmys guttata	Spotted Turtle
Kinosternon subrubrum	Eastern Mud Turtle
Malaclemys terrapin terrapin	Northern Diamond-Backed Terrapin
Pseudemys rubriventris	Northern Red-Bellied Cooter
Sternotherus odoratus	Eastern Musk Turtle
Terrapene carolina carolina	Woodland Box Turtle
Trachemys scripta elegans	Red-Eared Slider
Trachemys scripta scripta	Yellow-Bellied Slider

Lizards

Scientific name	Common name
Plestiodon fasciatus	Common Five-Lined Skink

Plestiodon laticeps	Broad-Headed Skink
Scincella lateralis	Little Brown Skink

Snakes

Scientific name	Common name
Carphophis amoenus amoenus	Eastern Wormsnake
Coluber constrictor constrictor	Northern Black Racer
Diadophis punctatus	Ringneck Snake
Lampropeltis getula	Eastern Kingsnake
Nerodia sipedon sipedon	Northern Watersnake
Opheodrys aestivus	Northern Rough Greensnake
Pantherophis alleghaniensis	Central Ratsnake
Storeria dekayi	Dekay's Brownsnake
Storeria occipitomaculata	Red-Bellied Snake
Thamnophis saurita saurita	Common Ribbonsnake
Thamnophis sirtalis sirtalis	Eastern Gartersnake
Virginia straitula	Rough Earthsnake

Annotated Species List

Amphibians

1. *Ambystoma opacum*. This taxon has been observed more frequently than either the red-spotted newt or Eastern Red-Backed Salamander. Kelley et al. (2006) noted Marbled Salamanders were relatively common at Fort Eustis during the 2004-2005 survey. Internal surveys performed by natural resources staff using drift fences with pitfall traps documented adults in mixed hardwood-pine forests of Training Area 17A/Mulberry Island in 2005. An opportunistic observation revealed adults and larvae in a small, shallow, excavated hole in a disturbed area in 2007. This taxon was commonly observed during the 2015 survey in various areas of Mulberry Island in upland forest, forest edge, forested wetlands, and ephemeral pools (Parsons Government Services, 2015). Adults and larvae were also commonly documented in mixed hardwood-pine forests with ephemeral pools at one main post site, three training areas on Mulberry Island, the Impact Area and Training Area 30 during the survey completed in 2021 (Lowe, 2021). In April 2023, an adult was found beneath leaf litter in Training Area 2 located on the very northern boundary contiguous with Newport News. This area contains suitable habitat with predominantly hardwood forest and several small ephemeral pools though this taxon had not been documented there previously.

Figure 2. *Ambystoma opacum.*

2. *Amphiuma means*. Three individuals were captured in a turtle trap on 13 May 2025 during a Spotted Turtle survey in an

ephemeral wetland on Mulberry Island. The ephemeral forested wetland has been flooded by beavers frequently through the last 5 years and was deep enough to allow turtle trapping, and ultimately the capture of this species. This finding was unexpected as this taxon had never been observed at the installation previously despite a considerable number of formal surveys.

Figure 3. *Amphiuma means.*

3. *Anaxyrus americanus americanus*. This taxon is less commonly observed than other anurans. Parsons (2015) documented 17 individuals from predominantly upland forest habitat in 2015. Two of these individuals were associated with ephemeral pools. Individuals calling from the Impact Area and one other location of Mulberry Island were noted in the 2019 survey (Lowe et al., 2021).

4. *Anaxyrus fowleri*. This anuran is commonly observed throughout Fort Eustis particularly in forested areas and edge habitat. Individuals are often observed in the mixed hardwood-pine forest encompassing the Fort Eustis Nature Trail by the staff. A Northern Watersnake regurgitated 4 Fowler's toads when it was removed from the vicinity of a building in the cantonment area (Christensen, personal observation). Additionally, the staff observed Fowler's toads on the railroad tracks. Kelley et al. (2006) documented several individuals in forest habitats and in landscape vegetation at the main lodging facility during the 2004-2005 survey. Parsons (2015) noted 15 individuals from upland forest with 3 of these associated with ephemeral pools. Lowe (2021) noted individuals calling from aquatic habitats in the Impact Area and one other location on Mulberry Island.

5. *Gastrophryne carolinensis*. This taxon was originally considered uncommon at Fort Eustis. Only one individual was collected during the 2004-2005 planning level survey (Kelley et al., 2006). This taxon has been heard calling from a tall grassy area following retention of rainfall in the cantonment area in 2007 but not since that time frame (Christensen, personal observation). However, 135 visual encounters were made on Mulberry Island during the 2015 survey. Forty-one individuals were documented at one location alone. Individuals were heard calling from the impact area during the 2019 survey.

6. *Dryophytes chrysoscelis*. This taxon is commonly heard calling throughout the installation by the staff. Choruses, as well as visual encounters, were noted in forested wetlands associated with the golf course in 2013 (Christensen, personal observation). Interestingly, Kelley et al. (2006) only noted one calling male from an upland forest during the 2004-2005 survey. Bessler (2010) noted this taxon from ephemeral pools within the golf course and from an ephemeral pool in Training Area 2, 2008-2009. Parsons (2015) reported vocalizations from upland forest interior, forested wetlands, and forest edge habitats in 2015. Lowe et al. (2021) reported vocalizations from the Impact Area in 2019.

7. *Dryophytes cinereus*. This taxon is commonly observed throughout Fort Eustis. In 2013, a chorus of Green Treefrogs was heard in the FEDMMA following a 2-year effort to control Common Reed at the site.

Interestingly, the reduction of the Common Reed coincided with sufficient rainfall retention that allowed colonization of the FEDMMA basin by previously excluded wildlife. Muskrats (*Ondatra zibethicus*) reduced dead Common Reed stems to mere 1-meter stalks by constructing over 200 lodges. These conditions were thought to have attracted the frogs. This taxon was heard calling from the pond at Goose Island on 2 August 2015 (Christensen and Mooring, 2016).

8. *Dryophytes squirellus*. This taxon is not commonly observed compared to other hylids occurring on the installation. It was first documented on Fort Eustis in 2015 (Parsons, 2015). Only three individuals were documented during this survey. Natural resources staff noted individuals calling during periods of light rain and one visual encounter in upland and partially disturbed areas since 2015.

9. *Lithobates catesbeianus*. This anuran is common at Fort Eustis. American bullfrogs have been observed at Eustis Lake, and this taxon occasionally invaded abandoned swimming pools slated for demolition. This taxon was frequently encountered during the 2004-2005 survey in pitfall traps and visual encounters (Kelley et al., 2006). Individuals were frequently observed in 2015 from various habitats including ephemeral pools, riparian areas, forest edge and deep within forested areas. Visual and acoustic observations were made in areas of Mulberry Island during the 2019 survey (Lowe, 2021).

10. *Lithobates clamitans*. This anuran is also common at Fort Eustis. It was documented in the 2005, 2015 and 2019 surveys. Interestingly, tadpoles between Gosner stages 25-39 were observed in an Impact Area tidal wetland with a measured salinity of 6.04 ppt (Lowe et al. 2021).

11. *Lithobates sphenocephalus utricularius*. This taxon is commonly observed at Fort Eustis. Large numbers are typically observed at a black gum swamp located on Mulberry Island during periods of water retention. Though considered an early caller, one individual was heard calling under daylight conditions in July 2013 at a forested wetland adjacent to the golf course.

12. *Lithobates virgatipes*. According to Virginia Department of Wildlife Resources (Virginia Department of Wildlife Resources. VAFWIS, SppObs Database. https://services .dwr. virginia.gov/fwis/) this taxon was recorded in Caroline, Hanover, King & Queen, King William, Spotsylvania and Sussex Counties and the Cities of Chesapeake and Virginia Beach. However, on 13 April 2021, two individuals were collected during a wildlife survey (Lowe et al., 2021) from a 0.1 ha ephemeral pool in Training Area 30 which is located in James City County (Christensen et al., 2022). This taxon had not been confirmed at Fort Eustis prior to 2021. Bessler (2008) noted Carpenter Frogs from an ephemeral pool on Mulberry Island during the 2008 vernal pool survey as an auditory encounter. However, no supporting recordings were made, and no visual encounters occurred. This observation remains unsupported. The observation in Training Area 30 remains the only confirmed documentation at Fort Eustis.

13. *Notophthalmus viridescens viridescens*. This taxon is uncommonly observed but has been documented during three contracted surveys. Adult stage individuals were observed in two ephemeral pools in 2008 (Bessler, 2010). Two red eft stage individuals were observed in a forested area on Mulberry Island in June 2015 (Parsons Government Services, 2015). Lowe et al. (2021) documented adults in aquatic habitats on Mulberry Island and Training Area 30. In

August 2018, an adult was found beneath leaf litter in Training Area 2. It was presumably aestivating based on considerable lack of rainfall for over 7 days at the time and existing aquatic habitats lacked standing water.

14. *Plethodon cinereus*. This taxon was commonly found in Training Areas 1 and 2 during an internal staff survey in 2005. These areas are contiguous and contain moist hardwood forest with heavy canopy. However, approximately 20 hectares of the adjacent habitat were lost to transportation development in 2009. It's uncertain if this had a significant impact on the population remaining in Training Area 1 and 2. This salamander was documented in the Impact Area and other locations on Mulberry Island where Loblolly Pine tends to be the dominant tree in forested areas during the 2019 survey (Lowe et al., 2021). One individual was observed in an ephemeral pool in 2008 (Bessler, 2010). Surveys in 2004-2005 and 2015 also documented this salamander (Kelley et al., 2006 and Parsons, 2015).

15. *Pseudacris crucifer*. Natural resources staff have noted calling individuals at various aquatic habitats on Mulberry Island. Choruses were noted throughout the installation by Kelley et al. (2006) during the 2004-2005 survey. Bessler (2010) reported individuals from two ephemeral pools on Mulberry Island 2008-2009. Interestingly, this taxon was not documented in 2015 (Parsons, 2015). However, this survey did not begin until late May and this may have precluded recording calls though none were captured in pitfall traps nor opportunistic visual identifications made. Lowe et al. (2021) noted individuals calling from the Impact Area and two other locations on Mulberry Island in 2019.

16. *Pseudacris feriarum*. Natural resources staff noted calling individuals in the hardwood forests of Training Areas 1 and 2 at various times. Parsons (2015) noted 11 visual observations from forest and edge habitats in 2015. Lowe (2021) reported individuals calling from the Impact Area in 2019.

Reptiles

1. *Carphophis amoenus amoenus*. Natural resources staff have observed this taxon in upland forests occasionally. It was documented by Parsons (2015). Lowe et al. (2021) documented this snake in the Impact Area, other forested areas of Mulberry Island, upland forest in Main Post and Training Area 30.

2. *Chelydra serpentina*. North American Snapping Turtles are very common at Fort Eustis throughout the installation. This taxon was documented in upland forest and estuarine marsh habitats in 2004 – 2005 (Kelley et al., 2006) and from Eustis Lake and Browns Lake as well as two natural impoundments on Mulberry Island during turtle surveys in 2002 and 2007 (Dolan and Christensen, 2007). Several incidental visual observations were made during the 2015 survey (Parsons, 2015). Adults were observed in the Impact Area during the 2019 survey (Lowe et al., 2021). A dead individual was observed at an ephemeral pool on Mulberry Island where the pool was almost devoid of water in 2008 (Bessler, 2010). Many incidents have occurred in the cantonment posing potential health and safety issues for personnel and turtles. Many have been observed crossing road networks and with some roadkill occurring. Two separate incidents involved North American Snapping Turtles at the same entrance door of a soldier billets room. Several have been found nesting in lodging flower beds. Thirty wildlife response incidents involving North

American Snapping Turtles were recorded during the 30-year period.

Figure 4. *Chelydra serpentina.*

3. *Chrysemys picta picta*. This taxon is often observed basking at Eustis Lake. Individuals were documented during the 2002 and 2007 surveys from Eustis and Browns Lakes and two natural impoundments on Mulberry Island (Dolan and Christensen, 2007). This species has been documented in all contracted surveys from aquatic sites throughout the installation.

4. *Clemmys guttata*. This taxon is not considered uncommon at Fort Eustis. Natural resources staff have noted this species in many areas of Mulberry Island to include forest edges, drainage ditches along road networks, crossing roads, and aquatic habitats. Dolan and Christensen (2007) did not document Spotted Turtles in their 2002 and 2007 turtle surveys; however, all contracted surveys noted their presence on the installation. Kelley et al. (2006) found 2 individuals during the 2004-2005 survey occurring in mixed hardwood-Loblolly Pine upland forest and a freshwater wetland. Bessler (2010) documented Spotted Turtles at 4 different ephemeral pools. Parsons (2015) noted one Spotted Turtle from freshwater wetland. Lowe et al. (2021) noted Spotted Turtles in the Impact Area and other locations on Mulberry Island. During spring and summer of 2024 natural resources staff documented 12 Spotted Turtles on the installation. Nine live adults were observed during staff field surveys in ditches along Mulberry Island Road (on Mulberry Island), and in emergent wetlands in the Felker Army Airfield clear zone with road-killed adults on a road near a forested wetland. In 2024, Fort Eustis was designated as a study site for Spotted Turtles under the DoD Strategic Environmental Research and Development Program. Field data collection for this study began on 28 April 2025 with 23 individuals being documented at the time of this article.

Figure 5. *Clemmys guttata.*

5. *Coluber constrictor constrictor*. This taxon is commonly observed at Fort Eustis with most observations noted in the cantonment. Many were observed beneath gazebos, undermining buildings, and moving freely through disturbed areas and lodging areas. Natural resources staff responded to 44 wildlife-human conflict incidents involving this species between October 2006 and June 2024. Observations of this snake also exist

for Mulberry Island within forested areas and in edge habitat by natural resources staff. Parsons (2015) noted this species in edge habitat, forested areas, and riparian habitat. One adult was observed in Training Area 30 during the FY 19 survey (Lowe et al., 2021). Dissection of a roadkill carcass on April 3, 2009, revealed consumption of an adult *Plestiodon inexpectatus* and a juvenile *Opheodrys aestivus* (Christensen and Dolan, 2009).

6. *Diadophis punctatus*. Natural resources staff have observed this taxon infrequently in cantonment urban forests of Main Post and in areas of Mulberry Island. Parsons (2015) reported four individuals in 2015. Lowe (2021) documented this taxon from the Impact Area and reported it as *Diadophis punctatus punctatus*.

7. *Kinosternon subrubrum*. This turtle is commonly observed at Fort Eustis. It is frequently observed crossing roads during Spring throughout the installation. Natural resources staff have documented this taxon from freshwater wetland habitats. The carcass of an adult was observed on the beach area at the north side of Goose Island on 2 August 2015. It was uncertain whether the turtle came from within the land mass or had washed ashore from a different location. Bessler (2010) documented it from 7 ephemeral pools. Christensen and Dolan (2007) noted the taxon during their 2002 and 2007 turtle surveys. Kelley et al. (2206), Parsons (2015), and Lowe (2021) all reported this turtle in their surveys.

8. *Lampropeltis getula*. This snake is not commonly observed at Fort Eustis. Natural resources staff observed two adults in cantonment, and one subadult in pine-mixed forest and one adult on a tidal shoreline on Mulberry Island. Kelley et al. (2006) observed two adults in upland forest and one adult along railroad tracks on Mulberry Island during the 2004-2005 survey. None were observed during the 2015 (Parsons, 2015) or 2019 (Lowe et al., 2021) surveys.

9. *Malaclemys terrapin terrapin*. This taxon is not commonly observed based on their aquatic nature; however, it has been found at some rather unexpected locations on the installation. One individual was found in a closed landfill that was mowed routinely. Natural resources staff have documented the turtle in aquatic habitats. Two individuals were observed on the Warwick River near the installation shoreline in 2003. Additionally, terrapins have been observed in tidal creeks on Mulberry Island. Eight individuals were removed from the leadership reaction course man-made training pool that were entrapped in the concrete pit. Depredated turtle nests were discovered in sandy locations under an observation tower approximately 2 meters from the pool edge but could not be identified fully as terrapin nests. Since this event, turtle ladders have been installed to allow terrapins to exit the pool. This occurred in July 2022.

10. *Nerodia sipedon sipedon*. This snake is commonly observed at Fort Eustis. Natural resources staff have observed this taxon throughout Main Post and Mulberry Island. The staff responded to 26 incidents involving this species during responses to wildlife incidents between 2006 and 2024. Individuals have been observed swimming in the James River near the Harrison Road shoreline. A subadult was observed at Goose Island on the edge of Common Reed at the interface with the James River on August 16, 2015 (Christensen and Mooring, 2016). Adults have been observed in cantonment, at Browns Lake and the port facility at Skiffes Creek. This species is thought to hibernate within the undermining of banks at some golf course ponds (Christensen, personal observation). Occasionally, this taxon enters

occupied buildings. Several have been removed from hangars at the airfield, and a juvenile was found in the locker room of the golf course. Kelley et al. (2006) collected one individual from a drainage ditch during the 2004-2005 survey. Parsons (2015) reported individuals from ephemeral pools, other aquatic habitats, and small woodland parcels. Lowe et al. (2021) reported adults from the Impact Area and Mulberry Island in 2019.

11. *Opheodrys aestivus*. This taxon has been observed in a variety of habitats. Though typically observed in forest habitats of the installation both on the ground and in in trees and other vegetation. One individual was observed within riprap along the James River shoreline while another was observed in emergent wetland vegetation a considerable distance from shore along the Warwick River.

12. *Pantherophis alleghaniensis*. This snake is the most commonly observed taxon at Fort Eustis. Natural resources staff responded to 101 wildlife-human conflict incidents involving this species between October 2006 and June 2024. All contracted surveys noted in this article reported Central Ratsnake observations. Both adults and juveniles have been removed from numerous storage/maintenance facilities as well as many occupied buildings throughout the cantonment area to include lodging facilities. The arboreal nature was well noted based on observing one individual negotiating 3" by 3" eight-foot support beams to predate house finch nests in a carport rafter. Another individual was tightly coiled around the structure of a tractor canopy.

13. *Plestiodon fasciatus*. Natural resources staff frequently observe juvenile *Plestiodon* sp. around buildings within the cantonment. Occasionally some are accidentally caught on insect pest control glue boards inside structures. Typically, the staff would remove them from the glue boards using vegetable oil and release them. *P. fasciatus* was documented by Kelley et al. (2006) in forested habitats and along railroad tracks. Parsons (2015) documented this species in forest habitats on Mulberry Island. Lowe et al. (2021) reported this skink in the Impact Area and other locations on Mulberry Island.

14. *Plestiodon laticeps*. This taxon is less commonly observed than *P. fasciatus* at Fort Eustis. It was not found by Kelley et al. (2006). Three adults were observed by Parsons (2015). Lowe et al. (2021) reported one adult from an upland forest habitat on Main Post.

15. *Pseudemys rubriventris*. This taxon is commonly observed from Eustis Lake either basking near the shoreline or actively swimming at the surface. The staff moved individuals attempting to cross roads. On June 17, 2008, a nest was predated by a pair of Fish Crows (*Corvus ossifragus*) almost immediately after the female had finished nesting. This turtle had previously negotiated two roads, an open gravel area and two embankments after leaving Eustis Lake (Christensen, 2008). Dolan and Christensen (2007) documented this species during their 2002 and 2007 turtle survey. Lowe et al. (2021) reported this species from an aquatic site on Mulberry Island.

16. *Scincella lateralis*. This taxon is not commonly observed at Fort Eustis. Kelley et al. (2006) reported two individuals from mixed hardwood-pine forest habitat on Mulberry Island during the 2004-2005 survey. Parsons (2015) reported 8 individuals in 2015. One individual was associated with an ephemeral pool and two were observed along streams and the remainder in upland forest, small woodland plots and edge habitats. Lowe et al. (2021) reported adults from the Impact Area and two other areas of

Mulberry Island and upland forest on Main Post in 2019.

17. *Sternotherus odoratus*. This species is not frequently observed. Dolan and Christensen (2007) documented one individual from Eustis Lake during their 2007 turtle survey. Observations of this taxon were not made again until 2019, when individuals were found at three aquatic sites on Mulberry Island and Training Area 30.

18. *Storeria dekayi*. This taxon is not commonly observed at Fort Eustis. One individual was observed in upland forest during the 2004-2005 survey (Kelley et al., 2006). Bessler (2010) reported one individual swimming in an ephemeral pool. It was not observed during the 2015 survey (Parsons, 2015) nor the 2019 survey (Lowe et., 2021).

19. *Storeria occipitomaculata*. This taxon was first observed at Fort Eustis on August 21, 2024. A subadult was found in an occupied office building on Mulberry Island. The adjacent habitat consisted of pine-mixed hardwood forest and drainage ditches.

20. *Terrapene carolina carolina*. Woodland Box Turtles have been commonly observed throughout the installation. Natural resources staff encounter this taxon frequently when working in field sites, and all contracted wildlife surveys documented Woodland Box Turtle encounters. Annual Earth Day events have included installation community volunteers surveying for this species annually from 2005 through 2023 in Training Areas 1 and 2. This event occurred in late April from 0900-1200 with numbers ranging from 1 to 12 individuals. Natural resources staff maintained a box turtle database based on their observations from April 1 through October 12, 2022, recording 48 individuals throughout Main Post and Mulberry Island. Only 2 juveniles were documented in this database. Interestingly, 19 individuals from the database were observed in Japanese Stiltgrass (*Microstegium*). The remains of a box turtle carapace, plastron and bones were found in a dry area of upland forest of Goose Island on 7 September 2015 (Christensen and Mooring, 2016). An adult was observed on Goose Island in August 2021 by natural resources staff. In general, few juveniles were observed in the 30-year period. Natural resources staff noted two cases of apparent plastron abnormalities from box turtles in Training Areas 1 & 2 first in April 2017 and again in April 2023. Photographs were submitted to the Zoological Pathology Program at University of Illinois in June 2023, who suggested the possibility of *Emydomyces testavorans* fungal infection.

Figure 6. *Terrapene carolina.*

21. *Thamnophis saurita saurita*. This snake is not commonly observed at Fort Eustis. Natural resources staff observed two individuals in upland forests of Mulberry Island and removed one individual from inside an occupied building. Kelley et al. (2006) documented two individuals from Mulberry Island, one from upland forest and the other from the edge of an estuarine marsh during the 2004-2005 survey. None were documented during the Parsons (2015) or Lowe et al. (2021) surveys. Natural resources staff observed one adult on October 10, 2024,

in a culvert draining an ephemeral pool adjacent to a pollinator habitat restoration site on Main Post.

22. *Thamnophis sirtalis sirtalis*. This taxon is commonly observed at Fort Eustis. Natural resources staff have observed individuals adjacent to buildings in cantonment, in upland forest along the Fort Eustis Nature Trail, and shoreline of Eustis Lake. The staff responded to 20 incidents involving this taxon during wildlife conflicts between 2006 and 2024. However, none were observed during the 2004-2005 survey (Kelley et al., 2006), by Parsons (2015) or Lowe et al. (2021).

23. *Trachemys scripta elegans*. This taxon was found in Eustis Lake and a natural impoundment on Mulberry Island consisting of Black Gum overstory (*Nyssa sylvatica*) during 2002 and 2007 turtle surveys (Dolan and Christensen, 2007). Kelley et al. (2006) observed this turtle in Eustis Lake.

24. *Trachemys scripta scripta*. This taxon has been documented from a natural impoundment on Mulberry Island during the 2007 turtle survey (Dolan and Christensen, 2007). It was also documented by Lowe et al. (2021) at an aquatic site on Mulberry Island.

25. *Virginia striatula*. This taxon was infrequently observed at Fort Eustis. Kelley et al. (2006) observed this snake in upland forests during the 2004-2005 survey but was not found in 2015 (Parsons, 2015). Lowe et al. reported one individual from Mulberry Island in 2019 (2021).

Discussion

Only 3 salamander species had been documented on Fort Eustis over this 30-year period of time until May 2025 when three *Amphiuma means* were discovered during a Spotted Turtle survey. This finding raised the number to four species. The secretive nature of this taxon is a likely reason for it not being documented previously. The topic of salamander diversity has been examined by external sources that suggest other salamander species could or are likely to occur at Fort Eustis. Spotted Salamanders (*Ambystoma maculatum*) represent one species in particular. The question as to why spotted salamanders remain undocumented despite the availability of ephemeral pools is addressed. The answer remains speculative but may be due to several factors. The taxon is not documented in the city of Newport News which is immediately adjacent Fort Eustis. Furthermore, several potential barriers exist that would otherwise restrict movement to the installation. These include the James River, Warwick River and Skiffes Creek. Considerable development exists at the northern portion of the installation where Fort Eustis and Newport News landmasses are contiguous. Additionally, development in Newport News exists adjacent to portions of Training Area 2. The extensive distribution of marbled salamanders may serve as sufficient competition that excludes Spotted Salamanders. Mabee's Salamander (*Ambystoma mabeei*) represents a potential taxon that was considered previously. Lowe et al (2021) noted one possible individual but could not confirm. Several other "expected" salamander species remain undocumented. Again, we are being speculative, but a major factor may be the lack of freshwater streams. Most streams are tidal with high salinity levels. However, Lowe et al (2021) observed Green Frog tadpoles in an Impact Area tidal wetland with a measured salinity of 6.04 ppt as noted above. This observation and the recent findings of *Amphiuma means* warrants an examination of salinity levels of water sources at the installation.

No venomous snakes were documented. Many reports of venomous snakes have been directed to the natural resources staff by the installation community over the course of the 30-year period. Despite these reports, neither photographs, specimens, nor actual live animals have ever been produced to confirm the presence of the three pit vipers. No roadkill specimens have been observed, and no reports of venomous snake bites exist. None of the contracted surveys cited in this article documented Timber Rattlesnakes, Eastern Copperheads or Northern Cottonmouths. Further, there have been seven qualified natural resources staff members performing considerable fieldwork throughout the installation over the 30-year period with none of these snakes being observed by the staff. Additionally, the staff responds to wildlife-human conflicts. Documenting these responses began in 2006. A total of 252 incidents involving snakes between April 2006 and August 2024 are documented. Of this figure, 203 snakes were found and identified. The species associated with these incidents were Central Ratsnakes (101), Northern Black Racers (44), Northern Watersnakes (26), Eastern Gartersnakes (20), Eastern Kingsnakes (2), a single Red Cornsnake (see explanation below), Rough Earthsnakes (2), Dekay's Brownsnakes (1), Ringneck Snakes (5), Rough Greensnake (1), and Red-Bellied Snake (1). The remaining forty-nine responses resulted in the given snake not being found. This finding remains consistent throughout the 30-year period. Nonetheless, the natural resources staff advises the installation community to avoid snakes as a precaution and report related incidents to the staff.

The data articulated here is based on a considerable amount of time that natural resources staff spent in the field, as well as evaluating information provided by the installation community over a 30-year period. Furthermore, this data is also based on seven formal contracted field surveys over the course of the stated period. No significant changes in the inventory have been observed, with the exception of Carpenter Frogs documented from Training Area 30 in 2021 and one red-bellied snake in 2024. Training Area 30 serves primarily as a buffer to development and has seen very little activity. Furthermore, it is only accessible by boat. Consequently, it received less priority for wildlife and habitat management. A formal wildlife survey was not performed in this area until 2021. Other taxa would be expected based on being contiguous without any obvious barriers. Excluding Training Area 30, we speculate that the current inventory presented here will remain consistent with little change in herpetofauna diversity.

No federal or Virginia-listed herpetofauna have been documented at Fort Eustis. The Virginia Department of Conservation and Recreation performed a zoological survey at the request of Fort Eustis (Roble, 1997). This survey included searches for Timber Rattlesnake, Mabee's Salamander, Tiger Salamander, and Barking Treefrog though none were observed. Subsequent contracted surveys and natural resources staff field time failed to find these taxa. Fort Eustis's riparian areas lack sufficient nesting sites for sea turtles. No stranded sea turtles nor carcasses have been documented at Fort Eustis.

Goose Island was recently reacquired in 2022. Only one survey had been performed on this property which occurred in 2014-2015 as an insect and botanical survey (Christensen and Mooring, 2016). Four herpetofauna species were observed during this survey consisting of a single Northern Watersnake, Green Treefrogs, the remains of a Woodland Box Turtle, and an Eastern Mud Turtle carcass. One live adult Woodland Box Turtle was observed in 2021. Future surveys

for herpetofauna are under consideration though no new taxa are expected given its small acreage and immediate proximity to the installation.

Training Area 30 does not see any operational activities, with the exception of limited natural resources management. Consequently, very little human activity impacts the habitats found there. As discussed previously, no wildlife surveys were performed there until 2021. Carpenter Frogs were observed with this species being documented in James City County for the first time (Christensen et al., 2022). Other herpetofauna documented at Training Area 30 by Lowe et al, (2021) included 2 snakes (*Coluber constrictor constrictor* and *Carphophis amoenus amoenus*), 2 turtles (*Sternotherus odoratus* and *Terrapene carolina carolina*), 4 other anurans (*Lithobates sphenocephalus utricularius*, *Lithobates clamitans*, *Dryophytes squirellus*, and *Anaxyrus americanus americanus*). The same salamander species observed on Fort Eustis were also found (*Ambystoma opacum*, *Notophthalmus viridescens viridescens*, and *Plethodon cinereus*). No lizards were observed. Time available to survey this site was limited. No obvious natural or artificial barriers are apparent so other taxa may enter this site. Additional future herpetofauna surveys are being considered.

Occasionally unique situations arise. Two incidents were noted. A Red-Footed Tortoise (*Chelonoidis carbonarius*) was found in the FEDMMA by natural resources staff. Likely, this individual was intentionally released by an irresponsible individual based on the location. The animal was transferred to the Luray Zoo through the assistance of then Virginia Department of Wildlife Resources. Natural resources staff observed an adult Red Cornsnake (*Pantherophis guttatus*) that had been killed on a road at the installation. This was documented on 31 December 2013. The staff speculated the snake was either a pet escapee or had been intentionally released. Cricket Frogs (*Acris* sp.) and Pickerel Frogs (*Lithobates palustris*) were recorded in an older edition of the Fort Eustis INRMP (2005); however, specific documentation could not be obtained. These taxa were not included in the anuran inventory and would be added if future observations were made.

Natural resources staff monitored herpetofauna diseases to the extent practical based on the availability of resources. The installation participated in two DoD-sponsored studies:

DoD amphibian disease survey focusing on Chytridiomycosis caused by the fungus *Batrachochytrium dendrobatidis* (Bd) in 2013. The infection rate was considered low; however, limited financial and manpower resources resulted in a small sample size. Species tested included *Lithobates sphenocephalus utricularius*, *Dryophytes chrysoscelis*, and *Dryophytes cinereus*. The results were reported by Lannoo M., C. Petersen, R.E. Lovich, and C. Phillips (2014).

In 2021-2023 Fort Eustis participated in Ophidiomyces (Snake fungal disease) surveillance on DoD Installations. A total of 55 individual snakes were collected and swabbed for the disease pathogen. Species included *Carphophis amoenus amoenus* (1), *Coluber contractor constrictor* (16), *Diadophis punctatus* (3), *Lampropeltis getula* (1), *Nerodia sipedon sipedon* (9), *Pantherophis alleghaniensis* (17), *Thamnophis sirtalis sirtalis* (4) and *Opheodrys aestivus* (2). Samples and data sheets were submitted for qPCR testing with a total of eight (14.5%) snakes testing positive for the disease.

Comparisons of the herpetofauna observed at Fort Eustis to the taxa reported by Gibson et. al. (2017) at Newport News Park during the Newport News Bioblitz offers some interesting perspectives. Fort Eustis and Newport News Park constitute similar land area size (3,186 hectares and 3,116 hectares, respectively) and are located in relative regional proximity though the land areas are not contiguous. The Newport News Bioblitz noted 16 amphibians (consisting of 11 anurans and 5 salamanders) and 20 reptiles (consisting of 7 turtles, 4 lizards and 9 snakes) while Fort Eustis has observed similar numbers with 15 amphibians (12 anurans and 3 salamanders) and 24 reptiles (9 turtles, 3 lizards, and 12 snakes). Many taxa occur at both sites; however, several differences exist such as the lack of Eastern Copperheads and Spotted Salamanders at both sites and the lack of Northern Cottonmouths and stream salamanders at Fort Eustis. Despite general site proximities, such differences are speculated to occur due to habitat variability, land area uses, man-made or natural barriers, or other factors. Consequently, field data is critical to evaluate herpetofauna populations and perform efficient natural resources management.

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Lessons From a Single Collection of Terrestrially Active Salamanders at The Nature Foundation at Wintergreen, Virginia

Walter E. Meshaka, Jr.
Section of Zoology and Botany, State Museum of Pennsylvania, Harrisburg, Pennsylvania 17120

Abstract: A series of terrestrially active salamanders was collected during a single timed search along a woodland trail in Nelson County, Virginia, to ascertain basic life history traits. All but two of 51 salamanders were Eastern Red-backed Salamanders, *Plethodon cinereus*. Mean adult body sizes were similar between males and females, males were found in no aggregations, and outnumbered females 2.20:1.00. Female reproduction was not annual, and aggregations of females were with other females, juvenile conspecifics, and with the Southern Two-lined Salamander, *Eurycea cirrigera*. Striped morphology and intact tails were prevalent in all segments of the collection of *P. cinereus*. Although only a single collection, the data from this study provide relevant information to relate to future impacts of climate change that are predicted to alter distribution and biology of this species.

Keywords: Collections, life history, salamanders, Wintergreen

INTRODUCTION

The Virginia Department of Wildlife Resources lists 51 species of salamanders for the Commonwealth of Virginia, 16 of which are found in Nelson County (Virginia Herpetological Society. https://www.virginia herpetologicalsociety.com/). Basic life history studies are limited for many of these species in the Commonwealth. Even for species that range throughout Virginia, much remains unknown with respect to life history information across its physiographic regions. A visit to The Nature Foundation at Wintergreen in Roseland, Nelson County, provided an opportunity to examine life history traits through counts and dissections of salamander collected during standardized collecting along a rock-border trail on 17 May 2024. Special attention was paid to relative abundance, population structure, reproductive strategy, morphology, and injuries. This repeatable approach I hope can be followed in the future at Wintergreen as well as elsewhere with the goal of monitoring spatial and temporal responses in life history traits by members of a geographically rich community.

STUDY SITE AND METHODS

A single walk was taken along the rock-lined trail encompassing the Trillium House at The Nature Foundation at Wintergreen, Roseland, Nelson County, Virginia, during 1330–1415 hrs on 17 May 2024. The ambient temperature was 15 °C, and conditions were wet and misty (Figure 1). Rocks and other natural cover were carefully lifted, salamanders were removed, placed in zip-lock bags with salamanders from underneath the same cover, and the cover was carefully replaced as closely to its original setting as possible. Salamanders were fixed in formalin, preserved in 70% denatured alcohol, and stored in the section of Zoology and Botany at the State Museum of Pennsylvania. Morph as striped or unstriped, status of the tail as intact or bobbed/regenerated, and sex and maturity through dissection were recorded for each specimen. Body sizes in mm snout-vent

length (SVL) to 0.1 mm were measured using a hand calipers. Inter- and intra-specific aggregations were also recorded from this collection.

RESULTS AND DISCUSSION

Fifty-one salamanders of two species were encountered during the 45 minute survey. Both individuals of *E. cirrigera*, were adults, and 48 of 49 individuals of *P. cinereus* were collected. The single *P. cinereus* that escaped was presumed to be a juvenile born the previous year. It was striped and did not appear to have lost any of its tail. Encounter rates of 1.09 individuals of *P. cinereus* speaks to potentially high population densities that can be reached in this species (Jaeger, 1980; Mathis, 1991).

Twenty-two adult males (41.1 $\pm$ 3.0 mm; range = 36.4–45.8), 10 adult females (43.1 $\pm$ 4.0 mm; range = 38.0–48.9), and 17 juveniles comprised the collection of *P. cinereus*. Neither the variance ($F = 0.5498$, $P = 0.12$) nor the mean ($T = -1.561$, $df = 30$, $P = 0.13$) of adult body size differed significantly between the sexes. Adult body sizes at Wintergreen do not conflict with those elsewhere (Pfinsgsten, 1989; Hulse et al., 2001; Meshaka and Wright, 2017).

No adult female contained vitellogenic follicles. That the timing of collection of these females overlapped with presumed nesting corroborates findings of biennial reproduction among females of this species in northern and colder locations (Petranka, 1998). The 2.20:1.00 ratio of males to females further suggests an absence of nesting females when sex ratios are otherwise even (Hood, 1934; Mathis, 1991). The range of body sizes among the females of this collection further suggests that the absence of annual reproduction in females was not likely to be associated with one segment of the adult population as seen elsewhere (Lotter, 1978).

Mating in *P. cinereus* can occur from autumn into early spring (Petranka, 1998), this species exhibits territoriality in summer and in fall (Mathis, 1989). The solitary nature of males in this collection corroborated territoriality, whereby males were more aggressive towards other males than to females (Jaeger, 1981). Territoriality among females was apparently absent or reduced during this time of year or perhaps by females that are not gravid. To that end, pairs of females were evident in three aggregations. A female and a juvenile were found in one aggregation, two females and a juvenile were found in one aggregation, and a female, a juvenile, and an adult *E. cirrigera* were found together in one aggregation. Striped individuals of *P. cinereus* typify colder climates (Lotter and Scott, 1977). Not unexpectedly, 91.8% of all individuals were striped, a morph that was high in males (95.5%), females (100.0%), and juveniles (82.4%). Lotter and Scott (1977) noted that the frequency of the unstriped morph is highest in juveniles.

Collectively, 71.4% of the sample of *P. cinereus* were found with intact tails. Likewise, more than one-half of each segment of the collection was found with an intact tail: Male (68.2%), female (80.0%), and juvenile (70.6%). As a measure of predation pressure, values from Wintergreen were more similar to those of a protected forest (66.8%) in south-central Pennsylvania (Meshaka and Morales, 2018) where potential predators were presumed to be more numerous than at a presumably safer urban site (85.3%) also in that region (Meshaka and Wright, 2017).

Information gleaned from this collection provided novel and comparative ecological information for the region, especially for *P. cinereus*. Other sites within the region provide opportunities for study of this and

other salamander species. For *P. cinereus*, life history information has demonstrable importance in the near future as climate change projections will result in temperatures that, barring an ability to increase energy intake, may impact *P. cinereus* in a way as to affect life history traits (Munoz et al., 2022).

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Figure 1. A portion of a trail surveyed for terrestrially active salamanders at the Nature Foundation at Wintergreen, Roseland, Nelson County, Virginia, on 17 May 2024. Photograph by W.E. Meshaka, Jr.

Dryophytes chrysoscelis **(Cope's Gray Treefrog)**: VA. Northumberland County, 950 Coopers Landing Rd Heathsville (37.87788° N, 76.42163° W). 16 May 2025. Nancy Buchholz.

County Record: Cope's Gray Treefrog is the diploid species in the species paired with the tetraploid Dryophytes versicolor (Gray Treefrog). The mating call of the male is the only easy way to differentiate the two species which are morphologically similar. Cope's Gray Treefrog has a nearly state-wide distribution (https://www.virginiaherpetologicalsociety.com/amphibians/frogsandtoads/copes-gray-treefrog/index.php) although it is either absent or less common in the western mountains.

On the afternoon of May 16 on our property in Heathsville, we saw the frog. It was resting on the stringer of the ladder steps for our above-ground pool. The ladder folds up and was in the secured locked position when we spotted the frog. The frog was about 8 feet off the ground at the time. When I lowered the ladder to the ground the frog made a little adjustment to it's new position but otherwise did not move. This was the first visual observation of this species in the area, however, I have been hearing them for at least the past two years. We photographed the frog and recorded the mating call that evening, and sent both the photo and sound recording to the VHS (Archive #852) since I saw from the website the species had not been reported from Northumberland County although it was from every surrounding county. This observation fills a gap in the reported distribution in eastern Virginia.

Nancy Buchholz
Heathsville, VA

Lithobates clamitans **(Green Frog)**: VA. Culpepper County, 30085 Trotting Trail, Richardsville. 26 May 2025. Walter Rainey.

County Record: The Green Frog has a state-wide distribution in Virginia (https://www.virginiaherpetologicalsociety.com/amphibians/frogsandtoads/green-frog/index.php) being reported from 91 of the 95 counties. It is one of, if not the, most commonly encountered frogs on VHS surveys. Here I report the observation of a Green Frog from Richardsville in Culpepper County. On 26 May 2025 I photographed the individual on our property in a fish pond and sent the photo to the Virginia Wild Snake ID for a positive identification. The administrator, Banks Mason, recommended submitting the photo to the VHS (Archive #853) since this species had not yet been reported in Culpepper County. This observation fills a gap in the distribution in northern Virginia, leaving only Bland, Charlotte, and Craig Counties without a voucher for this species.

Walter Rainey
Richardsville, VA

***Pseudacris brimleyi* (Brimley's Chorus Frog)** VA: City of Franklin, Blackwater Park (36°42'00.1"N 76°56'18.0"W). 15 March 2024. Jake Galla.

City Record: Blackwater Park is a 200-acre park in the City of Franklin that opened in late 2022. Blackwater Park was acquired, funded, and constructed by Beechtree Group and the Virginia Outdoors Foundation before its transfer to the City of Franklin. I was walking along the Ridge Trail at Blackwater Park and heard a seesaw-like call that sounded like running fingers along a comb. I recognized this sound as the call of Brimley's Chorus Frog (*Pseudacris brimleyi*) and recorded audio of the call to deposit in the VHS archive (Archive #840).

All counties surrounding the City of Franklin have Brimley's Chorus Frog records, but the City of Franklin lacked a record. The Brimley's Chorus Frog is an anuran that breeds in shallow flooded fields, red maple (*Acer rubrum*) swamps, ditches, floodplain pools, woodland pools with sphagnum, ditches or pools in logged areas, and shrub thickets (Gosner and Black, 1958. Notes of the Life History of Brimley's Chorus Frog. Herpetologica. 13(4): 249-254.). I heard the calling males during the species' breeding timeframe (Brandt and Walker, 1933. A new species of Pseudacris from the southeastern United States. Occasional Papers of the Museum of Zoology, University of Michigan. 272(1-7).) and the habitat of the park is consistent with habitat described in the literature.

Jake Galla
Richmond, VA

***Hemidactylium scutatum* (Four-toed Salamander)** VA. City of Richmond, Huguenot neighborhood (37.54749 N, 77.59028 W). 21 February 2025. Ashley McFadden.

City Record: Four-toed Salamanders are easily identified by their immaculate white venter with large black spots. No other salamander in Virginia has such a belly. They inhabit forested areas and are typically found under logs. They are rarely found in large numbers except for females which will attend nests, usually deposited in moss along steep banks of vernal pools. While a student at Trinity High School in the Huguenot neighborhood of Richmond I would go herping on the trails behind the neighborhood. This section of forest is really under-surveyed for herps in my opinion. I have found some really delicate species there that I haven't found anywhere else in the city.

On 21 February of 2025 I went off-trail to a swampy spot (lots of ferns, mud, old logs). I flipped a really saturated, rotting log. I almost didn't notice the four-toed salamander since it had dug up inside the log. I submitted several photographs of the salamander to the VHS (Archive #847) as a voucher for this observation. The Four-toed Salamander has been reported in all the counties surrounding Richmond, so this record helps fill a gap in the species distribution in central Virginia.

Ashley McFadden
Richmond, VA

Plethodon cinereus **(Eastern Red-backed Salamander)** VA: City of Lexington, Uncas Nature Trail (37°47'24.5"N 79°25'15.7"W). 25 March 2024. Matthew Anthony and Erin C. Anthony.

City Record: An eastern red-backed salamander was found under a rock along the Uncas Nature Trail on 25 March 2024. This is not an unexpected record since Red-backed Salamanders are widespread and reported from 83 of the 95 counties in Virginia. However, the City of Lexington is lacking in public lands with woodland habitat for species such as this to be found within the city limits. The Uncas Nature Trail is the only such trail I have found within Lexington. With a bit more exploration on private properties and college campuses, I believe the species list for Lexington can grow as there were only three amphibians reported in the FWIS database prior to this observation. A digital photograph was deposited in the VHS Archive (# 839) to document this report.

Erin C. Anthony
Post Oak Middle School
Science Department
Spotsylvania, VA 22553

Lampropeltis getula **(Eastern Kingsnake)**: VA. Brunswick County, Lawrenceville, (36º 43’ 54.2”N; 77º 49’ 58.1”). 25 September 2024. Robert Dennis.

County Record: The Eastern Kingsnake has a wide distribution in Virginia being reported from throughout the Coastal Plain and Piedmont physiographic provinces. One large gap in their reported distribution is Brunswick County in south central Virginia.

Here I report an observation of an Eastern Kingsnake from Brunswick County. On 25 September 2024 my neighbor brought me a live Eastern Kingsnake which he had found on his property. He has apparently seen this species in his garden on several occasions. The snake was released in my barn a mile south of Lawrenceville where it should have been safer in a habitat more distant from a human populated area. This observation thus fills a notable gap in the distribution. The Eastern Kingsnake is known from all surrounding counties in Virginia and in North Carolina. The photo was submitted to the VHS archive (#856).

Dr. Robert Dennis
Lawrenceville VA

Lampropeltis getula (Eastern Kingsnake): VA. Cumberland County, Farmville (37.319033,-78.385681). 6 June 2025. Henry Nase.

County Record: Lampropeltis getula occurs in a wide variety of habitats, including hardwood forests, mixed pine-hardwood forest, pine forest, abandoned fields, upland portions of swamps, and adjacent freshwater marshes, as well as along creeks and streams in agricultural and urban areas. Individuals are not uncommon around abandoned sawdust piles and old buildings in fields. They are completely terrestrial, seldom climbing into vegetation. Herpetologists find them most often under surface objects, such as boards, logs, tar paper, and discarded car hoods. Kingsnakes are diurnal, but are occasionally found on roads at dusk. (https://www.virginiaherpetologicalsociety.com/reptiles/snakes/eastern-kingsnake/index.php). In Virginia, they have a primarily eastern, central, and northern distribution, being reported from 57 counties and 9 cities. On 6 June 2025 shortly after midnight, I was driving on route 45, and observed a dead Eastern Kingsnake on the side of the road. Day time temperatures had peaked at over 27° C and there was light rain around mid-day. The habitat was a field backed by deciduous forest on one side and deciduous forest with some houses on the other side. The Eastern Kingsnake has been reported in all counties surrounding Cumberland, and this observation fills in a gap in central Virginia by adding Cumberland to the known counties. A digital photo was submitted to the VHS Archive (#855) as a voucher for the observation.

Henry Nase
Farmville, VA

***Lampropeltis getula* (Eastern Kingsnake)** VA. Middlesex County, 2379 Wares Bridge Rd., Church View. 26 May 2025. Ian Adrian.

County Record: The Eastern Kingsnake has a distribution in the Coastal Plain and Piedmont of eastern Virginia (https://www.virginiaherpetologicalsociety.com/reptiles/snakes/eastern-kingsnake/index.php). It is found in a variety of terrestrial habitats, typically encountered under surface objects. Their name is derived from the habit of preying on other snake species. Around dusk on 26 May 2025 I was looking for reptiles and flipped a piece of metal roofing on our property and found an Eastern Kingsnake coiled up underneath. I photographed the snake and sent a copy to the Virginia Herpetological Society to confirm the identity (Archive #854). I was informed there were no previous records for Middlesex County so this observation is a new county record. This species has been reported from Gloucester County to the south, but not from Matthews County to the south, Essex County to the north, or King and Queen County to the west. This observation helps fill a notable gap in the Eastern Kingsnake's distribution in the Middle Peninsula.

Ian Adrian,
Church View, VA

***Pantherophis guttatus* (Red Cornsnake)**: VA, Mecklenburg County, Brodnax, 3530 Canaan Church Road. 20 March 2025. Scott and Janette Wright.

County Record: The Red Cornsnake is a moderate sized snake, adults exceeding 75 cm in length (https://www.virginiaherpetological society.com/reptiles/snakes/corn-snake/index.php). They are terrestrial but rarely seen because of their fossorial nature (Op. cit.). On 20 March 2025 we observed a snake from the kitchen window as it was crossing our paved driveway moving toward the house, during a light shower about six o'clock in the evening. It was moving from the direction of a wooded area with mixed hardwoods and pines which forms the edge of a cut over area which has been regrowing

for about ten years. The home landscape includes trees and shrub borders with open lawn areas. I have seen this snake or another of the same species around our home in the past. I put the snake in an aquarium to photograph it, sending the photo to the VHS since I saw the Red Cornsnake had no previous records for Mecklenburg County. This species has been reported from the surrounding counties of Brunswick, Charlotte and Halifax, but not Lunenburg County. This record thus helps fill a gap in the south-central portion of Virginia. The photo was deposited in the VHS Archive (# 842) as a voucher for this observation. The snake was released after the photographs were taken, about 350 meters from the house.

Scott Wright
Brodnax, VA

***Storeria dekayi* (Dekay's Brownsnake)**: VA, 2301 Johnson Street, Hopewell. 1 March 2025. Shellie O'Brien.

City Record. Dekay's Brownsnake is found in most of the Counties in the eastern two-thirds of Virginia. It is a small, secretive snake not frequently encountered abroad during the daytime, but instead under some type of cover and often around homes (https://www.virginiaherpetologicalsociety.com/reptiles/snakes/dekays_brownsnake/index.php). On 1 March 2025 my mother was raking in a flower bed when she saw a small snake under the leaf litter. It was very docile and just coiled up and laid where it was. I moved the snake to a more secluded area and took a photograph of it, which I sent to the VHS Identification Page. I was informed the snake was a Dekay's Brown Snake and that there was no record of the species within the City of Hopewell. There are records, however, from the city of Richmond and Powhatan, Charles City, Sussex and Dinwiddie Counties surrounding Hopewell, so this observation is not unexpected. The photo below was submitted to the VHS Digital Archive (# 838) as a voucher for this observation. The weather at the time was sunny and windy, with a temperature of 20.5ºC.

Shellie O'Brien
Hopewell, VA

***Storeria dekayi* (Dekay's Brownsnake)**:VA Middlesex County, 2379 Wares Bridge Road, Church View. 6 May 2025. Ian Adrian.

County Record: Dekay's Brownsnake is a small, secretive, terrestrial snake. It is more often found in human-disturbed than natural areas (https://www.virginiaherpetologicalsociety.com/reptiles/snakes/dekays_brownsnake/index.php). They can be found under all manner of cover objects by daytime, often around homes and gardens. Their primary prey is earthworms and slugs, but have been observed to consume a wider variety of prey items (op. cit.). On 6 May 2025 I was walking in my driveway about mid-day when a small snake moved right in front of me. It continued into the grass of my yard where I got a photograph of it. I sent the photograph to the Virginia Herpetological Society (Archive #848) and was informed that this was the first observation of Dekay's Brownsnake in Middlesex County, although it has been documented in all surrounding counties except Essex. This record helps fill a gap in the distribution in eastern Virginia.

Ian Adrian
Church View, VA

***Tantilla coronata* (Southeastern Crowned Snake)** Pittsylvania County, *Exact location withheld due to sensitive information*. 5 April 2025. Jake Galla and Evan Spears.

Early Activity: Little is known about the biology of the Southeastern Crowned Snake (*Tantilla coronata*), a highly fossorial snake only known from a few localities in Virginia. It reaches its northern distribution limits in Virginia (Mitchell, Joseph and Reay, Karen "Atlas of Amphibians & Reptiles in Virginia" Virginia Department of Gamer and Inland Fisheries, 1999, pp. 97). Southeastern Crowned Snakes prefer more xeric habitats. The snakes favor loose sandy soil, rotting stumps, and logs for suitable nest sites and an abundance of prey items (Semlitsch, Raymond D., et al. "Habitat Utilization, Seasonal Activity, and Population Size Structure of the Southeastern Crowned Snake Tantilla Coronata." *Herpetologica*, vol. 37, no. 1, 1981, pp. 40–46.)

Mitchell, J.C. (1994. The Reptiles of Virginia. Smithsonian Institution Press. Washington, D.C. 352pp.) reports individuals of this species are active between May and August. Evan Spears and I recorded two juveniles and two adults in early April at a powerline adjacent to hardwood forest. All individuals were found under cover objects. We photographed and released the snakes where we found them, submitting a photo to the VHS Archive (#850) as a voucher.

Jake Galla
Richmond, VA

Evan Spears
Farmville, VA

***Virginia valeriae* (Smooth Earthsnake)**: VA. Halifax County, Banister River South Wildlife Management Area, Wolftrap Rd., (36.71606878869009, -78.80792199698881). 20 April 2025. Paul Glass.

County Record: The Smooth Earthsnake is a small terrestrial snake reaching a maximum length of only 32 cm in Virginia (https://www.virginiaherpetologicalsociety.com/reptiles/snakes/rough-earthsnake/index.php). They feed primarily on earthworms. They are found throughout Virginia, but are rare in the southwest being reported only from Scott County (Op. Cit.). On 20 April 2025 I was birding in the Banister River South WMA along Wolftrap Road when I saw a dead snake in the road. I took some photos since I did not recognize the species. I showed the pictures to Melissa Kovach who told me it was an Eastern Smooth Earthsnake. I sent photos (VHS Archive # 844) to the VHS when I saw that the Smooth Earthsnake was not reported from Halifax County, although it is from all surrounding counties in Virginia except Charlotte. This record thus helps fill a gap in the distribution in south central Virginia.

Paul Glass

***Virginia valeriae* (Smooth Earthsnake)**: VA, Orange County, Indiantown Road. 29 March 2025. Raelen Madison .

County Record: The Smooth Earthsnake is a small secretive snake rarely seen out and above ground, spending considerable time underground (https://www.virginiaherpetologicalsociety.com/reptiles/snakes/eastern-smooth-earthsnake/index.php). They are most often found under some type of cover object where they feed on worms and soft-bodied insects. They have a spotty but statewide distribution in Virginia thus far being verified in 49 counties and 12 cities (op. cit.)

On 29 March 2025 I made my first visit to the garden to get ready for the season. I moved a water barrel and found a small snake underneath. I love finding snakes with my kids so I took a picture and picked it up. I sent the photo to our friend who is a snake and wildlife expert. She texted back so fast asking where I found the snake. I told her at our house in the garden, and she was so excited to tell me it wasn't known that they live in Orange County. I sent a photograph to the VHS Herp Identification website for a positive identification which confirmed the snake was a Smooth Earthsnake. A digital photograph was submitted to the VHS Archive (#841) as a voucher for this first record for Orange County.

Raelen Madison
Orange County, VA

Plestiodon inexpectatus **(Southeastern Five-lined Skink)**: VA. City of Portsmouth, Craney Island (36.89041N; 76.36970 W). 4 April 2025. Christopher Petersen.

City Record: The Southeastern Five-lined Skink in Virginia is found primarily in the eastern Counties of the Commonwealth (https://www.virginiaherpetologicalsociety.com/reptiles/lizards/southeastern-five-lined-skink/index.php). There are, however, few records from the cities. While performing a herpetological survey of Navy property on Craney Island, I encountered a lizard moving in cut grass at the edge of a concrete-lined ditch. Upon capture, an examination of the scales on the underside of the tail revealed the lizard was a Southeastern Five-lined Skink. Photos of this were sent to the VHS to document (VHS Archive #845) this species as a new record for the City of Portsmouth. This find helps fill a gap in the distribution of the Southeastern Five-lined Skink in the southeastern corner of Virginia. The weather on 4 April was warm (29ºC) with overcast skies.

Christopher Petersen
Portsmouth, VA

Chrysemys picta picta **(Eastern Painted Turtle)** VA: Lunenburg County, Keysville (37.00899 N, 78.45910 W). 19 May 2024. Kristin E. Duty

County Record: The Eastern Painted Turtle (Chrysemys picta, picta) is commonly found in all regions of Virginia East of the Appalachian plateau. These turtles are active March through October occupying permanent freshwater bodies with vegetation and available basking surfaces. Having been verified in 84 counties and 12 cities (https://www.virginiaherpetologicalsociety.com/reptiles/turtles/eastemn-painted-turtle/index.php), here I report the first county record for Lunenburg County

On 19 May 2024 two Eastern Painted Turtles were observed and photographed basking on a log in a private pond in Keysville, Virginia. The two distinct bright yellow spots behind the eye, and bright red markings on the marginal scutes rule out other aquatic turtles found in its range. This report confirms inhabitance for Lunenburg and serves as a county record filling the gap for Southside Virginia. A photograph and this report were submitted to the VHS as verification (Archive #851).

Kristin E. Duty
Keysville, VA

***Clemmys Guttata* (Spotted Turtle):** VA. City of Richmond. Specific location withheld. 5 April 2025. Ashley McFadden.

City Record: The Spotted Turtle is a small turtle known for the yellow spots on each of the dorsal scutes. They inhabit shallow wetlands of all types (https://www.virginiaherpetologicalsociety.com/reptiles/turtles/spotted-turtle/index.php). It is a Tier IIIa species in the Virginia Wildlife Action Plan, both because of reductions in population numbers due to habitat loss and poaching for the pet trade. Because of this, the specific location of this find is withheld.

I was visiting a park in the City of Richmond when I observed a Spotted Turtle swimming in a shallow pond. I took several photos of this animal. I have seen several others over the previous year or two. I sent the photo to the VHS and told there were no previous documented instances of Spotted Turtles within the City. This photo serves as a voucher for this new record (VHS Archive # 843). They have been reported for all surrounding counties.

Ashley McFadden
Richmond, VA

***Pseudemys c. concinna* (Eastern River Cooter)** VA: Goochland County, Fairground Road (37.7001083, -77.8338345). 9 May 2025. Ryan Hall.

County Record: The Eastern River Cooter is a large aquatic turtle rarely found on land except for females searching for nesting sites (https://www.virginiaherpetologicalsociety.com/reptiles/turtles/eastern-river-cooter/index.php). On 9 May 2025 I was driving from Short Pump back to our home in Goochland County when I saw a larger River Cooter in the middle of a driveway walking towards Fairground Road. I immediately pulled over as there was no way for this turtle to cross the road without getting hit. I grabbed the specimen and put it in my car as there was no available water nearby. We drove down to the James River where there was an accessible ramp to the water where I released the turtle, which immediately swam off and disappeared into the river. I sent a photograph of the turtle to the Virginia Herpetological Society (Archive #849) to document this observation. The short claws and large size of the turtle identifies it as a female, most likely looking for a nesting site. This is a first record of the Eastern River Cooter for Goochland County, although it has been recorded from the counties to the south and east of Goochland.

Ryan Hall

Trachemys scripta elegans **(Red-eared Slider)**: VA. City of Roanoke, Strauss Park, 644 Westside Blvd. NW 9 April 2025. Ruthie Nutt.

County Record: The Red-eared Slider is native to the south-central United States. It has been widely introduced in Virginia due to released animals from the pet trade and is now considered naturalized. It is named for and best known for the broad red stripe behind the eye of the animal (https://www.virginiaherpetologicalsociety.com/reptiles/turtles/red-eared-slider/index.php). In Strauss Pak I was working to clean litter out of the park and its creeks. I accidentally found the turtle while picking up trash in the water. It was sitting on the bottom of the creek near but not under some mossy rocks and it tucked itself inside it's shell when I got close The movement was how I was able to see it initially and I stood still in the water to see if it would come back out so I could identify it. After about 8 minutes it came out of it's shell. It didn't try to swim away but just looked at me. I took a photo of it while it was underwater, and then I went back to work cleaning, so hopefully it's happier now with less trash. I've been working on cleaning up that creek for a little over 2 weeks and I've seen an increase in fish and wildlife presence, but this was the first turtle I'd found. The creek is located on the far side of the park and runs parallel to the street. The weather was clear, sunny and about 13ºC. A photo of the turtle was sent to the VHS as a voucher for this observation (Archive #846).

Ruthie Nutt

President's Corner

Greetings to fellow frog fanatics and snake seekers of the Virginia Herpetological Society! I want to take a moment to share our appreciation for **you**—our membership new and old—for supporting us, for sharing your passion with us, and for joining us in spreading awareness about our favorite organisms on planet earth. Let's keep each other energized in continued efforts to foster this and the next generation of herp ambassadors.

After concluding an amazing Fall Meeting at the DWR Headquarters last fall, your Executive Committee jumped (hopped?) right back into the hustle and bustle of what makes the VHS run smoothly: surveys were your wonderful photos!

We have many new and enthusiastic folks on our education team. This expansion has allowed us to attend a diversity of events across the Commonwealth this year. A heartfelt *thank you* to all who have contributed their time and knowledge to spreading appreciation and awareness, and to VHS Education Chair, **Caroline Seitz** for her leadership. Our education materials are expanding to include topics such as "*Gardening for Herps*" and an audio updated "*Frog Call quiz*", which I am particularly excited about (vernal pool time, anyone?).

In what I hope is the continuation of many "firsts" for the society, this spring we held the *very first* **Joint Spring Meeting of the Virginia Herpetological Society and North Carolina Herpetological Society** at Averett University this spring (shout out to local host **Jason Gibson** and North Carolina Herp Society Vice President **Tony Leiro**). Over 80 members of both societies came together to enjoy eight fantastic talks about reptile and amphibian conservation, education, and natural history. A huge thank you to our talented speakers for sharing your research planned (shout out **Jason Gibson**, **Matt Neff** and **Marshall Boyd**), herps records were updated (shout out **John White**) and grants were reviewed (shout out **Kory Steele**).

As any herpetologist might guess, spring is busy for VHS in the best way. Frog calls lured our amphibian experts **Jason Gibson** (VHS Survey Chair) and **Paul Sattler** (VHS Editor) onto the road and into the forest in contribution to ongoing efforts to document rare amphibian diversity in Virginia. With the warmer weather comes increased herp sightings, and this year alone our ID team has already identified almost 250 reptiles and amphibians for the public through our photo ID submission email. Please keep sending us with us! At the event we hosted one of our liveliest auctions, which successfully raised funds to support the shared efforts of both groups. Most importantly, we came together to build community. I hope those who attended walked away with new road cruising buddies and colleagues. I know I certainly did!

We also congratulate our two 2025 VHS Grant recipients: doctoral candidate **Tanis McDonnell** (Virginia Polytechnic Institute) will use funds to investigate "*Cattle grazing impacts on bog turtles in Southwestern Virginia*" and Associate Professor **David McLeod** (Mary Baldwin University) will pursue a project entitled, "*Initiating a long term study of salamanders and their response to climate change*". We look forward to hearing about the exciting results of these studies at future meetings!

Survey events have been incredibly successful this year, including our 2025 Annual Spring Survey held at Staunton River State Park and Staunton River Battlefield State Park. Over 45 amazing volunteers and members joined to contribute time and expertise. We were especially excited to

welcome members of the North Carolina Herp Society to participate in finding, photographing and documenting reptile and amphibian diversity in Halifax County. Keep an eye out for the forthcoming publication summarizing our findings in the 2025 Fall issue of Catesbeaina.

This is your president signing out, and encouraging you all to make the most of this summer—here are a few suggestions from me: tell your neighbor about the importance of snakes to healthy ecosystems, check off some lifers from your herp list, and take some great photos to enter in the Fall VHS Photo Contest. I can't wait to see you there!

Arianna Kuhn
VHS President

Minutes of the Spring 2025 VHS Meeting - Averett University

Arianna Kuhn, President of the Virginia Herpetological Society (VHS), opened the meeting at approximately 9:21 AM EDT at Averett University with the agenda for the meeting. VHS and Executive Committee Members (Ex-Com) Marshall Boyd, Kory Steele, Paul Sattler, Kelly Geer, Caroline Seitz, Jason Gibson, and Matt Close attended all or part of the meeting.

Officer Nominations and Elections
No nominations or elections occurred at this meeting.

General Information
Caroline Seitz (VHS Education) inquired about the future implementation of a spring joint meeting with the North Carolina Herp Society. The group discussed an interest in a joint meeting (as a one time expense rather than an annual expense) in 5 years depending on interest from both societies. The regularly scheduled VHS Fall Meetings and VHS Spring Surveys will continue.

Recruitment
Arianna Kuhn (VHS President) proposed the idea of a student leadership role to diversify perspectives in VHS leadership. A potential model to follow could be the junior herpetologist role within the North Carolina Herpetological Society (NCHS) with a junior society member and student representative. It was agreed upon to begin a write up of the potential position descriptions.

Kory Steele (VHS Grants) talked about previous student engagement models to follow (e.g., Virginia Natural History Society) where speaker awards were given. Further discussion is planned for future meetings to incorporate this idea.

Membership
Kelly Geer (VHS Membership) discussed digital footprint needs of the society. The Mailchimp program only allows a limited number of messages to be sent at a time while the Little Green Light program will help with connecting current members and new members to VHS events.

Treasurer
Matt Close (VHS Treasurer) discussed the budget summary of 2024-2025 with subscriptions and insurance costs being the highest accumulation of the budget. Web domain and online fees are funded for a further three (3) years. One-time costs such as the previously purchased frog loggers and the First Joint Spring Meeting (2025) will not be a part of next year's budget. The annual budget will be revisited at the Fall 2025 meeting.

Education
Caroline Seitz (VHS Education) discussed the annual education report. This year, VHS had 28 programs and served 6,030 community members. Events included school group visits, festival booths, podcasts, and Q&A education request emails. Budgeting for the needs of the Education/Outreach programming will be discussed in the future as more programs are incorporated to the schedule. A suggestion was made by CS for a code of conduct to be developed to hold education committee members accountable for showing up to committed programs, communicating inability to follow through on commitments, and cancellation policies to prevent "no-shows" or lack of kits/support at events VHS has committed to attend.

Kelly Geer (VHS Membership) suggested communications with Virginia Master Naturalist (MN) groups about education opportunities and events. Volunteers require education event hours for preapproved events, and could work in collaboration with VHS for fulfilling events staffing needs. Kelly offered to aid in the digital

development of programs using the LGL already implemented into use by the VHS.

Christine Stewart (Virginia Master Naturalist - Southeastern Piedmont Chapter member), offered to check with the Southeastern Piedmont Chapter to determine if members of the Virginia Master Naturalist groups can work hours that double for VHS and MN at the same time.

Arianna Kuhn (VHS President) offered to facilitate a connection between VHS and various chapters of MN with aid from Caroline Seitz (VHS Education) to develop more educator training with MN groups aiding in educational programming across Virginia.

Website

John White (VHS Webmaster) could not attend in person. In 2025 so far, VHS has identified 294 reptiles and amphibians (38 frogs, 27 salamanders, 24 lizards, 140 snakes and 65 turtles). Prior to the meeting date, John requested assistance with the VHS website maintenance with specific needs related to proficiency in HTML, JavaScript, PHP, and MySQL programming languages. Kelly Geer (VHS Membership) responded that she would be interested in being a co-webmaster with John to aid where she can in the continued development, maintenance and updates to the website. She indicated she will still be able to continue her role with VHS membership in addition to the co-webmaster position.

Website and database updates have been implemented to reflect the recent (March 2025) common and scientific name changes. Graphics are being updated with new scientific and common names as time permits. Website traffic statistics for April 2025 are as follows:

- Unique visitors: 59,734
- Number of visits: 127,964
- Pages accessed: 263,181
- Hits: 5,303,829
-Bandwidth: 755.46 GB

Surveys

Jason Gibson (VHS Surveys) discussed the preemptive plans for the spring survey to occur the following day (May 18-19) at Staunton River State Park and Staunton River Battlefield State Park. Details can be found in the survey write-up that will be published in the Fall issue of Catesbeiana. Other planned surveys include Crooked Creek WMA (lead by JG) and Land's End and Toby's Point Survey (lead by Matt Neff).

Journal

Paul Sattler (VHS Editor) discussed the next issue of Catesbeiana which is planned to include one major article and a possible smaller article which still needs field notes. If timelines work out, an additional article from Arianna Kuhn could be included. Overall, Paul is working on the spring report as well. Selected people to be reviewers depending on geographical and taxonomic topics could lead towards a master list of people to contact as needed for the publications.

Kelly Geer (VHS Membership) offered help to work on the master list of reviewers, roles and responsibilities to aid in the peer review process.

Conservation

Yohn Sutton (VHS Conservation) was unable to attend the meeting.

Grants

Kory Steele (VHS Grants) discussed the revisions to the grants information presented on the VHS website. Two grant proposals were awarded in 2025. Tanis McDonnell, a doctoral candidate at Virginia Polytechnic Institute (VT) was awarded funds to

investigate *"Cattle grazing impacts on bog turtles in Southwestern Virginia.*" Dr. David McLeod, an Associate Professor at Mary Baldwin University, was awarded funds to pursue his study *"Initiating a long term study of salamanders and their response to climate change."*

Permits

Susan Watson (VHS Permits) was unable to attend the meeting in person. Prior to the meeting, Susan amended the VHS Scientific Collection Permits to reflect the updated sub-permittees along with survey events throughout 2025 with reports of findings for each to be entered when that information is available.

Closing

Arianna Kuhn adjourned the meeting at 10:15AM.

Virginia Herpetological Society
Treasurer's Report
June 19, 2025

Previous Balance- December 11, 2024	$	**16,053.75**
Certificate of Deposit-Truist Bank (matured 04/18/25)	$	10,479.76
Income		
Dues and Donations	$	4,074.44
Spring Meeting with North Carolina Herpetological Society (NCHS)		
Registration with lunch (optional)*	$	780.00
Live and Silent Auctions*	$	2228.00
Merchandise	$	452.00
CD interest	$	171.30
Expenses		
Operational Expenses		
SCC eFile	$	25.00
Web Hosting	$	551.64
Recognition	$	79.75
Insurance	$	518.94
Spring Meeting*	$	2056.94
Payment to NCHS*	$	475.53
Education and Outreach	$	1785.36
Research (Grants)	$	1740.60
Service Fees (Paypal, Stripe, etc.)	$	254.13

**Spring Meeting registration fees, auction revenues, and expenses were shared with NCHS.*

Current Gross Balance (06/19/2025)	$	27,355.36
Certificate of Deposit-Truist Bank (matures 04/18/25)	$	10,651.06
Additional Encumbered Funds (Outstanding Payments Issued)	$	604.00
Current Available Balance (unencumbered)	**$**	**16, 100.30**

VHS Memberships (dues current)

Regular	315
Student	45
Lifetime	109
Total	**469**

Matthew Close
VHS Treasurer

Field Notes

The Field Notes section of *Catesbeiana* provides a means for publishing natural history information on Virginia's amphibians and reptiles that does not lend itself to full-length articles. Observations on geographic distribution, ecology, reproduction, phenology, behavior, and other topics are welcomed. Field Notes will usually concern a single species. The format of the reports is: scientific name (followed by common name in parentheses), state abbreviation (VA), county and location, date(s) of observation, observer(s), data and observations. The name(s) and address(es) of the author(s) should appear one line below the report. Consult the editor if your information does not readily fit this format. **All Field Notes must include a brief statement explaining the significance of the record** (e.g., new county record) **or observation** (e.g., unusual or rarely observed behavior, extremely early or late seasonal record, abnormal coloration, etc.). Submissions that fail to include this information are subject to rejection. Relevant literature should be cited in the body of the text (see Field Notes in this issue for proper format). All submissions will be reviewed by the editor (and one other person if deemed necessary) and revised as needed pending consultation with the author(s).

If the Field Notecontains information on a **new county (or state) record**, **verification is required in the form of a voucher specimen** deposited in a permanent museum (e.g., Virginia Museum of Natural History) or a **photograph** (print, slide, or digital image) **or recording** (cassette tape or digital recording of anuran calls) deposited in the archives of the Virginia Herpetological Society. Photographs and recordings should be sent to the editor for verification and archiving purposes; the identity of voucher specimens must be confirmed by a museum curator or other qualified person. Include the specimen number if it has been catalogued. Prospective authors of distribution reports should consult Mitchell and Reay (1999. *Atlas of Amphibians and Reptiles in Virginia*), Mitchell (1994. *The Reptiles of Virginia*), and Tobey (1985. *Virginia's Amphibians and Reptiles: A Distributional Survey*) [**both atlases are available on-line on the VHS website**] as well as other recent literature to determine if they may have a new county record. New distribution records from large cities that formerly constituted counties (Chesapeake, Hampton, Newport News, Suffolk, and Virginia Beach) are acceptable, but records from smaller cities located within the boundaries of an adjoining county will only be published if the species has not been recorded from that county. Species identification for observational records (e.g., behavior) should be verified by a second person whenever possible.

PHOTOGRAPHS

High contrast photographs (digital images) of amphibians and reptiles will be considered for publication if they are of good quality and are relevant to an accompanying article or field note. Published photographs will be deposited in the Virginia Herpetological Society archives.

Paul Sattler, Editor
Department of Biology
Liberty University
MSC Box 710155
1971 University Blvd.
Lynchburg, Virginia 24515