

A Herpetological Survey of the Chincoteague Bay Field Station Campus in Accomack County, Virginia

Sean Hartzell

Department of Biological & Allied Health Sciences
Bloomsburg University of Pennsylvania
400 East 2nd Street
Bloomsburg, PA, 17815

Abstract: The Chincoteague Bay Field Station is located on an approximately 15-hectare plot of land on Virginia's Eastern Shore. This area was surveyed opportunistically for herpetofauna primarily *via* nocturnal visual encounter surveys from early July through mid-August 2017. A total of 141 amphibians and reptiles were encountered during surveys, consisting of seven species of anuran, one snake, one turtle, and unidentified lizards in the genus *Pleistiodon*. No salamanders were found during surveys, despite historic vouchers of *Plethodon cinereus* at this locality. The majority of observations consisted of the species *Anayrus fowleri* and *Hyla chrysoscelis*. The composition of species observed at this site may likely have been influenced by survey methods used and seasonality. Future survey work may reveal the presence of other species at this locality.

Key words: Herpetological Survey, CBFS, Accomack County

INTRODUCTION

The Chincoteague Bay Field Station (CBFS), formerly known as the Marine Science Consortium, was founded in 1968 by a consortium of member Colleges and Universities for the purposes of coastal education and research. The CBFS Campus has been located in Wallops Island, Accomack County, Virginia (adjacent to NASA's Goddard Flight Facility) since 1971. The CBFS campus encompasses academic buildings and supporting structures (e.g., offices, dormitories, cafeteria) and the campus property resides in a matrix of open fields bordered by woodlands consisting of approximately 15 hectares, which may support a variety of herpetofauna known from Virginia's Eastern Shore (Mitchell, 1999; Mitchell and Reay, 1999; Mitchell, 2002). In 1986, C. A. Pague and others collected a series of *Plethodon cinereus* in the vicinity of the CBFS campus which are preserved in the Carnegie Museum of Natural History (CM 129628-129672). However, no other records appear to be available regarding the occurrence of herpetofauna on the CBFS

campus. This report summarizes the results of an opportunistic herpetological survey conducted on the CBFS during the summer of 2017.

Survey Site

Site 1. Chincoteague Bay Field Station (CBFS) Campus (37°56'08.7"N 75°28'56.5"W). Due to the relatively small size of the CBFS campus, the entire campus was considered a single study site during this survey (Figure 1). The CBFS campus consists mainly of open fields with minor wet areas and drainage ditches, woodlands, and anthropogenic structures (i.e., roads, buildings).

Chincoteague Bay Field Station Survey



Figure 1. Aerial map depicting the Chincoteague Bay Field Station (CBFS) Campus.

MATERIALS AND METHODS

Surveys for amphibians and reptiles were conducted on the CBFS campus by the author from 2 July 2017 to 12 August 2018. Surveys techniques consisted of visual encounters and lifting and replacing cover objects. Digital photos were taken of each species observed when possible. A total of 30.5 hours of survey effort was conducted. The majority of survey effort (26 hours) consisted of nocturnal visual encounter surveys with a headlamp, during which all roads on the CBFS campus were walked (Figure 1) and any herpetofauna encountered as well as anuran calls heard were noted. These surveys were conducted 3-5 times per week and began immediately after dusk. The remainder of survey effort (4.5 hours) was spent searching under cover objects and conducting diurnal visual surveys.

RESULTS

A total of ten amphibian and reptile species were observed during the CBFS campus surveys in July and August of 2017, consisting of seven amphibian species and at least three species of reptile (skinks in the genus *Plestiodon* were observed but unfortunately could not be captured to

photograph and verify identity; see annotated checklist below). A total of 141 amphibians and reptiles were observed during the survey (Table 1). No injuries or parasites were observed on any amphibians or reptiles during the survey.

Table 1. Amphibians and reptile species and summary on numbers observed during the survey of the Chincoteague Bay Field Station (CBFS) campus during July and August 2017.

<u>Species</u>	<u>Total</u>
Amphibians	
<i>Anaxyrus fowleri</i>	92
<i>Hyla cinerea</i>	5
<i>Hyla chrysoscelis</i>	24
<i>Lithobates catesbeianus</i>	2
<i>Lithobates clamitans</i>	6
<i>Lithobates sphenoccephalus</i>	1
<i>Pseudacris crucifer</i>	2
Reptiles	
<i>Chelydra serpentina</i>	2
<i>Pantherophis alleghaniensis</i>	1
<i>Plestiodon sp.</i>	6
Total Number of Observations	141

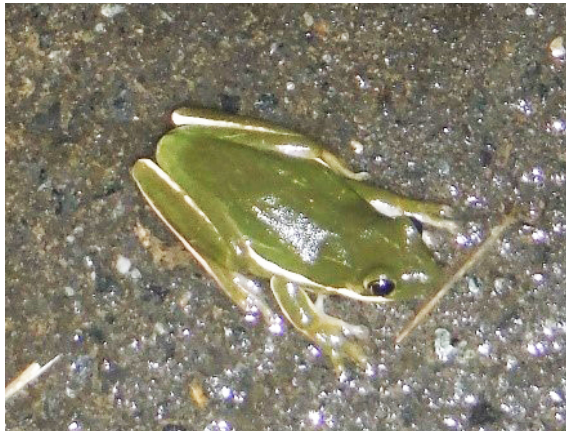
ANNOTATED CHECKLIST

Amphibians

1. *Anaxyrus fowleri* (Fowler's Toad). *A. fowleri* was the most abundant species found on the CBFS campus and commonly observed along roads at night and foraging under lights in the vicinity of campus buildings.



2. *Hyla cinerea* (Green Tree Frog). Four *H. cinerea* were observed at night on campus buildings. One individual was observed crossing Kearsarge Circle Road on the western side of campus during heavy rains. Calling of a few individuals was occasionally heard throughout the CBFS campus during rainy weather.



3. *Hyla chrysoscelis* (Cope's Gray Treefrog). *H. chrysoscelis* was commonly heard calling throughout the CBFS campus during rainy weather. Individuals were observed at night on campus buildings, along roads during rainy weather and calling from pools that formed in ditches along Mill Dam Road.

4. *Lithobates catesbeianus* (American Bullfrog). Two large *L. catesbeianus* were observed during heavy rains within a ditch along Mill Dam Road. Two small *L. catesbeianus* were observed along Enterprise

Street in the center of campus at night following a rainstorm.

5. *Lithobates clamitans* (Green Frog). Six *L. clamitans* observed consisted of small individuals observed on campus roads at night following rains.



6. *Lithobates sphenoccephalus* (Southern Leopard Frog). A single, small *L. sphenoccephalus* was observed in a grassy area adjacent to Enterprise Street on a dry night.



7. *Pseudacris crucifer* (Spring Peeper). Two *P. crucifer* were observed on Mill Dam Road at night during rainy weather. Calling was heard occasionally to the north of campus property in early July.

Reptiles

8. *Chelydra serpentina* (Snapping Turtle). Two young *C. serpentina* were observed within a ditch along Mill Dam Road during heavy rains.

9. *Pantherophis alleghaniensis* (Eastern Ratsnake). One *P. alleghaniensis* was observed in a field adjacent to Kearsarge Circle Road on the western side of campus on a dry night.



10. *Plestiodon* sp. (Skinks). Two skinks in the genus *Plestiodon* were observed under cover and four were observed diurnally on buildings on the northern portion of campus. These skinks were observed but could not be captured to confirm identification or photographed. Two skinks in the genus *Plestiodon* are known from Virginia's Eastern Shore: *Plestiodon fasciatus* (Common Five-lined Skink) and *Plestiodon laticeps* (Broad-headed Sink); and both species are known from Accomack County (Mitchell, 2002). Therefore, skinks observed could have been individuals of either or both of these species.

DISCUSSION

At least 43 species of amphibians and reptiles (excluding sea turtles) are known from Virginia's Eastern Shore (Mitchell, 1999; 2002). The herpetological species diversity

in this region is more depauperate in comparison to Virginia's mainland and other portions of the Delmarva Peninsula (Mitchell, 2002). This is likely due to a geological history of Virginia's Eastern Shore being inundated by more salt water historically, reducing colonization and/or establishment of amphibian and reptile species in this region, as well as recent habitat degradation by anthropogenic means (Mitchell, 1999; 2002). Excluding sea turtles, 41 species of amphibians and reptiles have been confirmed in Accomack County (Mitchell, 2002). This survey revealed the occurrence of ten amphibian and reptile species within the CBFS campus, all of which have previously been reported in Accomack County. Additionally, collection records for this location indicate the presence of *P. cinereus* at this site (however, this species was not found during this survey). Overall, this survey, in addition to this previous record for *P. cinereus*, suggests the presence of at least 11 amphibian and reptile species or approximately 27% of the known herpetological biodiversity of Accomack County utilize the CBFS campus.

Herpetological species diversity within Virginia's Eastern shore is biased toward a greater diversity of reptiles in comparison to amphibians (Mitchell, 2002). However, a greater number of amphibian's species were found during this survey and amphibian observations accounted for the vast majority (approximately 94%) of total herpetological observations. The greater number of amphibian species found and amphibian observations during this survey in comparison to reptiles may be the result of sampling methods, the season in which the sampling was conducted, or potentially the types of habitats in which these species may be found. For instance, the vast majority of herpetological observations during this survey were anurans on roads or near buildings during wet nights, when anurans

typically forage. Additionally, no salamanders, such as *P. cinereus*, were observed during this survey; however, this study was conducted during the warmest months of the summer when this species and other salamanders may retreat underground (Hulse et al. 2001; Meshaka and Wright, 2017).

Overall, herpetological observations during this survey typically consisted of few (i.e., < 10) observations of each species, with the exceptions of *A. fowleri* and *H. chrysozelis*. Because most areas within the study site were surveyed regularly during an approximate six-week period and animals were not marked, at least some observations during this survey were likely of the same individuals. However, relatively few observations of most species during this survey may suggest that many species observed on the CBFS campus utilize the study site as a temporary habitat or as a corridor of dispersal rather than permanently reside there. For instance, the lack of any streams, ponds, or other water sources with the exception of ephemeral drainage ditches adjacent to roads may exclude the CBFS campus from being a permanent residence for certain species observed (e.g., *C. serpentina*, frogs in the genus *Lithobates*), which may have been temporarily using the CBFS campus as a corridor for movement/foraging following heavy rains. However, relatively greater observations of *A. fowleri* and *H. chrysozelis* on the CBFS campus, as well as observation of individuals in multiple size classes and breeding aggregations of *H. chrysozelis* strongly suggests the residence of populations of both species on the CBFS campus. Furthermore, although *A. fowleri* were not observed breeding on-site during the survey period, potential breeding habitat for this species was present within the drainage ditches and moist areas observed during surveys (Green 2005). Future survey work utilizing other methodologies (e.g.,

cover board surveys) and survey work during other seasons may reveal a greater abundance of and additional herpetofauna occurring within the CBFS campus.

LITERATURE CITED

- Green, D.M. 2005. *Bufo fowleri* Hinckley, 1882, Fowler's Toad. In Lannoo, M. Amphibian Declines: The Conservation Status of United States Species. University of California Press, Oakland, California. 1115 pp.
- Hulse, A.C., C.J. McCoy, and E.J. Censky. 2001. Amphibians and Reptiles of Pennsylvania and the Northeast. Cornell University Press, Ithaca, New York. 419 pp.
- Meshaka, W.E. Jr. and Wright, D. 2017. Selected Life History Traits of the Eastern Red-backed Salamander, *Plethodon cinereus* (Green), at a Suburban Residence in South Central Pennsylvania. *Journal of the Pennsylvania Academy of Science* 91(2):95-104.
- Mitchell, J.C. 1999. Checklist and Keys to the Amphibians and Reptiles on Virginia's Eastern Shore. *Catesbeiana* 19(1):3-18.
- Mitchell, J.C. and K.K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia. Virginia Department of Game and Inland Fisheries, Richmond, Virginia. 122 pp.
- Mitchell, J.C. 2002. An Overview of Amphibian and Reptile Assemblages on Virginia's Eastern Shore, with Comments on Conservation. *Banisteria* 20(1):31-45.

ACKNOWLEDGEMENTS

I heartily thank the Chincoteague Bay Field Station and Bloomsburg University of Pennsylvania for facilitating my stay there during the summer of 2017 which made the work presented in this report possible, especially Thomas S. Klinger, Cynthia Venn, and Clay E. Corbin. I also thank two anonymous reviewers for helpful suggestions regarding this manuscript.