



Reptile & Amphibian Monitoring at Vicksburg National Military Park

Data Summary, Monitoring Year 2014

Natural Resource Data Series NPS/GULN/NRDS—2015/757



ON THE COVER

Box Turtle, *Terrapene carolinensis*, on Vicksburg NMP, 2014.

Photograph by: R. L. Woodman, Gulf Coast Inventory and Monitoring Network.

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Introduction

The Gulf Coast Inventory and Monitoring Network (GULN) of the National Park Service started implementation of its reptile and amphibian monitoring protocol (GRAMP) at three sites on Vicksburg National Military Park (VICK) in April 2011 (Figure 1). The GRAMP is a protocol developed by GULN in collaboration with Kurt Buhlmann of the University of Georgia, Savannah River Ecological Laboratory to provide basic herpetological assemblage monitoring at selected sites on network parks based on peer-reviewed standard sampling methods supported by a unified data management and analysis system (Woodman et al. 2015, in review). This annual report summarizes data collected at the VICK sampling sites in Monitoring Year (MY) 2014 and includes a summary of the GRAMP, extracts of data collected, and a list of amphibians and reptiles, with count by species, detected in MY2014. The complete data table for MY2014 is provided in Appendix A.

The GULN is located in portions of six states, spanning from Brownsville, Texas, to Pensacola, Florida, and north to Nashville, Tennessee, with main offices located in Lafayette, Louisiana. The network includes eight National Park Service (NPS) units: Big Thicket National Preserve (BITH), Gulf Islands National Seashore (GUIS), Jean Lafitte National Historical Park and Preserve (JELA), Natchez Trace Parkway (NATR), Palo Alto Battlefield National Historical Park (PAAL), Padre Island National Seashore (PAIS), San Antonio Missions National Historical Park (SAAN), and Vicksburg National Military Park (VICK). The network is currently (2014) implementing the GRAMP on six parks (GUIS, JELA, NATR, PAAL, SAAN, and VICK). Developmental sampling on two sites at BITH currently provides pilot baseline data in preparation for full implementation at those locations in FY2015.

Within its mission to preserve its Civil War history, Vicksburg NHP manages 1,748 acres of hilly loessial bluff habitat along the Mississippi River surrounding the city of Vicksburg, MS. The majority of the park is covered by second-growth hardwood forest and open fields. The remaining area consists of paved roads and maintained grassy lawns necessary for visitor access and historical interpretation. The land surface is dissected by small springs and deep erosional cuts with ephemeral streams and drainages, and much of the park is covered by a thick, closed forest canopy, creating a deeply shaded ground habitat. These environments provide habitat for a wide diversity of amphibian and reptile species, as evidenced by both recent faunal inventories and anecdotal observations of herpetofauna on roads and in the forest-edges of the park.

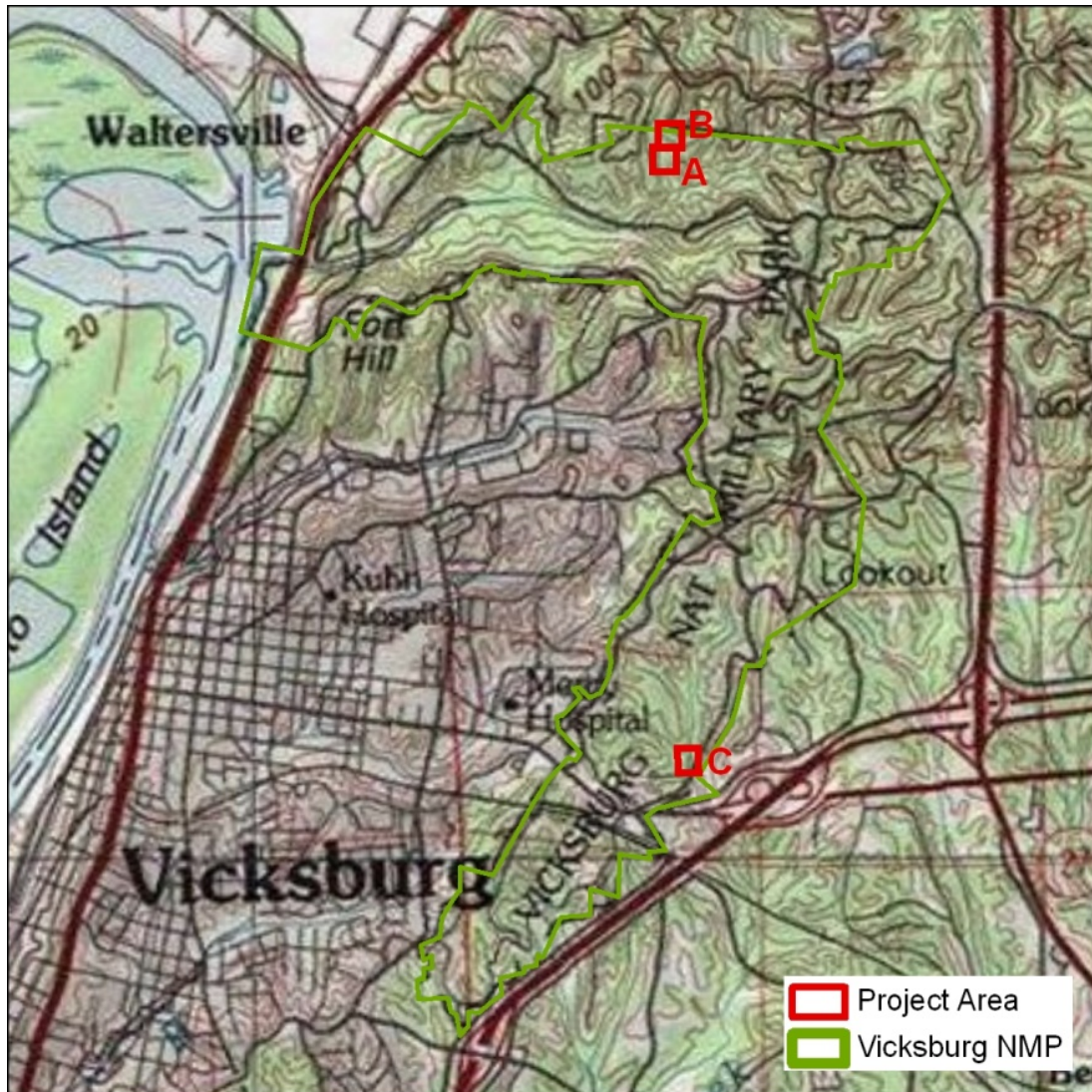


Figure 1. Overview topographic map showing the three VICK sampling sites. The project area and sampling areas are marked by the red boxes. VICK appears as a green “crescent” surrounding the urban center of Vicksburg, MS.

The Gulf Coast Network identified amphibians as a high priority vital sign during initial vital sign selection performed in 2004. Amphibians were combined with reptiles when the GULN Monitoring Plan (Segura et al. 2007) broadly accepted that sampling for many amphibians is equally effective for coexisting reptiles. Amphibians and reptiles (herps) are ranked highly among potential vital signs for GULN because: 1) herps are a diverse fauna associated with many habitats across all GULN parks, 2) some species come under legal mandates related to state-level protected status, and 3) herps constitute a diverse set of potential indicators of local and regional changes in ecosystems. Amphibians and their dependency on multiple habitats for developmental life stages, demonstrate sensitivities to anthropogenic habitat alteration, making them vulnerable to pollutants, habitat disruption and fragmentation. In addition, herps have collectively become the subject of growing resource management and conservation concern in response to their widespread decline at local and global scales.

Monitoring herps in parks is intended to benefit resource management efforts by providing insight into habitat and ecosystem change at the park and regional levels. This monitoring is designed to provide data comparable to that obtained by other research and inventory efforts, and can contribute to existing datasets, furthering our understanding of herpetofaunal population and community trends at multiple scales.

This annual report provides an overview of methodology and implementation of monthly sampling across one monitoring year (MY2014). Results presented here are limited to descriptive summaries of the annual findings and data about observed species and abundance presented at a monthly sampling scale. Additional analyses and synthesis reports will be completed every 4–5 years beginning in 2015, to include assessment of potential trends in species count, changes in relative abundance, and changes in measurable assemblage composition. Faunal trends will be evaluated in the context of recorded environmental data and with consideration of noted events, such as rainfall and significant anthropogenic and other impacts to local resources.

Methods

Sampling Design

Amphibian and reptile monitoring at VICK utilizes terrestrial coverboard (CB) and arboreal PVC-pipe (PVC) fixed-point sampling methods coupled with environmental conditional monitoring. CB and PVC sampling devices are permanently installed in fixed linear arrays (clusters) distributed in three accessible clearings in forested areas of the park (Figure 2). PVC arrays are co-located with CB arrays to simultaneously assess terrestrial and arboreal species within the selected sampling space.

The spatial distribution of CB and PVC constitute a fixed multiple-array sampling design where each cluster represents a discrete and statistically independent sample.

Each CB cluster consists of 20 coverboard panels deployed in a loose line approximately 5 m apart, alternating between wood and tin boards. Wood coverboards are of 2 cm thick untreated plywood and tin coverboards are of light gauge roofing tin. All boards measure 91.5 cm by 122 cm. Each co-located PVC cluster consists of five pairs of PVC pipes attached to trees located within the CB cluster area. Each PVC pair consists of one small pipe measuring 2.5 cm by 61 cm and one large pipe measuring 5 cm by 61 cm. Each pipe is capped on the bottom and outfitted with a drain hole and a nylon rope mounted along the interior length to allow mammalian bycatch to escape.

Initial start-points for each CB cluster were selected by simple randomization among five potential start-points in each sampling site, followed by deployment of CB panels in a line extending along the local vegetation and ground features in the area. Individual device locations are determined by natural micro-habitat and site qualities including spaces suitable for CB panels and trees large enough to host pipe-pairs (>15 cm dbh). All CB and PVC locations are mapped onto the project GIS layers using GPS location data. No baits, lures, added food, or chemical attractants are used in any sampling at VICK sites. All traps are of refugia-type and designed to allow for the escape of all fauna.

Total sampling effort consists of 3 CB clusters (a total of 60 panels), and 3 PVC clusters (a total of 15 pipe-pairs). The spatial distribution and proximal locations of VICK sampling devices are depicted in Figure 2.



Figure 2. Map showing the 3 VICK sampling areas and the associated CB and PVC arrays. The colored squares denote the alternating metal and wood panels in each array.

In addition to CB and PVC sampling, field crew record all individuals seen outside of sampling devices during sampling activities. These encounters are logged as “casual observations” (Cas Obs) and contribute to composite data on species richness and species-specific population descriptive parameters, such as mean size and sex-ratio estimation in the population, but are not considered in analyses utilizing device as a factor.

One data logger (HOBO Pro V2, by Onset, Inc.) is deployed within VICK PVC array A to provide long-term air temperature and relative humidity monitoring at 10-minute intervals throughout the monitoring year.

Sampling and Data Collection

Sampling emphasizes consistent collection of detailed, high-quality data on all encountered individuals to provide a reliable database for assessing assemblage composition and structure. CB, PVC, and Casual Observations all yield hand-specimens and photographic records.

All field crew are led by experienced field biologists with detailed familiarity with the taxonomy of regional herpetofauna. Performance of sampling events follows the methodology and procedures prescribed for each sampling method in GRAMP protocol SOP (Woodman et al. 2015, in review). All specimens are hand-collected where possible for detailed assessment. Data include location, time, species ID (when possible), body length and sex (when possible), and count, when multiple individuals of a type are observed but not all are handled and assessed.

Specimen information is recorded on paper field data sheets during sampling. Photographs are taken of collected specimens to support post-sampling taxonomic ID review. Specimens are handled with appropriate prophylaxis and technique as adapted from the ASIH Guidelines (Beaupre 2004) and specified in the GRAMP. All collected specimens are immediately released following processing at the collection point or site. Non-collected individuals (venomous snakes are never handled, other individuals may escape or avoid capture) are photo-documented during sampling procedures, and images provide confirmation of “no-catch” encounters for data records.

Monitoring Schedule

VICK sites are sampled on a monthly basis over each Monitoring Year (MY), defined as being from October 01 to September 30), for a total of 12 monthly sampling visits per MY. Each visit consists of one work-day: The sampling team sequentially samples CB and PVC clusters starting with a safety briefing at ca 0730 and typically completing CB and PVC sampling by 1130. The array sampling order is held constant over all visits to avoid random variation in yield which could result from time-of-day effects. All CB and PVC sampling are completed as early in a day as possible so as to reduce impacts on yield from increasing air and ground temperatures.

Data Handling

Data are recorded in the field on standard GULN paper field data sheets. The field crew submits completed data sheets to the GULN Data Manager and the GRAMP Project Leader for review and verification of taxonomic information. All data are entered into the GRAMP database following procedures specified in SOP 5 Data Entry of the GRAMP protocol (Woodman et al. 2015, in review). Project data are managed following procedures and standards specified in the GULN Data Management Plan (Granger 2007). Data are extracted from this database for analysis and reporting. The complete Monitoring Year 2014 faunal data are provided in Appendix A of this report. Data are also made available by going to the GULN Amphibian & Reptile Monitoring Project in the NPS Integrated Resource Management Applications (IRMA) portal at: <https://irma.nps.gov/App/Reference/Profile/2192506>.

Results

The complete VICK Project dataset is provided in Appendix A of this report. This project data table lists observation date, sampling location, sampling method, common and scientific name, and body length and sex (if determined) for each individual recorded. Key aspects of this dataset are summarized in the following tables and graphs by sampling method. All summary data are presented in a per-sampling-event format with cumulative totals for the MY where appropriate.

Sampling at the 3 VICK sites yielded a total of 103 individuals (74 amphibians, 29 reptiles) representing 14 species (7 amphibians, 7 reptiles) from all methods in MY2014. Three-lined salamander (*Eurycea guttolineata*, 19), together with toads in the genus *Anaxyrus* (16), accounted for 47% of all amphibian detections. The two most abundant reptiles were the common ground skink (*Scincella lateralis*, 14) and other skinks (*Eumeces* sp., 4), accounting for 62% of all reptiles observed. Two related *Anaxyrus* toad species are known on VICK; *A. americanus* and *A. fowleri*. As juveniles and some adults cannot be reliably identified to species, we pool and report them as *Anaxyrus* sp. in this data summary. Likewise, the skinks on VICK, broad-headed and five-lined (*Eumeces laticeps*, *E. fasciatus*, respectively), are pooled as *Eumeces* sp., as species identification requires specific scale-counts which are not consistently recorded. Where identification is considered reliable, individuals of both genera were recorded to species on project field data sheets.

Tables 1 and 2 present the summary counts of individual amphibians and reptiles, respectively, observed by sampling method (CB = coverboards, PVC = PVC pipes, Cas Obs = Casual Observations) by sampling month in MY2014. Note that the NOV 2013 sampling event was planned but cancelled due to adverse weather (NS = No Sample).

The total numbers of individual reptiles and amphibians observed across all methods vary among sampling events, with amphibians exhibiting both somewhat greater apparent variation between events and substantially greater “peak-abundance” than do reptiles (Figure 3).

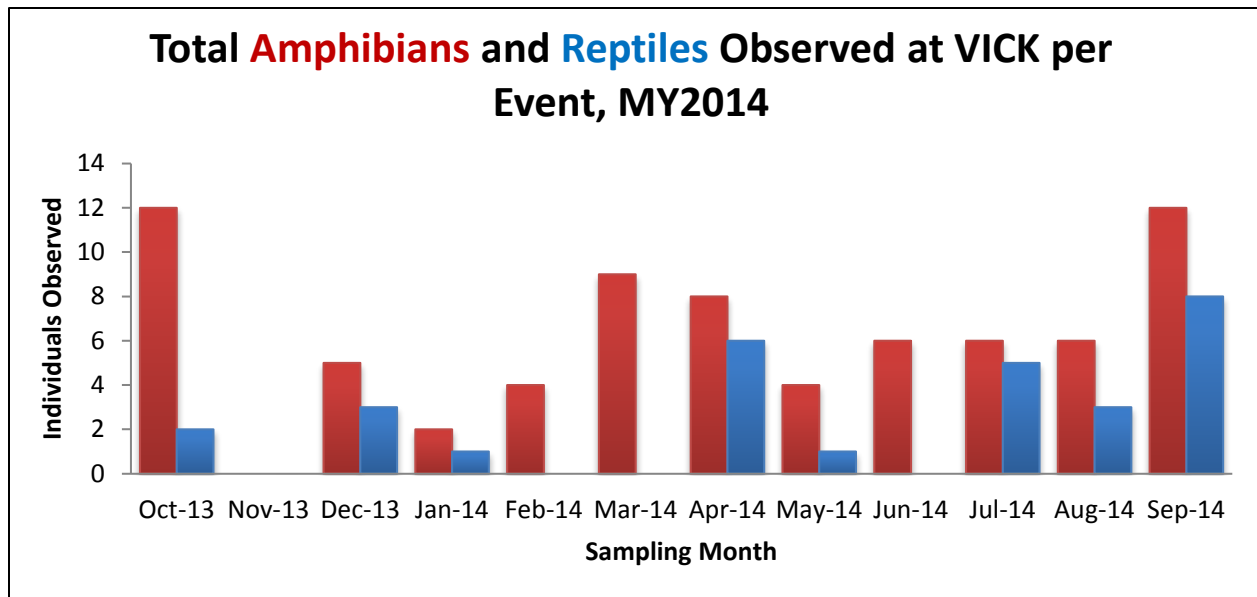


Figure 3. Total count of amphibians and reptiles observed at VICK over all methods by sampling month in MY2014. Note that no sampling was performed at VICK in NOV 2013, due to adverse weather.

Table 1. VICK Amphibians.

Sampling Method	OCT 2013	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	Total By Method
CB	1	NS	2	2	4	4	2	4	4	4	4	10	41
PVC	6	NS	3	0	0	5	5	0	0	0	1	0	20
Cas Obs	5	NS	0	0	0	0	1	0	2	2	1	2	13
Total n by Event	12	NS	5	2	4	9	8	4	6	6	6	12	74

Table 2. VICK Reptiles.

Sampling Method	OCT 2013	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	Total By Method
CB	0	NS	2	0	0	0	4	0	0	3	3	6	18
PVC	1	NS	0	1	0	0	0	0	0	0	0	0	2
Cas Obs	1	NS	1	0	0	0	2	1	0	2	0	2	9
Total n by Event	2	NS	3	1	0	0	6	1	0	5	3	8	29

Numbers of amphibian and reptile species observed at VICK sites in MY2014

Tables 3 and 4 present the counts of amphibian and reptile species, respectively, observed by sampling method (CB = coverboards, PVC = PVC pipes, Cas Obs = Casual Observations) by sampling month in MY2014. Note that the NOV 2013 sampling event was cancelled due to adverse weather (NS = No Sample). It should be noted that some species were observed in more than one sampling method in some events; individuals are seen in different sampling methods because they occur there (i.e., both CB and casual observation yield the same toad species). The total count column presents the counts of all species observed by method over the year. The yellow block denotes the total count of unique species observed by all methods during the MY.

Table 3. Number of amphibian species encountered MY2014.

Sampling Method	OCT 2013	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	Total By Method
CB	1	NS	2	2	3	2	1	3	3	1	3	2	4
PVC	2	NS	2	0	0	2	2	0	0	0	1	1	2
Cas Obs	2	NS	0	0	0	0	1	0	1	2	1	0	3
Total species by Event	5	NS	4	2	3	4	4	3	3	3	4	3	7

Table 4. Number of reptile species encountered MY2014.

Sampling Method	OCT 2013	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014	Total By Method
CB	0	NS	1	0	0	0	2	0	0	2	3	2	4
PVC	1	NS	0	1	0	0	0	0	0	0	0	0	1
Cas Obs	1	NS	1	0	0	0	2	1	0	2	0	2	4
Total species by Event	2	NS	1	1	0	0	4	1	0	3	3	4	7

Amphibian species count equaled or exceeded that of reptiles in 10 of 11 completed sampling events (Figure 4). This outcome reflects, in part, the varied seasonality and possibly low overall abundance of some species, together with the limited efficiency of available sampling methods. Notably, many snake species and some tree frogs known to be on the park did not appear in any sampling event in MY2014.

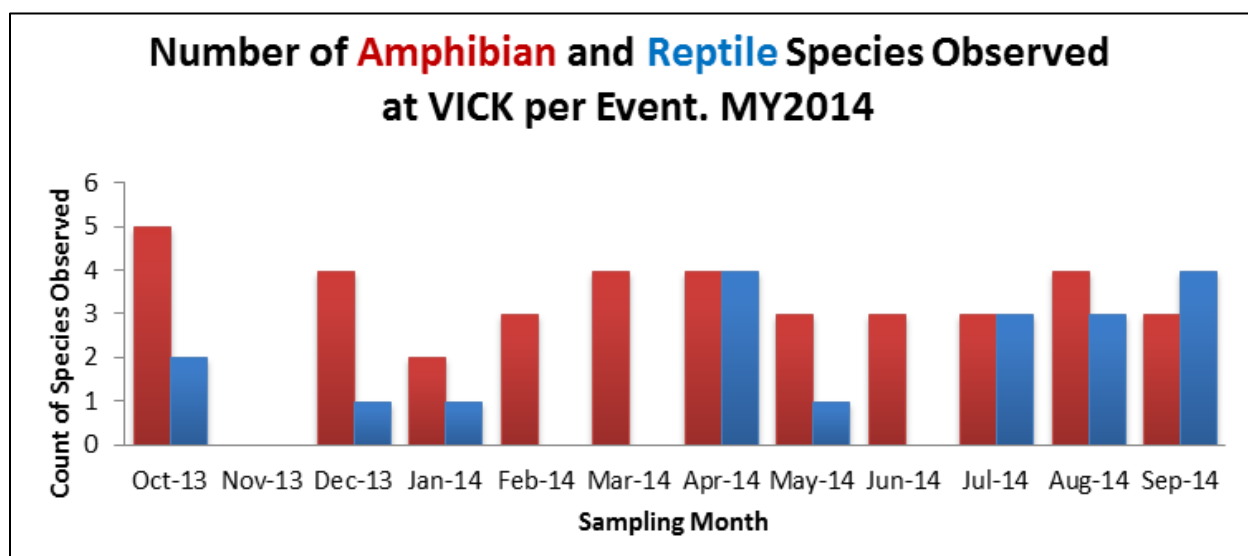


Figure 4. Numbers of amphibian and reptile species observed in 3 VICK sites in each sampling month in MY2014. Most species occurred in only one or two events in the year. Note that no sampling was done at VICK in NOV 2013, due to adverse weather.

The accumulation of species-detections over time

Amphibian and reptile species accumulation differed, in that amphibian accumulation plateaued as of February 2014, while new reptiles continued to be added through August of 2014 (Table 5, and visualized in Figure 5). Both amphibian and reptile accumulation were lower in MY2014 compared to that seen in previous MY, suggesting that the hypothetical maximum numbers of species likely to be detected by the sampling methods remains to be reached.

Table 5. Cumulative species-counts for amphibians, reptiles, and all herp species over MY2014. The highlighted counts in the SEP 2014 event are the cumulative totals for MY2014.

Taxon Group	OCT 2013	NOV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014	APR 2014	MAY 2014	JUN 2014	JUL 2014	AUG 2014	SEP 2014
Amphibians	5	5	6	6	7	7	7	7	7	7	7	7
Reptiles	2	2	3	3	3	3	4	5	5	6	7	7
Cumulative of all Species	7	7	9	9	10	10	11	12	12	13	14	14

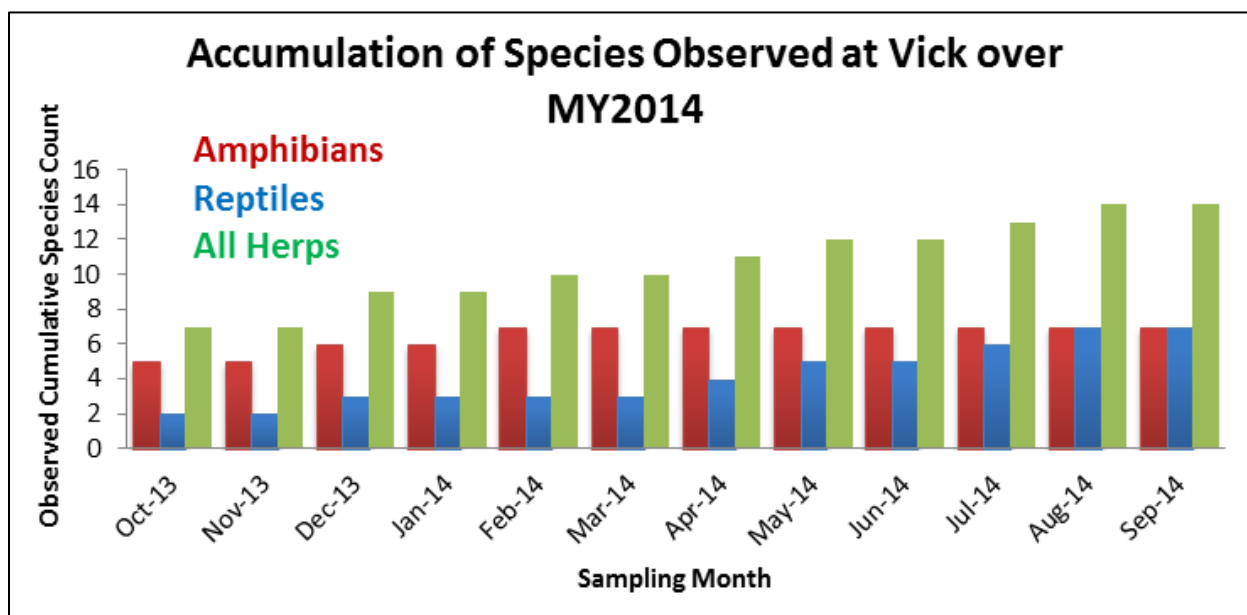


Figure 5. Cumulative count of amphibian, reptile, and “all herps” species observed at 3 VICK sites over MY2014. Notably, accumulation of new amphibian species plateaued as of February 2014.

The 14 amphibian and reptile species detected in VICK sampling in MY2014 are listed in Table 6 below. The numbers are the total count observed for each species over all sampling methods in the MY. Note that some observations are not consistently and reliably discriminated to species: 1) American toad (*Anaxyrus americanus*) and Fowler’s toad (*A. fowleri*) are combined as *Anaxyrus sp.*; 2) broad-headed skink (*Eumeces laticeps*) and five-lined skink (*E. fasciatus*) are combined as *Eumeces sp.*; and 3) gray treefrog (*Hyla versicolor*) and Copes gray treefrog (*H. chrysoscelis*) are combined as *Hyla versicolor/chrysoscelis*.

Table 6. Amphibian and Reptile species observed MY2014.

Amphibians			Reptiles		
Scientific Name	Common Name	No.	Scientific Name	Common Name	No.
<i>Anaxyrus</i> sp.	Toad	16	<i>Anolis carolinensis</i>	Green anole	2
<i>Desmognathus conanti</i>	Spotted dusky salamander	12	<i>Carphophis amoenis</i>	Eastern worm snake	3
<i>Eurycea guttolineata</i>	Three-lined salamander	19	<i>Diadophis punctatus</i>	Ring-necked snake	1
<i>Hyla versicolor/chrysoscelis</i>	Gray treefrog complex	14	<i>Eumeces</i> sp.	Skink	4
<i>Hyla cinerea</i>	Green treefrog	9	<i>Scincella lateralis</i>	Ground skink	14
<i>Lithobates clamitans</i>	Bronze frog	1	<i>Terrepene carolinensis</i>	Box turtle	2
<i>Pseudacris crucifer</i>	Spring peeper	3	<i>Thamnophis sirtalis</i>	Common garter snake	3

Air temperature and percent relative humidity recorded at VICK during MY2014

Air temperature (C°) and percent relative humidity (%RH) were recorded at 10-minute intervals using HOBO data-loggers throughout MY2014 to provide an environmental condition covariate to faunal data. Air temperature and %RH are presented as data-value traces over the MY2014 period in Figure 6 below. Note that these data traces continue from those reported for MY2013; the SEPT 2013 environmental data are available in the MY2013 VICK Data Summary Report (Woodman and Finney 2014). Formal assessment of possible relationships between environmental conditions and faunal parameters is an anticipated element in long-term trend analysis to be performed from 2015 on.

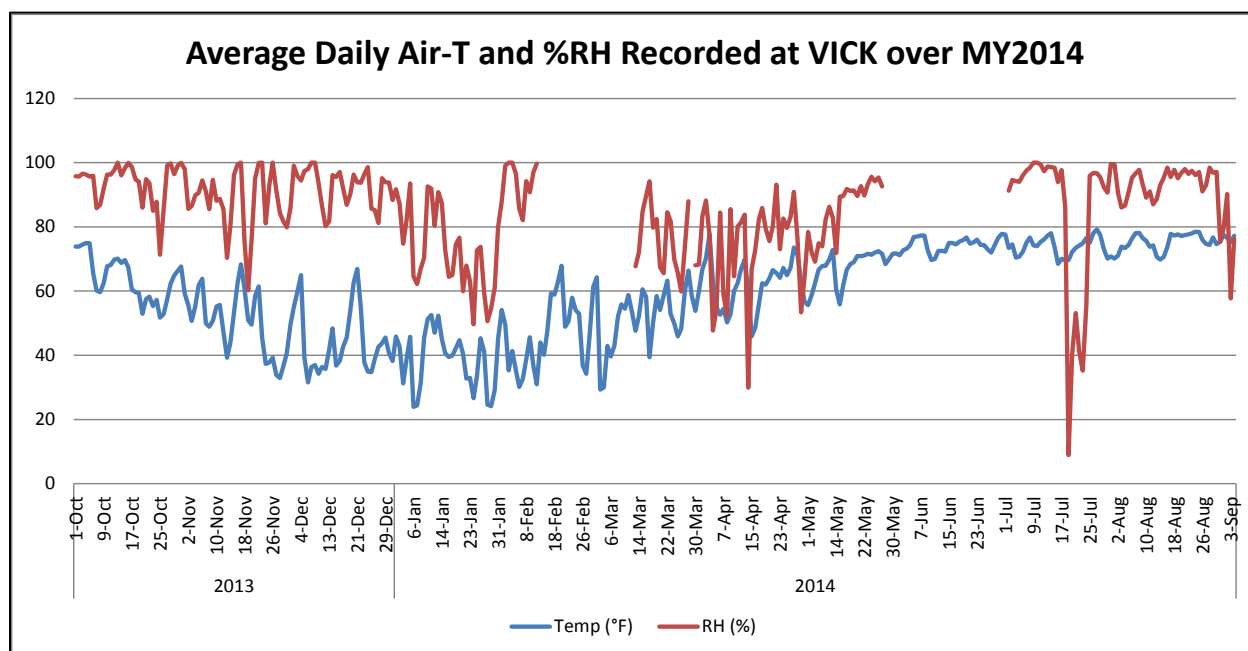


Figure 6. Daily mean air temperature (Air-T) and percent relative humidity (%RH) recorded at VICK from OCT 03 2013 through SEP 03 2014. The missing line-segments for %RH denote that the HOBO sensor had failed during these periods.

Discussion

The 14 herpetofaunal species (7 amphibians, 7 reptiles) detected during MY 2014 represent only 31 percent of the 45 species (18 amphibians, 27 reptiles) reported as being present or likely present on VICK according to the most recent herp inventory (Keiser 2002). It should be noted that many species reported in the inventory, including alligators, aquatic turtles, and snakes primarily associate with aquatic habitats, accounting for 16 species noted by Keiser (2002), and are unlikely to be detected in this monitoring effort. In addition, it is broadly recognized in herp monitoring and research (Graeter et al. 2010, Heyer et al. 1995) that many herp species are habitat specific and no sampling method is uniformly effective for all species even within its habitat range (i.e., CB panels sample terrestrial fauna, but are very unlikely to detect box-turtles nor equally detect all snakes, lizards, and salamanders present in the area.) In addition, sampling effort is limited in scope and range, and larger snake species may be relatively rare and thus unlikely to be encountered in smaller sampling efforts. From these factors, we accept that some species may be present and active in the sampling area but unlikely to be seen in our effort.

Notably, this effort detected more tree frogs in MY2014 (23) than were seen in MY2013 (9); at least three species of hylid tree frogs (*Hyla cinerea*, *H. squirella*, and *H. versicolor/chrysoscelis*) are seemingly abundant on VICK, based on frequently-heard chorusing, yet few are ever encountered in PVC samplers. The same sampling method is successfully used in other parks (GUIS, JELA, NATR) to sample many of the same species, yet few are seen on VICK. The cause for this low detection rate at VICK remains unknown. Notably, the squirrel tree frog, *H. squirella*, which comprised over 40% of tree frog observations on VICK in MY2013, did not appear in any MY2014 sample, even though related tree frogs were much more frequently observed this year. Overall, more amphibians (74 individuals), but fewer amphibian species (7) were observed in MY2014, compared to the 67 individuals representing 13 amphibian species observed in MY2013. All detected amphibian and reptile species are considered expected and typical of the region and habitats. No obvious pathologies or abnormalities were noted in any species.

MY2014 yielded 29 individual reptiles compared to 20 observed in MY2013. The number of reptile species observed dropped slightly from 8 in MY2013 to 7 in this MY. The MY2014 list of detected reptile species (Table 6) differs from that of MY2013, in that the copperhead (*Agkistrodon contortrix*) and speckled king snake (*Lampropeltis getula*) reported in MY2013 were not detected in MY2014 sampling, while the common garter snake (*Thamnophis sirtalis*) was reported from multiple MY2014 sampling events, but was not detected in MY2013. All observed reptiles are expected to be present on the park, albeit densities of snakes may be fairly low, leading to low probabilities of encountering most species with the sampling effort available.

Species accumulation for MY2014 differed substantially from that observed in MY2013 at VICK. MY2014 amphibian accumulation plateaued as of February 2014, while reptiles continued to add through August 2014. MY2013 saw both reptiles and amphibians accumulating throughout the MY. Accumulation of species richness is expected to level off with time, as the methods in use and available effort attain their maximum likely detection of species in the sampled area. The early

cessation of amphibian accumulation and lower number of species seen in MY2014 compared to that seen in MY2013 is a seemingly marked departure from previously-seen levels, but should not be construed as strongly indicating any “trend” in species richness or in local assemblage composition at this point, as the small overall numbers of individuals observed in all MY to-date do not provide a strong basis for robustly detecting small changes in species richness or abundance. As both amphibian and reptile detections continued over the year, and MY2014 total abundance was greater than that seen in MY2013, it is considered likely that the hypothetical maximum detected species count still remains to be attained, and it remains reasonable to anticipate that a few new species will be added to the VICK monitoring detection list in the near future.

The recorded air-T and %RH indicated no extreme variation or apparent departures from anticipated pattern and ranges in MY2014; the lack of large and abrupt changes likely indicates that no substantial weather changes occurred in the sampling period, and no major coastal storms occurred in the region in MY2014. This would suggest that faunal detections recorded in MY2014 did not reflect any strong impacts from unusual weather shifts or events.

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Appendix A.

VICK Project Data Table. The following table presents all faunal observation data recorded at the 3 VICK sampling areas in Monitoring Year 2014.

Unit	Start Date	Category	Species	Common Name(s)	Count	Trap Type
VICK	10/31/2013	Amphibian	<i>Anaxyrus</i> sp.	Toad	2	COBS
VICK	10/31/2013	Amphibian	<i>Pseudacris crucifer</i>	Spring peeper	3	COBS
VICK	10/31/2013	Reptile	<i>Thamnophis sirtalis</i>	Common garter snake	1	COBS
VICK	10/31/2013	Amphibian	<i>Eurycea guttolineata</i>	Three-lined salamander	1	CB
VICK	10/31/2013	Reptile	<i>Anolis carolinensis</i>	Green anole	1	PVC
VICK	10/31/2013	Amphibian	<i>Hyla cinerea</i>	Green treefrog	2	PVC
VICK	10/31/2013	Amphibian	<i>Hyla versicolor/chrysoscelis</i>	Gray treefrog complex	4	PVC
VICK	12/5/2013	Reptile	<i>Scincella lateralis</i>	Ground skink	1	COBS
VICK	12/5/2013	Amphibian	<i>Anaxyrus americanus</i>	American toad	1	CB
VICK	12/5/2013	Amphibian	<i>Desmognathus conanti</i>	Spotted dusky salamander	1	CB
VICK	12/5/2013	Reptile	<i>Scincella lateralis</i>	Ground skink	2	CB
VICK	12/5/2013	Amphibian	<i>Hyla cinerea</i>	Green treefrog	1	PVC
VICK	12/5/2013	Amphibian	<i>Hyla versicolor/chrysoscelis</i>	Gray treefrog complex	2	PVC
VICK	1/15/2014	Amphibian	<i>Desmognathus conanti</i>	Spotted dusky salamander	1	CB
VICK	1/15/2014	Amphibian	<i>Eurycea guttolineata</i>	Three-lined salamander	1	CB
VICK	1/15/2014	Reptile	<i>Anolis carolinensis</i>	Green anole	1	PVC
VICK	2/12/2014	Amphibian	<i>Desmognathus conanti</i>	Spotted dusky salamander	2	CB
VICK	2/12/2014	Amphibian	<i>Eurycea guttolineata</i>	Three-lined salamander	1	CB
VICK	2/12/2014	Amphibian	<i>Lithobates clamitans</i>	Bronze frog	1	CB
VICK	3/13/2014	Amphibian	<i>Desmognathus conanti</i>	Spotted dusky salamander	2	CB
VICK	3/13/2014	Amphibian	<i>Eurycea guttolineata</i>	Three-lined salamander	2	CB
VICK	3/13/2014	Amphibian	<i>Hyla cinerea</i>	Green treefrog	3	PVC
VICK	3/13/2014	Amphibian	<i>Hyla versicolor/chrysoscelis</i>	Gray treefrog complex	2	PVC
VICK	4/3/2014	Amphibian	<i>Anaxyrus fowleri</i>	Fowler's toad	1	COBS
VICK	4/3/2014	Reptile	<i>Eumeces</i> sp.		1	COBS
VICK	4/3/2014	Reptile	<i>Thamnophis sirtalis</i>	Common garter snake	1	COBS
VICK	4/3/2014	Amphibian	<i>Desmognathus conanti</i>	Spotted dusky salamander	2	CB
VICK	4/3/2014	Reptile	<i>Carphophis amoenus</i>	Eastern worm snake	2	CB
VICK	4/3/2014	Reptile	<i>Scincella lateralis</i>	Ground skink	2	CB
VICK	4/3/2014	Amphibian	<i>Hyla cinerea</i>	Green treefrog	3	PVC
VICK	4/3/2014	Amphibian	<i>Hyla versicolor/chrysoscelis</i>	Gray treefrog complex	2	PVC
VICK	5/8/2014	Reptile	<i>Terrapene carolina</i>	Common box turtle	1	COBS
VICK	5/8/2014	Amphibian	<i>Anaxyrus</i> sp.	Toad	1	CB
VICK	5/8/2014	Amphibian	<i>Desmognathus conanti</i>	Spotted dusky salamander	2	CB

Appendix A continued.

Unit	Start Date	Category	Species	Common Name(s)	Count	Trap Type
VICK	5/8/2014	Amphibian	<i>Eurycea guttolineata</i>	Three-lined salamander	1	CB
VICK	6/5/2014	Amphibian	<i>Anaxyrus</i> sp.	Toad	2	COBS
VICK	6/5/2014	Amphibian	<i>Anaxyrus</i> sp.	Toad	2	CB
VICK	6/5/2014	Amphibian	<i>Desmognathus conanti</i>	Spotted dusky salamander	1	CB
VICK	6/5/2014	Amphibian	<i>Eurycea guttolineata</i>	Three-lined salamander	1	CB
VICK	7/2/2014	Amphibian	<i>Anaxyrus</i> sp.	Toad	1	COBS
VICK	7/2/2014	Amphibian	<i>Hyla versicolor/chrysoscelis</i>	Gray treefrog complex	1	COBS
VICK	7/2/2014	Reptile	<i>Eumeces</i> sp.		1	COBS
VICK	7/2/2014	Reptile	<i>Scincella lateralis</i>	Ground skink	1	COBS
VICK	7/2/2014	Amphibian	<i>Eurycea guttolineata</i>	Three-lined salamander	4	CB
VICK	7/2/2014	Reptile	<i>Carphophis amoenus</i>	Eastern worm snake	1	CB
VICK	7/2/2014	Reptile	<i>Scincella lateralis</i>	Ground skink	2	CB
VICK	8/7/2014	Amphibian	<i>Anaxyrus</i> sp.	Toad	1	COBS
VICK	8/7/2014	Amphibian	<i>Anaxyrus americanus</i>	American toad	1	CB
VICK	8/7/2014	Amphibian	<i>Desmognathus conanti</i>	Spotted dusky salamander	1	CB
VICK	8/7/2014	Amphibian	<i>Eurycea guttolineata</i>	Three-lined salamander	2	CB
VICK	8/7/2014	Reptile	<i>Diadophis punctatus</i>	Ring-necked snake	1	CB
VICK	8/7/2014	Reptile	<i>Eumeces</i> sp.		1	CB
VICK	8/7/2014	Reptile	<i>Scincella lateralis</i>	Ground skink	1	CB
VICK	8/7/2014	Amphibian	<i>Hyla versicolor/chrysoscelis</i>	Gray treefrog complex	1	PVC
VICK	9/5/2014	Reptile	<i>Terrapene carolina</i>	Common box turtle	1	COBS
VICK	9/5/2014	Reptile	<i>Thamnophis sirtalis</i>	Common garter snake	1	COBS
VICK	9/5/2014	Amphibian	<i>Anaxyrus</i> sp.	Toad	4	CB
VICK	9/5/2014	Amphibian	<i>Eurycea guttolineata</i>	Three-lined salamander	7	CB
VICK	9/5/2014	Reptile	<i>Eumeces</i> sp.		1	CB
VICK	9/5/2014	Reptile	<i>Scincella lateralis</i>	Ground skink	5	CB
VICK	9/5/2014	Amphibian	<i>Hyla versicolor/chrysoscelis</i>	Gray treefrog complex	2	PVC

The Department of the Interior protects and manages the nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its special responsibilities to American Indians, Alaska Natives, and affiliated Island Communities.

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