

## **Blue Ridge Scout Reservation Surveys Resource Ramble I, II and III 2007-2009**

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### Introduction

The Resource Ramble is an annual survey of all taxonomic groups, geology, and archeological remains which occur on the Blue Ridge Mountains Boy Scout Reservation. The Blue Ridge Mountains Council of the Boy Scouts of America owns the largest Boy Scout camp in the eastern United States. The 6475 hectare (16,000 acre) camp lies mostly in Pulaski County and falls within the Blue Ridge physiographic province. The original and largest land purchase was made in 1957 with some smaller purchases made in the 1960s. The Scout Reservation is a beautiful area of rolling hills covered by a forest of mixed pines and hard woods including *Quercus* sp. (oaks), *Tsuga canadensis* (hemlock), *Pinus strobus* (white pine), *Pinus virginiana* (Virginia pine), and *Rhododendron* sp. Elevation of this property ranges from 670 m to 975 m (2200' to 3200'). Due to the elevation and substrate, the soil is well drained and dry. Drainage flows to the New River watershed basin.

### Materials and Methods

The Virginia Herpetological Society organized the amphibian and reptile survey for each of three Resource Rambles, between 2007-2009. We had a group ranging from 3 to 9 people operating each year. Collecting at each site included visual sightings, dipnetting, over-turning cover objects, listening for calling anurans, and hand capture. Each animal captured was inspected for overall health and disease, with observations documented on data sheets. Digital photos and/or digital sound recordings were collected for each species encountered when such equipment was available.

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### Survey Sites

Camp Ottari is located on the northeastern side of the Reservation and was surveyed on 13-14 April 2007 and 28-29 August 2009.

Site 1: Camp Headquarters and Cabins (36° 59' 42.8"N 80° 34' 42.4"W). Camp Ottari headquarters is a group of buildings set in a hardwood forest. There are paved and stone roads, and some pallets, to serve as flooring for scout tents erected in small villages.

Site 2: Lake Ottari (36° 59' 33.0"N 80° 34' 36.4"W) is a man-made lake from damming Little Laurel Creek at an elevation of about 730 meters. Since this is in the mountains, the substrate is mostly rock and precluded setting turtle traps since poles could not be driven into the rock bottom.

Site 3: Little Laurel Creek and floodplain west and upstream of Lake Ottari (36° 59' 27.2"N 80° 34' 52.5"W). Little Laurel Creek is a moderate sized creek with a rocky substrate. Both banks are surrounded by a mature forest. Immediately adjacent to the bank is a *Rhododendron* sp. thicket. Thick leaf litter and logs make up the substrate of the forest floor. A firing range and a blacksmith and wood working workshop are adjacent to the creek.

Site 4: Little Laurel Creek and floodplain east and downstream of Lake Ottari (36° 59' 30.4"N 80° 34' 32.7"W). This portion of Little Laurel Creek is wider than the creek at site 3 and has similar physical features including the surrounding forest. No large man-made structures are located at this site.

Camp Powhatan is located on the central western side of the Reservation and was surveyed on 13-15 June 2008.

Site 5: Lake Powhatan (36° 57'55.5"N 80° 39' 47.4"W). A man-made pond built by damming Big Macks Creek was surveyed on 13-14 June 2008.

Site 6: Created Marsh at Nature Center (36° 57' 55.2"N 80° 39' 42.1"W). This area at the Nature Center consists of a small pond and stream where water was recirculated in a small stream. It was surveyed 13-15 June 2008.

Site 7: Along Big Macks Creek northwest of Lake Powhatan (36° 58' 33.9"N 80° 40' 54.3"W). The area between Co. Rt. 655 into Camp Powhatan and Big Macks Creek was surveyed 13 June 2008.

Site 8: Intersection of Greenwood and Burks Run Trails, North of Camp Powhatan (N 36° 58' 23.4" 80° 39' 23.4"W). A site where some timbering had been done resulting in brush and wood piles within hardwood forest was surveyed on 14 June 2008.

Site 9: Along Big Macks Creek southeast of Lake Powhatan (N 36° 57' 30.5" W 80° 39' 34.5"). The steep sides of a small ravine, forested with hardwoods and rhododendron was surveyed the evening of 14 June 2008.

Site 10: Jersey Ridge Woodpile (N 36° 57' 45.8" W 80° 39' 51.0"). An open area at the top of a ridge where building debris and brush was piled was surveyed the afternoon of 14 June 2008 and the morning of 15 June 2008.

## Results

A total of 8 different species of reptiles were verified during the Resource Rambles. This includes 2 lizards, 5 snakes and 1 turtle species. A total of 19 species of amphibians were documented. This includes 8 different anurans and 11 species of salamanders. Altogether, 27 species of herps were documented for the Blue Ridge Boy Scout Reservation in Pulaski County. In the annotated checklist of species which follows, the numbers within brackets represent sites where species were found. These results are summarized in Table 1 which lists the number of individuals of all species found at the various sites.

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### Annotated Checklist:

#### Amphibians:

##### 1. *Anaxyrus americanus* (American Toad) [1, 2, 4, 8]

All the toads found at the Boy Scout Reservation were American Toads. They were found both foraging out in the open and under cover objects such as rocks and boards.

##### 2. *Hyla versicolor* (Gray Treefrog) [5, 6]

All of the Gray Treefrogs observed at the Boy Scout Reservation were *Hyla versicolor* based on the male mating calls. They were plentiful during June 2008 since that was during the breeding season. All of the individuals observed appeared to be males near sources of water, which were calling.

##### 3. *Lithobates catesbeianus* (American Bullfrog) [2, 5, 6]

Most of the Bullfrogs recorded were males calling. Most were calling from the two lakes, one at each camp, but at least one was seen in a small pond at the base of the dam of Lake Powhatan.

##### 4. *Lithobates clamitans* (Green Frog) [3, 4, 5, 6]

Green Frogs were heard calling in June 2008 from Lake Powhatan and the small man-made pond at the Nature Center at Camp Powhatan. Juveniles were found under rocks along Little Laurel Creek both east and west of Lake Ottari in the spring of 2007 and fall of 2009.

##### 5. *Lithobates palustris* (Pickerel Frog) [1, 2, 4]

Pickerel Frogs were observed around Lake Ottari and Little Laurel Creek east of the lake. One egg mass was observed in Lake Ottari in April 2007. None were seen during the 2008 survey of the Camp Powhatan side of the Reservation.

##### 6. *Lithobates sylvaticus* (Wood Frog) [2]

Wood Frogs were only observed as tadpoles in a road rut running along the northern shore of Lake Ottari.

Table 1. List of species	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10
<b>Amphibians</b>										
<b>Anurans</b>										
<i>Anaxyrus americanus</i>	2	1		1				1		
<i>Hyla versicolor</i>					calling	12				
<i>Lithobates catesbeianus</i>		1			calling	calling				
<i>Lithobates clamitans</i>			1	2	calling	calling				
<i>Lithobates palustris</i>	1	eggs		1						
<i>Lithobates sylvaticus</i>		50+ tadpoles								
<i>Pseudacris crucifer</i>		37+			calling	calling				
<i>Pseudacris feriarum</i>		3 ♂ calling								
<b>Salamanders</b>										
<i>Ambystoma maculatum</i>		eggs/ larvae								
<i>Desmognathus monticola</i>		1	37	35					18	
<i>Desmognathus quadramaculatus</i>			1	9					7	
<i>Eurycea cirrigera</i>		2	60	23			1		4	
<i>Eurycea longicauda</i>							1		2	
<i>Gyrinophilus porphyriticus</i>			1							

<i>Notophthalmus viridescens</i>		32				14	3				1	
<i>Plethodon cylindraceous</i>						1					8	
<i>Plethodon wehrlei</i>	3		19									
<i>Plethodon yonahlossee</i>											1	
<i>Pseudotriton ruber</i>			1									
<b>Reptiles</b>												
<b>Lizards</b>												
<i>Plestiodon fasciatus</i>								2	2			
<i>Sceloporus undulatus</i>	27	3				3		3	13		1	
<b>Snakes</b>												
<i>Agkistrodon cortortrix</i>						1			1			
<i>Crotalis horridus</i>												1
<i>Diadophis punctatus edwardsii</i>						1					1	
<i>Pantherophis alleghaniensis</i>	1								1			
<i>Storeria occipitomaculata</i>												1
<b>Turtles</b>												
<i>Terrapene carolina</i>	1											
<b>Total</b>	35	130+	120		91	3+	13+	7	17	42	3	

7. *Pseudacris crucifer* (Spring Peeper) [2, 5, 6]

Spring Peepers were both heard and observed around the larger bodies of water at both camps. Males were heard calling from a cattail thicket near the beach area (12+) and shrubs near the dam (20+) of Lake Ottari, as well as choruses from Lake Powhatan and the Nature Center pond at Camp Powhatan.

8. *Pseudacris feriarum* (Upland Chorus Frog) [2]

A small Chorus Frog chorus was heard on the afternoon of 13 April 2007 from the dam at Lake Ottari. No recordings were possible of the chorus and the males could not be located from their concealed calling sites. From the calls, the species was identified as *Pseudacris feriarum*. The chorus was silent that same evening when a group returned to listen for calling anurans.

9. *Ambystoma maculatum* (Spotted Salamander) [2]

Spotted Salamander eggs were found in Lake Ottari near the dam and larvae were observed in a ditch near the dam in April 2007. No adults were seen.

10. *Desmognathus monticola* (Seal Salamander) [2, 3, 4, 9]

Seal Salamanders were common in all the streams on both sides of the Boy Scout Reservation. They were present in large numbers regardless of the season of the year and were found under rocks along the margin of streams.

11. *Desmognathus quadramaculatus* (Black-bellied Salamander) [3, 4, 9]

Black-bellied Salamanders were found in Little Laurel and Big Macks Creeks. They were not as plentiful as Seal Salamanders. They were found under rocks along the edge of these streams.

12. *Eurycea cirrigera* (Southern Two-lined Salamander) [2, 3, 4, 7, 9]

Two-lined Salamanders were the most numerous species found at the Reservation. They were present in all the streams examined. Most were found under rocks along the margins of streams, however, one

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was found under the bark of a log slanted at an angle upwards from the margin of the stream 1.3 meters above ground level in August 2009.

### 13. *Eurycea longicauda* (Long-tailed Salamander) [7, 9]

Long-tailed Salamanders were found along Big Macks Creek both northwest and southeast of Lake Powhatan. One was found under a log pile away from the bank of the creek. The other two were found out foraging at night along the stream margin.

### 14. *Gyrinophilus porphyriticus* (Northern Spring Salamander) [3]

The only Spring Salamander was found under a rock in the dry stream-bed of Little Laurel Creek.

### 15. *Notophthalmus viridescens* (Red-spotted Newt) [2, 4, 5, 9]

Newts were found in both Lake Ottari and Powhatan. In April 2007 courtship and amplexus was observed in Lake Ottari. An eft was found along the floodplain of Big Macks Creek in a shale pit. Several adults were observed along Little Laurel Creek east of Lake Ottari. Five were under rocks along the banks of the stream. Two were found dead along the creek, one under a rock and another on top of a rock along the margin of the stream.

### 16. *Plethodon cylindraceus* (White-spotted Slimy Salamander) [4, 9]

Slimy salamanders were found under logs within the floodplains of Little Laurel and Big Macks Creeks. Both *P. cylindraceus* and *P. glutinosus* are known from Pulaski County. These slimy salamanders were identified using 6-phosphogluconate dehydrogenase as a species-specific marker after the methods of Highton et al. (1989) with *P. cylindraceus* controls from Bedford County and *P. glutinosus* controls from Dickenson County.

### 17. *Plethodon wehrlei* (Wehrle's Salamander) [1, 3]

Wehrle's Salamanders were found only in April 2007. Most were found under logs along the floodplain of Little Laurel Creek. One was found under the bark of a log in a pile, 0.5 meters from ground level. At the same site (3) another was found under a length of treated 2x2



inch piece of lumber. In April, adult males could be distinguished by their mental glands. Juveniles often had two rows of red spots down the back (Conant and Collins, 1991). At Site 3 a series were measured with snout-to-vent length and sex recorded for each specimen. These data are recorded in Table 2. The one male from this series regurgitated an earthworm when handled. Two gravid females and two juveniles were found under the same log.

Table 2. Snout to vent length and sex of 12 *Plethodon wehrlei* from Site 3.

SVL (mm)	Sex
63	gravid ♀
63	gravid ♀
56	gravid ♀
58	gravid ♀
59	gravid ♀
61	♂ with mental glands
45	Juvenile
42	Juvenile
41	Juvenile
53	Juvenile with red spots
50	Juvenile with red spots
--	Juvenile

18. *Plethodon yonahlossee* (Yonahlossee Salamander) [9]

The one Yonahlossee Salamander observed was found beside a log, at night, on very steep slope above Big Macks Creek at Camp Powhatan. It was evidently out foraging and may have had a “burrow” under the log near where it was found. Since this was the first specimen of this species many of the group had seen, it was kept for photographs the following day. It was then returned to the same vicinity and released under a log.

19. *Pseudotriton ruber ruber* (Northern Red Salamander) [3]

The only Red Salamander found during the surveys was within the cav-

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ity of a log at the Mountain Man Shooting Range near Little Laurel Creek, about 0.2 meters above ground level.

### Reptiles:

20. *Plestiodon fasciatus* (Common Five-lined Skink) [7, 8]

The Five-lined Skinks were observed sunning on logs in brush piles and under the bark of cut logs at Camp Powhatan in 2008.

21. *Sceloporus undulatus* (Eastern Fence Lizard) [1, 2, 4, 7, 8, 10]

The Eastern Fence Lizard was by far the most common lizard observed. A total of 50 individuals were observed over the three years. Both sexes and juveniles were commonly observed sunning on trees. In April 2007 one male was observed biting the neck of a female, presumably in courtship.

22. *Agkistrodon contortrix* (Northern Copperhead) [4, 8]

Both of the Copperheads observed were found under cover. The one at site 4 was under a log and the one at site 8 was under a board pile.

23. *Crotalis horridus* (Timber Rattlesnake) [10]

The one Timber Rattlesnake found was observed basking in a large log/debris pile on 15 June 2008. The debris pile was located on a cut-over ridge where the morning sun could penetrate the forest canopy, the perfect basking location for a large snake. Since this was the first Timber Rattlesnake seen by many in the group, it was extensively photographed with telephoto lenses. The snake seemed quite unbothered by the human presence and continued to sun in spite of our activity.

24. *Diadophis punctatus edwardsii* (Northern Ring-necked Snake) [4, 9]

There were only two Ring-necked Snakes observed during the Resource Rambles. Both were found under cover objects. The one at Site 4 was found under a log along Big Macks Creek and the other was uncovered only by furiously digging in a leaf and rock pile at the base of a tree along Lake Ottari in a futile search for a large skink which sought refuge from capture in the root system at the base of the tree on

which it was basking. The appearance of the Ring-necked snakes was typical of the Northern Ring-necked Snake with a complete collar and the absence of black half-moons on the venter.

25. *Pantherophis alleghaniensis* (Eastern Ratsnake) [1, 6]

The two Eastern Ratsnakes observed were found in the base camps at both Camp Ottari and Camp Powhatan. They were both observed crawling along the ground.

26. *Storeria occipitomaculata* (Northern Red-bellied Snake) [10]

The Red-bellied Snake found at Camp Powhatan was discovered under cover at the debris pile on Jersey Ridge mid-June 2008. Later in the same summer, camp staff found and photographed another near the base camp at Powhatan.

27. *Terrapene carolina* (Eastern Box Turtle) [1]

The only evidence of any turtle in any year was the shell of a Box Turtle found in the woods near the base camp at Camp Ottari in 2007.

## Discussion

From Table 1 it can be seen that a total of 8 reptile and 19 amphibian species were documented for the Blue Ridge Boy Scout Reservation during the three Resource Rambles. The amphibians are much better represented than the reptiles, primarily due to weather constraints during the three surveys. There was some sunny sky seen during most of the surveys, but all three surveys were marked by heavy and sometimes prolonged rain showers. This was not ideal weather for reptiles and probably accounts for some of the low numbers observed, both of individuals and number of species. Of the eight species seen, only three were out from under cover when seen (*Crotalis horridus*, *Pantherophis alleghaniensis*, and *Sceloporus undulatus*). Future surveys at the Reservation should target the late spring and summer months when reptiles are more likely to be active. Turtles are underrepresented in our surveys because of the nature of the two man-made lakes. Both Lake Ottari and Powhatan are formed by damming streams in valleys. The

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substrate is mostly rock with only a thin layer of sediments, insufficient for setting turtle hoop traps. Future survey efforts might try alternative methods for setting turtle traps.

The Virginia Department of Fish and Wildlife Information Service dataset lists 15 reptile species documented for Pulaski County, so there are obviously more species to be found from the Reservation. Of the 8 reptile species we did observe, 4 were not previously documented for Pulaski in this database. These species include *Crotalus horridus*, *Storeria occipitomaculata*, *Plestiodon fasciatus*, and *Sceloporus undulatus*. Mitchell (1994) lists the Five-lined Skink and Eastern Fence Lizard as present for Pulaski County. Both Linzey and Clifford (1995) and Tobey (1985) list *Crotalus horridus* as being present in Pulaski County; however Mitchell (1994) lists the Rattlesnake as unvouchered for Pulaski County, with reports from Snowville and Camp Powhatan. Rattlesnakes have been previously observed by Camp Staff but have not been formally documented previously. A photographic voucher was taken for the *Crotalus horridus* observed in 2008, and deposited in the VHS Digital Archive (# 143). *Storeria occipitomaculata* was also not listed in the Virginia DGIF Database, Tobey (1985), Linzey and Clifford (1995), Mitchell (1994) or Mitchell and Reay (1999). A voucher of the specimen we found in 2008 has been deposited in the Liberty University Natural History Museum (#701). The same summer we observed the Red-bellied Snake, Camp Staff later sent us a digital photo of a second specimen they had captured, photographed and released, asking for a positive identification. This digital photo has also been placed in the VHS Archive (#145). One large skink was observed but not captured during the 2009 survey on a tree near Lake Ottari which may have been *Plestiodon laticeps*. Future survey efforts during warmer summer months should also place efforts at checking the lake margin for Broad-headed Skinks. They have been documented for Montgomery County just to the east of Pulaski, and their presence in eastern Pulaski County is not unreasonable.

The Resource Rambles did a much better job at documenting amphibians than reptiles. The Virginia DGIF Information Services database

lists 25 amphibians as documented for Pulaski County, and we found 17 of these. Most of the anurans we found are widely distributed in western Virginia, such as *Anaxyrus americanus*, *Lithobates catesbeianus*, *L. clamitans*, *L. palustris*, *L. sylvaticus*, and *Pseudacris crucifer*. Although *Pseudacris feriarum* is perhaps not common in western Virginia, there are multiple reports for Montgomery County to the east so it is not unusual to find it in eastern Pulaski County. With all the records for western Montgomery County, it is surprising that no one has previously documented *Hyla versicolor*. Although not listed in the DGIF database, Mitchell and Reay (1999) or Tobey (1985), they were commonly found at Camp Powhatan. This probably reflects the poor history of surveys for the county rather than an unusual find. The Gray Treefrog was photographed and a digital image placed in the VHS Digital Archive (#142). Because we were there in June, the males could be identified by their mating call. April and August at Camp Ottari was outside the normal peak of mating calls so they are not yet documented from the eastern side of the Reservation. We were surprised not to have found *Anaxyrus fowleri*. There are scattered records for Fowler's Toad in western Virginia, including Pulaski County. There is sandy soil in the stream valleys and what would appear to be suitable habitat, particularly along the sandy beaches created at Lake Ottari and Powhatan.

Likewise, most of the salamanders found are widely distributed in western Virginia, such as *Ambystoma maculatum*, *Desmognathus monticola*, *D. quadramaculatus*, *Eurycea cirrigera*, *E. longicaudata*, *Gyrinophilus porphyriticus*, *Notopthalmus viridescens*, *Pseudotriton ruber*, and *Plethodon cylindraceus*. Therefore, there were no unusual finds. *Plethodon wehrlei* appears to be more abundant to the east in Montgomery and Floyd Counties, but is known from eastern Pulaski County where we surveyed. We found it interesting that while they seemed somewhat abundant in April, we did not find them in June or August although there were rains and what appeared to be good conditions for salamanders.

One of the most surprising finds was that of the Yonahlossee Salamander (*Plethodon yonahlossee*). Camp Staff had marked on our map

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“endangered salamander” at Camp Powhatan for the area surrounding Little Macks Creek south of where it joins Big Macks Creek but they could not tell us what endangered species the mark referred to. Other than *Cryptobranchus alleganiensis*, we were not aware of any salamanders with special status likely to occur in this area. After a good rain on 13 June 2008 some of the survey team went out at night walking Big Macks Creek and the very steep slopes above the creek. After some time of searching we were finding many of the same species we had seen earlier in the day. Then, we found an adult *Plethodon yonahlossee* in full color sitting out in clear view, beside a log. It was a splendid sight!

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