

Appalachian Herpetology
Survey of Reptiles and Amphibians at the Selu Conservancy, Dewese Property, and
Dalrymple Property located in Montgomery County and Giles County, Virginia

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Introduction:

For week one, our field research sites for observing reptiles and amphibians consisted of three different properties two of which were located in Montgomery County and the other in Giles County. Selu Conservancy was found in 1989 after John Bowles donated 185 acres of his inherited land to Radford University, which was then expanded many years later to a total of 380 acres that lies along the Little River (History of Selu). Selu was named for the mythical Cherokee meaning grandmother corn-spirit by a poet named Marilou Awiakta (History of Selu). Selu Observatory is located just a few miles from Radford in Montgomery County, and is home to numerous trails, beautiful views, and provides a setting for classes and research projects.

Montgomery County was named after General Richard Montgomery who died during the American Revolutionary War in 1755 while attempting to capture Canada (Montgomery County, Virginia Genealogy). It was established in 1777 from Fincastle County. Montgomery County is part of the Blacksburg, Christiansburg, and Radford, Virginia areas. The County lies in the Ridge and Valley province and approximately 60% of the county is forested. 7% of that area is located in the Jefferson National Forest (Forestry in Montgomery County, Virginia). During our field research, we surveyed two properties in Montgomery County, the Dewese property and Selu.

Giles County was established in 1806 and named after William Branch Giles (Giles County Virginia History and Genealogy). It is home to Mountain Lake which is one of the only two natural freshwater lakes in Virginia. The last place we surveyed for week one was the Dalrymple property in Giles. Doug and Claire Dalrymple own approximately 300 acres in the White Gate Community which contains multiple streams, sandstone caves, grassy fields, and mixed hardwood forest areas.

Study Sites:

Selu Conservancy:

This area consisted of undisturbed grassfields, hardwood forest, walking trails, and small stream/pond areas stretched out across 380 acres of land. There was a variety of tree and plant species throughout the property.

Site 1: Burn Field/Garden Area. The area consisted of highgrass fields on one side with high grass areas on the outskirts of the hardwood forest on the other side with an access trail in between them.

Site 2: Dr. Smalls Spring Pond Area. Within the Selu Conservancy there is a small spring pond area just to the right of the walking trail past the Burn Field/Garden area. The area is surrounded by leaf litter, trees, and small shrubbery.

Site 3: Mixed Hardwood Forest. A westward facing slope with a small stream dividing the area near the cemetery located on the Selu Conservancy.

Site 4: Gravel Roads. Neighboring cattle fields right before the access gate to the Selu Conservancy.

Dewese Property:

This area included a fire road, secondary succession habitats, mixed hardwood forest, and a partially dried up stream in Shawsville, Virginia. There were various plant and tree species throughout the property.

Site 1: Secondary Succession Environment. Parallel to the fire road on both sides for less than a mile long.

Site 2: (N 37.116646, W -80.294613) Left side of the edge of the fire road on a flat surface approximately one mile from the road.

Site 3: Mixed Hardwood Forest. Both sides of fire road. Mixed plant species along trail with various rocks and logs

Site 4: Partially Dried Stream. At the end of the fire road. Water started to appear in sections of the stream further up into the forest. Various rocks and leaf litter within stream.

Dalrymple Property:

Throughout approximately 300 acres of land there are numerous sandstone caves, small streams, maintained grass fields, rock quarries, maintained walking trails, and numerous species of plants and trees surrounding the area.

Site 1: Double Door Cave. The cave is located approximately half a mile away from the barn on the property within a ravine adjacent to a small stream.

Site 2: Small Stream. Adjacent to the double door cave approximately half of a mile from the barn on the property.

Site 3: Waterfall. Directly below the camper on the property the waterfall transitions into a small stream going through a section of the property. Surrounded by stinging nettle and various other vegetation.

Materials and Methods:

Before surveying, all participants were certified in Working the the IACUC. Participants arrived to Selu property at 12:00 P.M. and the Dewise and Dalrymple property at 11:00 A.M. Participants were informed on how to safely turn over rocks and logs, as well as exploring the caves. Surveys usually consisted of a time constraint of thirty minutes. During surveys, many methods of collection included: flipping rocks/logs, inspecting leaf litter and cave walls/crevices, capturing organisms, placing them into plastic bags for further observation and identification as well as conducting night cruising surveys. All animals that were captured were released back where they were discovered on site.

Property	Selu	Dewise	Dalrymple
Number of surveyors	10	10	10
Hours spent observing/surveying	2.66	1.75	3.5
Night cruise?	Yes	No	Yes

Table 1. Time spent surveying at each property, 16-18 May 2018

Results:

Selu Conservatory: A total of four different species were found on Selu’s property for our first day. Three out of the four species that were found were amphibian species (two salamander species and one frog species) and the other was a reptile (one snake species). A total of six animals were collected from three different sites on the Selu property. On the second night, a toad was found on a gravel road on the Selu property.

Species	Site 1	Site 2	Site 3	Site 4
Reptiles:				
Snakes				
<i>Diadophis punctatus</i>	1		1	
Amphibians:				
Salamanders				

<i>Plethodon glutinosus</i>	1			
<i>Plethodon wehrlei</i>	2			
Frogs				
<i>Hyla versicolor</i>				1
Toads				
<i>Anaxyrus americanus</i>				1

Annotated Checklist

Reptiles:

1. *Diadophis punctatus* (Northern Ring-necked Snake) was found at site 1 and 2. One of the snakes were found under debris along the edge habitat. Another was found under a large rock in a mixed hardwood forested area during a microhabitat survey.
2. *Plethodon glutinosus* (Northern Slimy Salamander) was found at site 1. This salamander was found under a cover board near a small body of water. It had 13 costal grooves, a light chin, and a dark belly. His weight was 1.9 grams, the snout-to-vent length was 46.59 millimeters and its tail length was 22.1 millimeters.
3. *Plethodon wehrlei* (Wehrle's Salamander) was found at site 1. One wehrle's salamander, a juvenile was seen under a cover board beside the pond. It had 17 costal grooves with some bronze flecking. Its weight was 1 gram, its snout-to-vent length was 26.3 millimeters and its tail length was 21.15 millimeters. The tail was complete. The other wehrle's salamander was found under a large rock within close proximity of the pond. Its weight was 3 grams, the snout-to-vent length was 33 millimeters, and the tail length was 37.8 millimeters.

Amphibians:

4. *Hyla versicolor* (Gray Treefrog) was found at site 4. This frog was seen during a night driving survey and it was spotted on the Selu property on the gravel road heading back to the retreat center.
5. *Anaxyrus americanus* (American Toad) was found at site 4. The toad was found returning from a night driving survey on the side of a gravel road on the Selu Property right before passing through the entrance gate.

Dewese property: A total of six different species were found during the survey of the property. Two of the species were reptiles (one snake and one turtle) and the remaining four were amphibians, specifically salamanders. A total of sixteen specimens were collected between the four sites.

Species	Site 1	Site 2	Site 3	Site 4
Reptiles				
Snakes				
<i>Carphophis amoenus</i>	1			
Turtles				
<i>Terrapene carolina</i>		1		
Amphibians				
Salamanders				
<i>Notophthalmus viridescens viridescens</i>			6	
<i>Desmognathus fuscus</i>				4
<i>Desmognathus ochrophaeus</i>				3
<i>Pseudotriton ruber</i>				1

Annotated Checklist

Reptiles:

1. *Carphophis amoenus* (Eastern Worm Snake) was found at site 1 underneath a rock in secondary succession. The specimen was identified as a male. Measurements were taken and revealed that the snake had a SVL of 19.2 mm and a tail length of 4.7 mm.
2. *Terrapene carolina* (Eastern Box Turtle) was found at site 2 along side of the fire road in the grass. Based off of its anuli, the species could possibly be 16 years old. The carapace was measured at 67.4 mm in height, 132.7 mm in length, 100.6 mm in width, and approximately 540 g in weight.

Amphibians

3. *Notophthalmus viridescens viridescens* (Eastern Red-Spotted Newt) was found at site 3 along various vegetation and rocks along the fire road. One specimen appeared to be a male and had 14 red spots along its back, with 7 on each side.
4. *Desmognathus fuscus* (Northern Dusky Salamander) was found at site 4 in various parts throughout the stream, mainly under rocks and logs and in stagnant pools.
5. *Desmognathus ochrophaeus* (Allegheny Mountain Dusky) was found at site 4 in various parts throughout the stream, mainly under rocks and logs and in stagnant pools.

6. *Pseudotriton ruber* (Red Salamander) was found in site 4. The specimen appeared to be a larvae. It was found under a small rock within the stream.

Dalrymple property: A total of 6 species were found on the Dalrymple property at three different sites. All of these species were salamanders. Overall, there were 22 animals collected between the two different sites.

Species	Site 1	Site 2	Site 3
Amphibians:			
Salamanders			
<i>Eurycea lucifuga</i>	8		
<i>Plethodon glutinosus</i>		2	
<i>Desmognathus fuscus</i>		1	
<i>Plethodon hoffmani</i>		1	
<i>Desmognathus monticola</i>			7
<i>Eurycea cirrigera</i>		1	2

Annotated Checklist

1. *Eurycea lucifuga* (Cave Salamander) was found at site 1. There was a total of 8 cave salamanders found inside a cave located near a stream on the dalrymple property.
2. *Plethodon glutinosus* (Northern Slimy Salamander) was found at site 2. It was located under a big rock near the stream.
3. *Desmognathus fuscus* (Northern Dusky Salamander) was found at site 2. This northern dusky salamander was found under a rock that was partially in the stream.
4. *Plethodon hoffmani* (Valley and Ridge Salamander) was found at site 2. It had 20 costal grooves and some bronze flecking.
5. *Desmognathus monticola* (Seal Salamander) was found at site 3. There were a total of 8 seal salamanders that were found during the woodland stream survey, mainly underneath rocks located in and beside the stream.
6. *Eurycea cirrigera* (Southern Two-lined Salamander) were found at both site 2 and site 3. The first Southern Two-lined Salamander seen at site 2 was found underneath a rock located very close to the stream. The other two, Two-lined Salamanders were found at site 3 both under rocks in the stream.

Discussion:

A total of 15 different species of reptiles and amphibians were observed during the first week of field research for the Appalachian Herpetology course at Radford University. There

were 45 organisms total that were collected and identified between the three properties visited. All reported species were known to be located within the two counties surveyed. One species that was collected and observed in the Dalrymple property was named after one of the professors that taught at Radford University. This species was *Plethodon hoffmani* (Valley and Ridge Salamander). Lizards were not reported at any of the properties. This may have been due to the weather being rainy or the habitats searched were not suitable for lizards.

In the future, these surveys could be conducted in drier weather and/or a different time a year to see if any other species may present themselves at these locations. More locations on the properties may also show more or different species than what was collected. Access to equipment may be useful in the future as well. There were several caves that could have been explored on the Dalrymple property if proper equipment was available to the group.

Proper management and conservation of all the species collected and to still be collected is very important to population statuses of three properties limited. Salamanders especially have a narrow habitat range in which they thrive and need the habitat to be preserved. All of the properties surveyed seemed to be doing a great job of conserving the habitats by not having a lot of development on the land and there were a high number of salamanders present. Salamanders are a key indicator of how the habitat is doing because they have such a narrow habitat range. If anything changes within the habitat, salamander populations are the first species to show any changes.

References:

Forestry in Montgomery County, Virginia. Virginia Department of Forestry. Retrieved from <http://www.dof.virginia.gov/locations/montgomery.htm>

Giles County Virginia History and Genealogy. Retrieved from <http://genealogytrails.com/vir/giles/>

History of Selu. Selu Conservancy. Radford University. Retrieved from <https://www.radford.edu/content/selu/home/selu-about/selu-history.html>

Montgomery County, Virginia Genealogy. Retrieved from https://www.familysearch.org/wiki/en/Montgomery_County,_Virginia_Genealogy#Montgomery_County.2C_Virginia_Courthouse