Results of the Thirteenth Annual HerpBlitz: The Cedars Natural Area Preserve, Lee County Virginia.

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Abstract: The Cedars Natural Area Preserve in Lee County was surveyed in May, June and August 2018. A total of twenty-eight species (8 anurans, 9 salamanders, 2 turtles, 3 lizards and 6 snakes were reported, including new county records for *Scincella lateralis* and *Virginia valeriae*. A previously unvouchered record for *Pseudacris feriarum* was verified. Some rarely seen species such as *Aneides aeneus, Eurycea lucifuga,* and *Lampropeltis nigra* were observed.

Key Words: Herpetological Survey, The Cedars Natural Area Preserve, Lee County, *Aneides aeneus, Eurycea lucifuga, Pseudacris feriarum, Graptemys geographica, Lampropeltis nigra, Scincella lateralis,* and *Virginia valeriae.*

INTRODUCTION

The Cedars Natural Area Preserve (CNAP) consists of 820 hectares (2024 ac) of land in 24 different tracts in Lee County Virginia. The land is being preserved because it lies within a karst region characterized by thin soils over easily dissolved limestone, which produces a rolling, rocky landscape with numerous sinkholes and caves. Because of the thin soil and underlying bedrock, most trees have difficulty growing, producing an arid landscape with numerous grassy meadows. It is an open area within an otherwise forested region. It is named for the Red Cedar (*Juniperus virginiana*) which grows throughout the area (Calcareous Glade).

The CNAP began in 1996 with the purchase of 20 ha (50 ac) by The Nature Conservancy. The land was transferred to the Virginia Department of Conservation and Recreation the following year, and they currently oversee management of the area. Additional tracts of land are purchased as funds and the land become available. An additional 60 ha (250 ac) was purchased recently in 2015. The Cedars region covers an area approximately 50-65 km (30-40 mi) along the Powell River in the Ridge and Valley Physiographic Province. The Powell River joins the Clinch, then Tennessee, and finally the Ohio before flowing into the Mississippi and the Gulf of Mexico.

There are numerous rare plants adapted to the thin nutrient-poor soil and preservation of these species is one of the primary conservation goals of the Preserve. CNAP is also home to the Lee County Cave Isopod *Lirceus usdagalun* found only in three caves in Lee County, all connected by groundwater. The Lee County Cave Isopod is federally listed as an endangered species (US Fish & Wildlife Service, 1997).

The DGIF's FWIS Database currently lists 19 reptile species documented for Lee

County, including 7 tiered species (tier 3-4). There are also 29 amphibians listed, including 5 tiered species (tier 1-4). Amphibians and reptiles found in Lee County which are not common elsewhere include the Hellbender (*Cryptobranchus a. alleganiensis*), Mudpuppy (*Necturus maculosus*), Green Salamander (*Aneides aeneus*), Black Mountain Salamander (*Desmognathus welteri*), Cave Salamander (*Eurycea lucifuga*), Kentucky Spring Salamander (*Gyrinophilus porphyriticus duryi*), Midland Mud Salamander (*Pseudotriton montanus diastictus*), Southern Ravine Salamander (*Plethodon richmondi*), Eastern Black Kingsnake (*Lampropeltis nigra*), Northern Map Turtle (*Graptemys geographica*), and Stripe-necked Musk Turtle (*Sternotherus minor peltifer*). The CNAP was chosen as a survey site partly because of the opportunity to see many less-common species, the unique nature of the Cedar Glades, and the relatively few previous surveys in this most southwestern county in Virginia.

There have been four surveys in Lee County since 1958 (Burger, 1974; 1975; Mitchell and Pague, 1984; Roble and Hobson, 2002; Meade, 2003). Burger (1974, 1975), during a 10-day collecting period lasting from 9-18 July 1958 in the Jonesville area and in the Cumberland Gap National Historical Park, recorded 19 species of amphibians and 18 species of reptiles. Mitchell and Pague (1984) conducted a 13-day survey from 1-13 July, in 46 sites spread across Lee County. Their efforts yielded 25 species of amphibians and 21 reptiles. Roble and Hobson (2002) surveyed CNAP when it contained only 287 ha (709 ac), from 1995-2002. They conducted 1-2 day surveys during which they overturned rocks and logs, examined caves and sinkholes, recorded incidental observations, and included one night of road cruising. They found 24 species including 15 species of amphibians and 9 species of reptiles. They surveyed the more eastern and central tracts of land, whereas the current survey focused attention on the western tracts obtained only after this earlier survey. Meade (2003) surveyed Cumberland Gap National Historical Park, approximately 50 km (30 mi) west of CNAP. He surveyed selected plots in streams, floodplains, mountain meadows, caves, cliffs and bogs using area-constrained searches, artificial cover boards, night driving and incidental observations. He found 35 species including 23 species of amphibians and 12 species of reptiles. The CNAP presented a unique opportunity to survey an unusual habitat in far southwestern Virginia.

Survey Sites

1. Bowen Tract:
This tract contains gently rolling hills including forested and grassland areas. The team concentrated on a forested bluff overlooking the Powell River. The dominant trees included Sweet Gum, White Oak, Chinquapin Oak, Sugar Maple and Cedars. The understory included Dogwood, Redbud, Poison Ivy and Greenbrier. There was an abundance of flat rocks, rocky outcroppings, and some tin sheets.

2. Coy and Maxie Cope Tract:
This tract of land contains several dilapidated buildings with tin and wood debris scattered around the buildings. The land is grassy and open with many exposed limestone rocks scattered across the open fields. The dominant trees were White Oak, Hickory and some Junipers in the meadows. A small continually-running spring entering a cave is an interesting geologic feature of this property. Around the spring there are steep limestone walls with many crevices. The limestone and outflowing spring are covered

in thick mats of moss. A small vernal pool was found on the edge of the forested section.

3. Fulks Tract

The Powell River marks the southern border of this property. Much of this property is open grassy field. There is a hardwood forest containing Chinquapin Oak, White Oak, Sugar Maple, Shagbark Hickory, and Black Walnut, with Winged Elm and Redbud in the understory. Of geologic interest is a major limestone cave (Solgener Cave) with a stream flowing out of the mouth of it.

4. Natural Bridge Cave Site

This site includes a stream, which begins on the Barton Tract, flows onto the Mason-Barton Tract where it flows into a cave, under Co. Rt. 662 then off the CNAP. The stream was surveyed beside Co. Rt. 662 where the stream flows under the road.

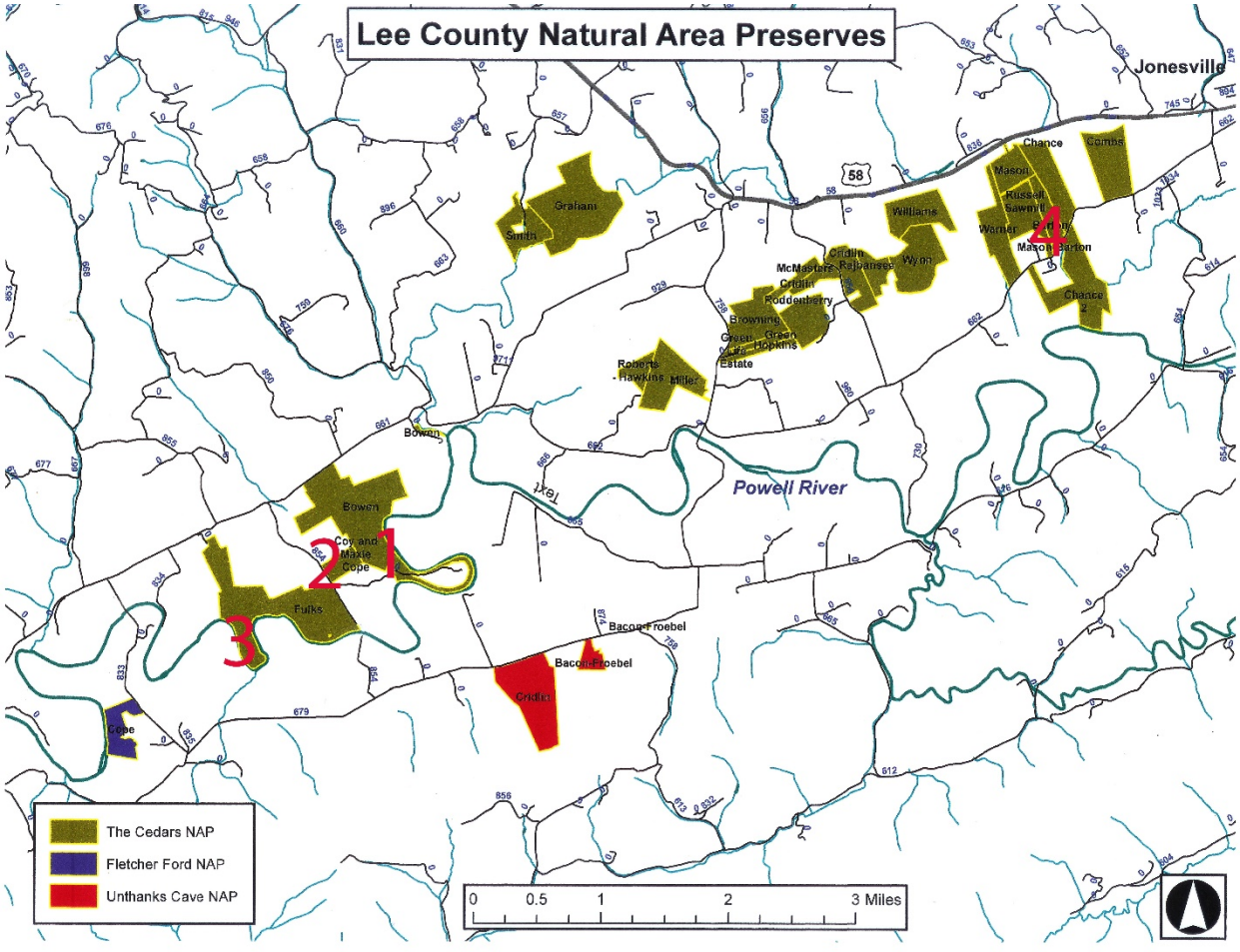

Figure 1. Map of The Cedars Natural Area Preserves with survey sites numbered in red.

MATERIALS AND METHODS

The Cedars Natural Area Preserve was visited three separate times in 2018. The first visit was a presurvey conducted by JG and PS on 24 May. The second visit was the herpblitz conducted on 9 and 10 June. The third visit was conducted by JG, PS, and MB on 2 August. During this last survey

amphibians were swabbed and tail tips collected to test for the presence and prevalence of Bd (*Batrachochytrium dendrobatidis*) and Ranaviral infections. The results of these data will be published later, elsewhere.

The following techniques were used by surveyors during the herpblitz survey: hand capture, visual observations, rolling over but replacing cover objects such as logs and rocks, and listening for calling anurans, both at day and at night. Additionally, five baited hoop turtle traps, three minnow traps and two chimney crayfish traps were placed in the Powell River. Animals hand captured were examined visually for malformations, diseases, injury, and parasites. Animals were released at the site of capture. Digital photos were taken as vouchers for species. Data sheets were kept with information on each animal and the microhabitat where the animal was found. The data sheets were deposited in the VHS Archive. Table 1 below gives a summary of how much time was spent at each survey site.

Table 1. Summary of work effort at the different sites sampled during The Cedars NAP survey.

	Site 1	Site 2	Site 2[a]	Site 3	Site 3[a]	Site 4
Number of surveyors	9	21	7	21	9	2
Hours surveyed	1.3	1.75	1	2	.75	.5
Person hours of survey effort	11.7	36.75	7	42	6.75	1.0

2[a] = night hike on 9 June 2018, 3a = survey of powerline cut on Fulks track and Powell River on 10 June

RESULTS

The Cedars presurvey of 24 May, the survey of 9 and 10 June, and a post survey visit on 2 August, yielded observations of 142 total animals. Twenty-eight species were documented including 17 amphibians (8 anurans and 9 salamanders) and 11 reptiles (two turtles, three lizards, and six snakes). This survey yielded 2 county records and many western range extensions for different species. We also documented *Pseudacris feriarum* reported by Roble and Hobson (2002) but not vouchered at that time. Table 2 below summarizes information from each of the surveyed sites. Following the data table is an annotated species list summarizing observations made for each species. Common and scientific names follow Crother, 2017.

Table 2. Summary of the number of amphibians and reptiles observed at each site of The Cedars Natural Area Preserve. c = calling male anuran, L = larvae, m = metamorphs, s = shed skin 1[a] = disease survey conducted on 2 August, 2[a] = night hike on 9 June, 2b = presurvey observations taken on 24 May, 2[c] = disease survey conducted on 2 August, 3a = survey of powerline cut on Fulks track and Powell River on 10 June, 3b = disease survey conducted on 2 August.

	Bowen		Coy and Maxie Cope				Fulks			NB	
Species/Site	1	1[a]	2[b]	2	2[a]	2[c]	3	3[a]	3[b]	4	Total
Date	6/10	8/2	5/24	6/9	6/9	8/2	6/9	6/10	8/2	6/8	
Amphibians											
Anaxyrus a. americanus						1				1	2
Anaxyrus fowleri	1						1				2
Hyla chrysoscelis			1c	1c	1c						3
Lithobates catesbeianus									1		1
Lithobates clamitans										1	1
Lithobates palustris			1				1				2
Lithobates sylvaticus				m							1
Pseudacris feriarum			L				L				
Ambystoma maculatum				L		L					
Aneides aeneus							1				1
Eurycea cirrigera									1	1	2
Eurycea l. longicauda			5	1	2						8
Eurycea lucifuga			1	3	6	13	2		1		26
Notophthalmus v. viridescens				3		20					23
Plethodon glutinosus	1		1								2
Plethodon kentucki				4	1	13					18
Pseudotriton r. ruber			1								1
Reptiles											
Graptemys geographica								2			2
Terrapene c. carolina	2			2		1					5
Plestiodon fasciatus	2	1		1			6			1	11
Sceloporus undulatus	2	2		3			1	1			9
Scincella lateralis	3	1					2	1			7
Carphophis a. amoenus	6							1			7
Coluber c. constrictor			1				1	1			3
Diadophis punctatus edwardsii						1	1				2
Lampropeltis nigra							1				1
Pantherophis alleghaniensis							s				
Virginia v. valeriae	2										2
Total	19	4	11	19	10	49	17	6	3	4	142

Annotated Checklist

Amphibians

1.*Anaxyrus a. americanus* (American Toad)
One American Toad was found on Rt. 662 near the Natural Bridge Cave site. Another American Toad was found sitting in gravel at the mouth of the large cave on the Coy and Maxie Cope tract.

2. *Anaxyrus fowleri* (Fowler's Toad)
One juvenile and one adult Fowler's Toads were found on the Bowen and Fulks tracts on 10 and 9 June. A Fowler's toad was heard calling next to the Powell river on the Fulks tracts on the night of 9 June while driving to the night survey.

3. *Hyla chrysoscelis* (Cope's Gray Treefrog)
Cope's Gray Treefrogs were heard calling on the Bowen Tract and Coy and Maxie Cope tract during our pre-survey of the Cedars on 24 May 2018. Males were heard calling both during the day and night. A few tadpoles collected in a road rut on the Fulks property on 24 May were taken and reared. These tadpoles were found to be Cope's Gray Treefrogs. Cope's Gray treefrogs were observed calling during the day and night at the Coy and Maxie Cope site on 9 June 2018.

4. *Lithobates catesbeianus* (American Bullfrog)
One juvenile American Bullfrog was hand captured in the stream exiting Solgener Cave on the Fulks Tract. This animal was found to have two chiggers imbedded in the skin of one hind foot.

5. *Lithobates clamitans* (Green Frog)
One adult frog was found beside the stream at the Natural Tunnel Cave site on the 24 May pre-survey.

6. *Lithobates palustris* (Pickerel Frog)
A small adult Pickerel Frog was found on a night survey of the spring-fed stream and cave site at the Coy and Maxie Cope tract on 24 May 2018.

7. *Lithobates sylvaticus* (Wood Frog)
Numerous metamorphic Wood Frogs were found in and along the edge of a small vernal pond on the Coy and Maxie Cope tract. This record slightly extends the westernmost documented range of this species in Virginia (Roble and Hobson, 2002).

8. *Pseudacris feriarum* (Upland Chorus Frog)
Numerous *Pseudacris* tadpoles were found in two cement tanks; one on the Coy and Maxie Cope tract and one on the Fulks tract. *Pseudacris brachyophona* and *P. crucifer* are known from Lee County, but not *P. feriarum*. Roble and Hobson (2002) heard but did not record a chorus in May 1999. A few tadpoles were reared through metamorphosis by JG and appeared to be *P. feriarum*. One metamorph died, was preserved in alcohol and tissues subjected to DNA sequence analysis using the Cox1 gene fragment. The DNA sequence was identical to *P. feriarum,* confirming the identity of the tadpoles. This is the first verified occurrence of the Upland Chorus Frog in Lee County, and a westward expansion of the known range, the next nearest location being approximately 100 km to the east in eastern Washington County.

9. *Ambystoma maculatum* (Spotted Salamander)
Many larval Spotted Salamanders were dip-netted from a small vernal pool on the Coy and Maxie Cope tract. At least 20 late stage larvae from this same pool were observed during the 2 August survey. This observation represents only the second record for this species in Lee County and a 33 km western

range extension from the other collection site, reported in Fulton et.al., (2014).

10. *Aneides aeneus* (Green Salamander)
Only one adult Green Salamander was found during this survey. This animal was found in a rock crevice at the mouth of a cave on the Fulks tract.

11. *Eurycea cirrigera* (Southern Two-lined Salamander)
One adult was found under a rock by a stream at the Natural Tunnel Bridge Cave site (N36°40'01.2", W 83°09'19.4"). This record extends the westernmost documented range for this species in Virginia (Mitchell and Reay, 1999). One two-lined salamander found on 2 August was on the wall of Solgener Cave on the Fulks tract, and was observed to have two reddish cysts, one on the upper hind limb and one on a hind foot. These cysts appeared to be consistent with larval chigger parasitism.

12. *Eurycea l. longicauda* (Long-tailed Salamander)
Five adult Long-tailed Salamanders were found under rocks near a spring at the Coy and Maxie Cope tract 24 May 2018. Three additional observations were made of this species on 9 June at the Coy and Maxie Cope tract. One salamander was found under a rock and the other two were found at night along a spring. Roble and Hobson (2002) reported finding Long-tailed Salamanders on the Lee County airport property to the east of this site. Their observation was the westernmost documented population at the time, so this observation represents a small (3 km) western range extension for this species.

13. *Eurycea lucifuga* (Cave Salamander)
One Cave Salamander was found sitting at the opening of a rock crevice near the cave at the Coy and Maxie Cope tract on 24 May. This animal was found after dark. On 9 June Cave Salamanders were found in three different caves, two caves from the Coy and Maxie Cope tract and one cave from the Fulks tract. All animals were found in the open on cave walls in rock crevices. On 2 August, 13 Cave Salamanders were found at the mouth of two separate caves during a nighttime survey.

14. *Notophthalmus v. viridescens* (Red-spotted Newt)
Three adult Red-spotted Newts were observed in a vernal pool on the Coy and Maxie Cope tract. Twenty adult Red-spotted Newts were dipnetted from the same vernal pond on 2 August 2018.

15. *Plethodon glutinosus* (Northern Slimy Salamander)
One adult slimy salamander was found on moss beside a small spring fed stream on 24 May at the Coy and Maxie Cope tract. This animal was found after dark. A juvenile was found on the Bowen tract under a log.

16. *Plethodon kentucki* (Cumberland Plateau Salamander)
A mixture of adult and juvenile Cumberland Plateau Salamanders were found at two different caves on the Coy and Maxie Cope tract. All salamanders were found in rock

crevices or on the walls of the caves. Thirteen juvenile Cumberland Plateau Salamanders were collected from a cave at the Coy and Maxie Cope tract on 2 August.

17. *Pseudotriton r. ruber* (Northern Red Salamander)
A large *Pseudotrition r. ruber* larva was found sitting in a small pool in a spring fed stream at the Coy and Maxie Cope tract on 24 May 2018. This was a nighttime observation.

Reptiles

18. *Graptemys geographica* (Northern Map Turtle)
Two adult Northern Map Turtles were observed basking on a log and a rock in the Powell River at the Fulks tract on 10 June.

19. *Terrapene c. carolina* (Woodland Box Turtle)
Two box turtles were found under tin at the Coy and Maxie Cope site. The Bowen site yielded observations of one adult turtle by a building and one shell on the road. Another adult female turtle was observed sitting on the forest floor on 2 August at the Coy and Maxie Cope tract.

20. *Plestiodon fasciatus* (Common Five-lined Skink)
One juvenile skink about discovered under a piece of bark at the Natural Tunnel Bridge Cave site on 24 May. During the survey Common Five-lined Skinks were found on log piles, under rocks, on buildings, and in logs at the Bowen, Coy and Maxie Cope, and Fulks tracts. A large adult female was found under a rock at the Bowen tract on 2 August.

21. *Sceloporus undulatus* (Eastern Fence Lizard)
During the presurvey an adult Eastern Fence Lizard was found on the road leading to the Bowen tract. Adults were found on rocks, under rocks, and near old buildings at the Bowen, Fulks, and Coy and Maxie Cope tracts. On 2 August two newly hatched fence lizards were found under rocks at the Bowen tract.

22. *Scincella lateralis* (Little Brown Skink)
Little Brown Skinks were observed on 9 and 10 June foraging and under rocks at the Bowen and Fulks tracts. This represents a new county record (Mitchell and Reay, 1999) A photograph from the Bowen tract on 10 June was deposited in the VHS Archive (# 542) as a voucher. A newly hatched Little Brown Skink was observed on a grassy path at the Bowen tract on 2 August. Future surveys between Lee County and Patrick County, previously the most western range for this species in Virginia, may yield additional populations between these two locations.

23. *Carphophis a. amoenus* (Eastern Wormsnake)
Six adult wormsnakes were found under rocks and logs at the Bowen tract. One adult wormsnake was found under a rock in the power line right-of-way on the Fulks tract. Several snakes were observed to have scattered scale damage.

24. *Coluber c. constrictor* (Northern Black Racer)
A single adult black racer was found under a piece of tin by an old building on the Coy and Maxie Cope tract on 24 May. During the

survey weekend two additional animals were observed at the Fulks tract. One adult was found on the road and the other adult was found under a piece of tin.

25. *Diadophis punctatus edwardsii* (Northern Ring-necked Snake)
One large adult Northern Ring-necked Snake was found under a large rock at the Fulks tract. The animal had a full yellow neck band and spots on the ventrum. A juvenile ring-necked snake was found in a rock crevice at the mouth of a large cave at the Coy and Maxie Cope tract on 2 August.

26. *Lampropeltis nigra* (Eastern Black Kingsnake)
A single adult Eastern Black Kingsnake was found between a decomposing cedar log and a large limestone rock in the power line right-of-way on the Fulks tract (VHS Archive # 541). On 14 June, Stephen Grayson found a juvenile Eastern Black Kingsnake under a rock along the roadside at the McMasters Cridlin Roddenberry Tract.

27. *Pantherophis alleghaniensis* (Eastern Ratsnake)
A shed Eastern Ratsnake skin was found on the Fulks tract near an old barn on 9 June.

28. *Virginia v. valeriae* (Eastern Smooth Earthsnake)
Two adult Eastern Smooth Earthsnakes were found under a rock and under tin, respectively, at the Bowen tract on 10 June. One of the snakes appeared to have small patch of damaged scales on its head. This represents a county record (Mitchell, 1994; Mitchell and Reay, 1999; VHS Archive # 543) and now stands as the western-most population in Virginia.

DISCUSSION

Now that two surveys have been made of the Cedars Natural Area Preserve, Roble and Hobson's and this one, we can report that the Cedars Natural Arear Preserves has a minimum of 32 species of amphibians and reptiles (see table 3 for a comparison of the results from the two surveys). This total includes 19 species of amphibians (10 anurans and 9 salamanders) and 13 species of reptiles (2 turtles, 3 lizards, and 8 snakes). Additional work may add further information about the species inhabiting this area. This survey yielded two new records for Lee County, *Scincella lateralis* and *Virginia valeriae*. Since there were two smooth earthsnakes and seven ground skinks, the lack of previous records for these species is likely due to a lack of surveys in this far western county rather than their being at low densities. In addition, the survey was able to voucher *Pseudacris feriarum* which had been reported by Roble and Hobson (2002) but not vouchered them. Several rare salamanders, including *Aneides aeneus, Eurycea lucifuga,* and *Plethodon kentucki* were observed. Southwestern Virginia has many salamanders not frequently seen on more eastern surveys, and was one reason Lee County was chosen for this survey. The

finding of an adult Eastern Black Kingsnake, and the resulting photo frenzy was another highlight of the survey.

Several species we hoped to see but were not encountered, include the Eastern Hellbender and Common Mudpuppy, which have been reported previously from the Powell River. The Midland Mud Salamander, Kentucky Spring Salamander, and Black Mountain Salamander are also known from Lee County but not observed at The Cedars, demonstrating the list of amphibians and reptiles might still be expanded by further survey work.

The Virginia Department of Conservation and Recreation, working in partnership with The Nature Conservancy, are continuing to buy and add more landholdings to this preserve. As this natural area preserve grows, it is imperative that surveys continue to be conducted to learn more about the herpetofauna of this area. In addition to continuing to inventory species, it is also important that the harder work of adding natural history information on each species continues. Species in this area occupy habitats in the most western region of Virginia. The differences in proximity to the ocean, unique soils and vegetation, and a watershed draining to the Mississippi River rather than Chesapeake Bay might cause differences in anuran calling dates, breeding cycles, egg laying dates, clutch sizes, and anatomical size differences compared to species in other regions of Virginia.

Roble and Hobson (2002) reviewed the species that might still be found in Lee County. The authors encourage readers to review their account to better understand species still likely to be added to the list of Cedars Natural Area Preserve herps. Future surveyors should visit the property during different seasons to pick up early breeding or fall breeding amphibians. The authors had difficulty setting turtle traps in the bedrock of the Powell River. Different turtle trapping techniques could better sample the turtle fauna in the Powell River. More and better sampling techniques for the large aquatic salamanders could increase information on the occurrence of these species in the Powell River and tributaries flowing into the river. The sampling of environmental DNA might prove particularly useful.

Education concerning the spread of fungal infections should be a priority of managers of this preserve. White Nose Syndrome found in bats has been detected in caves on this property. The causative agent *Pseudogymnoascus destructans* (PD) can be spread by contaminated shoes, clothing or equipment. Signage or other education materials should be produced to educate the public about how to disinfect shoes and equipment. This would also help reduce the spread of fungal diseases such as BD and SNF (Snake Fungal Disease) which are currently spreading in amphibians and snakes. BD and Ranaviral infections have been detected in wild populations of Green Salamanders in Wise and Dickenson Counties, two counties adjacent to Lee County (Blackburn et.al., 2015). The 2 August survey swabbed a number of salamanders. The results of the subsequent test for BD and Ranavirus will be published elsewhere. It is important to get base-line date on infection rates to better determine if this infection is a problem for resident amphibians and to aid managers of this property.

Table 3. Species comparison for two surveys conducted at the Cedars Natural Area Preserve.

Species	Roble and Hobson, 2002	Gibson and Sattler, 2018
Amphibians		
Anaxyrus a. americanus	*	*
Anaxyrus fowleri	*	*
Gastrophryne carolinensis	*	
Hyla chrysoscelis	*	*
Lithobates catesbeianus	*	*
Lithobates clamitans	*	*
Lithobates palustris	*	*
Lithobates sylvaticus	*	*
Pseudacris crucifer	*	
Pseudacris feriarum	*	*
Ambystoma maculatum		*
Aneides aeneus	*	*
Eurycea cirrigera		*
Eurycea l. longicauda	*	*
Eurycea lucifuga	*	*
Notophthalmus v. viridescens		*
Plethodon glutinosus	*	*
Plethodon kentucki	*	*
Pseudotriton r. ruber		*
Reptiles		
Graptemys geographica		*
Terrapene c. carolina	*	*
Plestiodon fasciatus	*	*
Sceloporus undulatus	*	*
Scincella lateralis		*
Carphophis a. amoenus	*	*
Coluber c. constrictor		*
Diadophis punctatus edwardsii	*	*
Heterodon platirhinos	*	
Lampropeltis nigra	*	*
Nerodia s. sipedon	*	
Pantherophis alleghaniensis	*	*
Virginia v. valeriae		*

LITERATURE CITED

Blackburn, M.E, J.A. Wayland, W.H. Smith, J.H. McKenna, M.A. Harry, M.K. Hamed, M.J. Gray, and D.L. Miller. 2015. First report of Ranavirus and *Batrachochytrium dendrobatidis* in green salamanders (*Aneides aeneus*) from Virginia, USA. Herpetological Review. 46(3): 357-361.

Burger, W.L. 1974. Herpetological specimens collected in Lee County, Virginia: (1) amphibians. Virginia Herpetological Society Bulletin 75: 1-2.

Burger, W.L. 1975. Herpetological specimens collected in Lee County, Virginia: (2) reptiles. Virginia Herpetological Society Bulletin 76: 1-2.

Calcareous Glade. (https://en.wikipedia.org/wiki/Calcareous_glade) Wikipedia, Retrieved August 8, 2018. Crother, B.I. (ed.). 2017. Scientific Standard English Names of Amphibians and Reptiles of North American North of Mexico, with Comments Regarding Confidence in our Understanding. Eighth Edition, Society for the Study of Amphibians and Reptiles, Herpetological Circular 43:1-102.

Fulton, J.N., M. Couch, and W.H. Smith. 2014. New geographic distribution records for herpetofauna from southwest Virginia, USA. Herpetological Review.45(1): 105-106.

Meade, Leslie S. 2003. Herpetofauna Survey of Cumberland Gap National Historical Park. National Park Service, Cooperative Agreement H5028 02 A424.

Mitchell, J.C. and K.K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game and Inland Fisheries, Richmond, Virginia. 122 pp.

Mitchell, J.C. and C.A. Pague. 1984. Reptiles and amphibians of far southwestern Virginia: report on a biogeographical and ecological survey. Catesbeiana 4(2): 12-17.

Roble, S.M. and C.S. Hobson. 2002. Records of amphibians and reptiles from "The Cedars" region of Lee County, Virginia. Catesbeiana 22(2): 35-48.

U.S. Fish & Wildlife Service. 1997 Lee County Cave Isopod *Lirceus usdagalun* recovery plan. Hadley, Massachusetts.

Virginia Native Plant Society. (https://vnap.org/adding-land-to-cedars-natural-area-preserve/), Retrieved August 8, 2018.

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