

## **Sixth Annual HerpBlitz: Survey of Hungry Mother State Park**

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### Introduction

Hungry Mother State Park was the first of the original Virginia State Parks. The inauguration of the first six Virginia State Parks was held at Hungry Mother State Park on 13 June 1936 with thousands of people in attendance. The 75<sup>th</sup> anniversary was held prior to our survey, on 18 June 2011. Much of the original land was donated by local landowners to establish a state park in Smyth County. The largest piece of land 760 hectares (1,881 acres) was donated by John and Mildred Lincoln in 1933. The Civilian Conservation Corps used 600 men to construct the roads, trails, cabins, picnic areas, restaurant and dam at Hungry Mother, between 1933 and 1941. The Hemlock Haven Conference Center, which was originally an Episcopal Church Camp, was purchased in 1986 and added to Hungry Mother. Today, Hungry Mother State Park consists of 985 hectares (2,435 acres), a 44 hectare (108 acre) lake, more than 19.3 km (12 miles) of trails, an amphitheater, restaurant, conference center and lodge. It is located 6.5 km (4 miles) north of Marion on State Route 16, off I-81.

Located in southwestern Virginia, the environment is one of high elevation deciduous forests dominated by oaks, hickory, sugar maples, tulip trees, and hemlock with an understory of rhododendron,

ferns, and some blueberry. The forest is mature so there are a number of decaying logs on the forest floor, covered with dead bark or moss, providing excellent habitat for salamanders and small snakes. The elevation at the lake is 730 m (2,200 feet) with Molly's Knob at 1070 m (3,200 feet). Hungry Mother Creek was dammed to make the lake, so much of the shore is steep hillside forming as the ravine through which Hungry Mother Creek ran was flooded. There are many small mountain streams coming into the lake, and these provide the major mesic areas in the Park. The hills and ridges above the streams are more arid.

The Virginia Herpetological Society chose Hungry Mother State Park for the sixth annual HerpBlitz because it had been 19 years since our last survey there. We had 20 volunteers on 25-26 June 2011, organized into two groups to survey the habitat around trails and the lake. The date in late June was chosen since the weather in the mountains would be cooler later in the summer, with other surveys in lower elevations occurring earlier in the season. Some members used the proximity to Whitetop Mountain to make side trips to this interesting habitat before or after the Hungry Mother Survey.

### Study Sites

To penetrate into the very mountainous park, survey teams had to follow established trails due to the rough terrain and thick vegetation. On 25 June two survey teams were formed. Team 1 consisted of 8 people and surveyed Site 1, team 2 consisted of 12 people and surveyed Site 2. On 26 June one survey team of 10 people visited Site 3. Observations of the fourth site were opportunistically made from people staying at the campground. Below are general descriptions of the survey sites. GPS coordinates obtained from Google™ Earth represent a point taken at the center of each survey site.

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### Site 1 – Lake Loop Trail (36°52'17.74"N, 81°30'45.43"W)

To survey this site Team 1 parked at a parking area near Camp Burson then traveled the Lake Loop Trail from the southern starting point, and then traveling east until arriving at the boat ramp. They were able to survey the lake spillway, the marshy area at the end of the spillway, several streams flowing into Hungry Mother Lake, the wooded area surrounding the trail, several man-made debris piles, and the marshy area around the boat ramp.

### Site 2 – Raider's Run Trail (36°52'58.26"N, 81°31'21.39"W)

Team 2 parked at the Raider's Run Trail parking area. The trail is along the northern edge of Hungry Mother Lake, and they then followed the Lake Loop Trail to the boat ramp. All the streams, shaley slopes, and woodlands surrounding the trail were surveyed during the trip to the boat ramp.

### Site 3 – CCC Trail (36°52'37.91"N, 81°30'54.27"W)

The Sunday team parked at the wildlife viewing parking lot and then proceeded to follow the CCC Trail. This trail was completely surveyed along with its surrounding forests and streams adjacent to the trail. Where the CCC trail intersects with the Lake Loop Trail, the survey team followed the Lake Loop Trail south back to the boat ramp.

### Site 4 – Camp Burson campground (36°52'8.77"N, 81°31'28.14"W)

This site sits at the end of the spillway on the southern edge of park property. The campground has very few trees but to the southeast is a marsh and stream. Various individuals staying at the campground made observations on the species found here, but there was not a record of how many people or how much time was spent searching, so these data are not entered in Table 1.

## Materials and Methods

Twenty people participated in the sixth annual HerpBlitz for 5 hours on 25 June and 2.5 hours on 26 June 2011. Table 1 provides the amount of survey effort for each site. Surveyors utilized multiple collecting techniques to find amphibians and reptiles, including visual observation, listening for calling anurans, overturning cover objects, hand capture, and dipnetting. All captured animals were given a visual inspection to identify any malformations, disease or injuries. Digital photos were taken of any species considered county records or with injuries or disease. Group leaders were required to record all relevant data on data sheets.

Table 1: The amount of survey effort per research site.

|                               | Site 1 | Site 2 | Site 3 | Site 4 |
|-------------------------------|--------|--------|--------|--------|
| Number of surveyors           | 8      | 12     | 10     |        |
| Hours surveyed                | 5      | 5      | 2.5    |        |
| Person hours of survey effort | 40     | 60     | 25     |        |

## Results

One hundred twenty-five person hours of survey effort and miscellaneous observations around Camp Burson yielded a total of 25 species. The survey produced a total of six anurans, 10 salamanders, three turtles, one lizard, and five snakes. A grand total of 182 individual animals were found during the weekend. Table 2 indicates each site and how many of each species were collected from that site. An annotated checklist below documents observations about each species.

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Table 2. Summary of the number of animals observed at each site.

| Sites                               | 1  | 2  | 3  | 4  |
|-------------------------------------|----|----|----|----|
| <b>Species</b>                      |    |    |    |    |
| <b>Amphibians</b>                   |    |    |    |    |
| <i>Anaxyrus americanus</i>          |    | 1  |    | 1  |
| <i>Hyla versicolor</i>              |    |    | C  | C  |
| <i>Lithobates catesbeianus</i>      |    |    |    | 1C |
| <i>Lithobates clamitans</i>         | 5  | 3  |    | 1C |
| <i>Lithobates palustris</i>         | 1  | 4  |    |    |
| <i>Pseudacris crucifer</i>          |    |    | C  |    |
| <i>Desmognathus fucus</i>           | 19 | 10 |    |    |
| <i>Desmognathus monticola</i>       | 21 | 22 | 16 |    |
| <i>Desmognathus ochrephaeus</i>     | 1  |    |    |    |
| <i>Desmognathus quadramaculatus</i> | 5  | 2  | 4  |    |
| <i>Eurycea cirrigera</i>            | 3  | 3  | 8  |    |
| <i>Eurycea l. longicauda</i>        | 7  |    |    |    |
| <i>Plethodon glutinosus</i>         | 6  | 12 | 6  |    |
| <i>Plethodon richmondi</i>          |    | 1  |    |    |
| <i>Pseudotriton ruber</i>           | 1  |    | 1  |    |
| <i>Notophthalmus v. viridescens</i> | 1  |    | 1  |    |
| <b>Reptiles</b>                     |    |    |    |    |
| <i>Chelydra s. serpentina</i>       | 1  |    |    |    |
| <i>Chrysemys p. picta</i>           | 1  |    |    |    |
| <i>Terrapene c. carolina</i>        | 1  |    |    |    |
| <i>Sceloporus undulatus</i>         | 1  | 1  |    |    |
| <i>Agkistrodon c. mokasen</i>       | 1  | 1  |    |    |
| <i>Diadophis punctatus</i>          | 3  |    |    |    |
| <i>Nerodia s. sipedon</i>           | 2  |    |    |    |
| <i>Pantherophis alleghaniensis</i>  |    |    | 1  |    |
| <i>Regina septemvittata</i>         | 1  |    |    | 1  |
| Total Number of animals by site     | 81 | 60 | 37 | 4  |

C = calling males heard

### Annotated Checklist

#### Amphibians

##### *I. Anaxyrus americanus americanus* (American Toad)

Two American Toads were found, one each at Sites 2 and 4. The toad at Site 2 was found near a stream and the toad at Site 4 was found on the camp road at night after a rainstorm.

2. *Hyla versicolor* (Gray Treefrog)

Small choruses of several male Gray Treefrogs were heard at night along the stream behind Camp Burson campground and the boat ramp.

3. *Lithobates catesbeianus* (American Bullfrog)

A few individual male bullfrogs were heard calling at night along the stream behind Camp Burson.

4. *Lithobates clamitans melanota* (Northern Green Frog)

Northern Green Frogs were found by the lake shore, along the edge of a stream, and on the road at Camp Burson. Males were observed calling at several sites.

5. *Lithobates palustris* (Pickerel Frog)

Five Pickerel frogs were found along the lake shore at Sites 1 and 2.

6. *Pseudacris crucifer* (Spring Peeper)

One male peeper was heard calling around the boat ramp at Site 3.

7. *Desmognathus fuscus* (Northern Dusky Salamander)

Twenty-nine Northern Dusky Salamanders were found under rocks in and near streams.

8. *Desmognathus monticola* (Seal Salamander)

*Desmognathus monticola* was the most commonly collected salamander species during the survey weekend. Animals were found under rocks, under logs, and in leaf litter. All animals were collected in or adjacent to streams.

9. *Desmognathus ochrephaeus* (Alleghany Mountain Dusky Salamander)

One lone Alleghany Mountain Dusky Salamander was found under a log approximately 1 meter from the edge of a stream at Site 1.

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### 10. *Desmognathus quadramaculatus* (Black-bellied Salamander)

Black-bellied Salamanders were found at three sites. All of the animals were found under rocks in streams.

### 11. *Eurycea cirrigera* (Southern Two-lined Salamander)

Two-lined salamanders were found near streams under rocks, bark and leaf litter.

### 12. *Eurycea longicauda* (Long-tailed Salamander)

Seven adult Long-tailed Salamanders were discovered under rocks near a log pile and under logs by a brush pile at Site 1.

### 13. *Plethodon glutinosus* (Northern Slimy Salamander)

Twenty-four slimy salamanders were found under logs at three sites.

### 14. *Plethodon richmondi* (Ravine Salamander)

A juvenile Ravine Salamander was found under a log by the lake at Site 2.

### 15. *Pseudotriton ruber* (Red Salamander)

A large adult Red Salamander was found in a shallow stream pool under a rock at Site 3. The animal was missing one eye.

### 16. *Notophthalmus viridescens viridescens* (Red-spotted newt)

One Red-spotted Newt was found under a rock by a stream at Site 1.

## Reptiles

### 17. *Chelydra serpentina* (Eastern Snapping Turtle)

One large adult snapping turtle was discovered (by smell) near the road leading to the boat ramp of Hungry Mother Lake. The animal was dead. The cause of death was not apparent.

### 18. *Chrysemys picta* (Eastern Painted Turtle)

The shell of an adult Eastern Painted Turtle was found in the marsh beside the boat ramp at Site 1.

19. *Terrapene carolina* (Eastern Box Turtle)

One female *Terrapene carolina* was collected by a stream at Site 1. Upon closer inspection it was found to have swollen eyes and was lethargic.

20. *Sceloporus undulatus hyacinthinus* (Northern Fence Lizard)

Northern Fence Lizards were found basking near a shaley bank at Site 2 and at the edge of a treeline by the wildlife viewing pond at Site 1.

21. *Agkistrodon contortrix mokasen* (Northern Copperhead)

Two adult Northern Copperheads were observed at Sites 1 and 2. The snake captured at Site 1 was in a small floodplain by the boat ramp. The animal seen at Site 2 was basking on a beaver lodge by the shore of the lake.

21. *Diadophis punctatus* (Ring-necked Snake)

Three Ring-neck Snakes were found under rocks and bark at Site 1.

22. *Nerodia sipedon sipedon* (Northern Watersnake)

An adult Northern Watersnake was found in the water next to a culvert pipe at Site 1.

23. *Pantherophis alleghaniensis* (Eastern Rat Snake)

Only one adult Eastern Rat Snake was found during the survey period. This snake was found at Site 3 basking on a fallen tree next to the lake.

24. *Regina septemvittata* (Queen Snake)

A juvenile Queen snake was captured in the stream flowing out of the spillway from the dam of Hungry Mother Lake.

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### Discussion

On this two day survey the VHS found a total of 182 specimens, representing 25 species (Table 2). There were 16 species of amphibians (6 anurans and 10 salamanders) and, as one might expect in a cooler, high elevation area, fewer reptiles with 9 species (3 turtles, 1 lizard and 5 snakes).

Of the species that were observed on the Hungry Mother Survey, many are found widely throughout Virginia and could be expected in most surveys. These species would include: *Anaxyrus americanus*, *Lithobates catesbeianus*, *L. clamitans*, *L. palustris*, *Hyla versicolor*; *Desmognathus fuscus*, *D. monticola*, *Pseudotriton ruber*, *Notophthalmus viridescens*, *Chelydra serpentina*, *Chrysemys picta*, *Terrapene carolina*, *Sceloporus undulatus*, *Agkistrodon contortrix*, *Diadophis punctatus*, *Nerodia sipedon*, *Pantherophis alleghaniensis* and *Regina septemvittata*. Many of the salamanders are common in the western counties. These included: *Desmognathus ochrephaeus*, *D. quadramaculatus*, *Eurycea longicauda*, *Plethodon glutinosus* and *P. richmondi*. Finally, *Eurycea cirrigera* is common along the southern counties. Thus, there were no real surprises or county records to come out of this survey. We found many of the species one would expect to be present in the western part of Virginia.

There were a number of species documented for Smyth County that we did not find. In looking at reasons why these species were not encountered, a variety of explanations exist. We consulted the Fish and Wildlife Information Service (FWIS) database maintained by the Virginia Department of Game and Inland Fisheries and Mitchell and Reay (1999), to examine more closely the distribution of species within Smyth County. *Ambystoma maculatum*, *Lithobates sylvaticus*, *Pseudacris brachyphona* and *P. feriarum* may be difficult to find outside their spring breeding periods as the adults either disperse into the forest (the anurans) or resume their fossorial life style (spotted salamander). Also, the FWIS database reports the spotted salamander only from two sites in Smyth County, at Chilhowie and southwest

of Sugar Grove. The Wood Frog is reported only from the Big and Little Laurel Creeks in the very southern part of the county. They have not been reported for Smyth County north of I-81 near Hungry Mother State Park. The Mountain Chorus Frog has been reported in the database from only two sites in Smyth County, on Pond and Grave Mountains to the south of the Park. The Upland Chorus Frog is found in the database only from Chilhowie, to the east. Thus, many of these species are far from prevalent in the county, and may not occur within the Park.

There are several very high-altitude species that would not have been expected to occur at Hungry Mother State Park including *Desmognathus organi*, *Eurycea wilderae*, *Plethodon montanus*, *P. welleri*, and *P. yonahlossee*. The FWIS database reports them only from the Mount Rogers/Whitetop Mountain area in the southern part of the county. *Plethodon montanus*, the Northern Gray-cheeked Salamander is also reported from the Clinch Mountain Wildlife Management Area in the northwest portion of the county. Pinder and Greenlee (1999) reported 127 from our 1998 VHS survey of the Clinch Mountain WMA. *Desmognathus marmoratus*, the Shovel-nosed Salamander, is endemic to Laurel Creek and its tributaries, south of the Park. These species, although found in the county, are not found in Hungry Mother State Park.

Other than Hungry Mother Lake, there were no large bodies of water in the Park so we might not have been expected to find some of the turtles such as the Spiny Softshell *Apalone spinifera*, Common Map Turtle *Graptemys geographica*, or Stinkpot *Sternotherus odoratus*, all of which have been reported for Smyth County. Both the Spiny Softshell and the Common Map Turtle prefer rivers, making it less likely to find them in Hungry Mother Lake and the relatively small Hungry Mother Creek. The FWIS database reports the Common Map Turtle and Spiny Softshell Turtle from the North Fork of the Holston River near Saltville. The Spiny Softshell is also reported just north of Chilhowie. Since Softshells can occur in impounded waters, it is not impossible they could inhabit the Lake, but they apparently are

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not native to Hungry Mother Creek. The absence of Stinkpots at Hungry Mother State Park may be more a matter of not making use of turtle hoop traps, than their absence from the area. Stinkpots have been reported from tributaries of the North Fork of the Holston River just north of the Park. Likewise the Hellbender *Cryptobranchus alleganiensis* and Mudpuppy *Necturus maculosus* would not be expected. Hellbenders and Mudpuppies are known from Smyth County, but from the larger rivers such as the North and South Forks of the Holston River which run north and south of the Park.

Several of the snakes are not common and a brief survey may not turn them up. Species such as the Timber Rattlesnake *Crotalus horridus*, Hognose Snake *Heterodon platirhinos*, Milk Snake *Lampropeltis triangulum*, and Garter Snake *Thamnophis sirtalis* may be present in the Park but rarely encountered. The Timber Rattlesnake is reported in the FWIS database from the southeast and northwest corners of Smyth county, on either side of Hungry Mother State Park. The Hognose Snake is reported from only a single locality in the county, north of Saltville. The Milk Snake and Garter Snake are more widely reported for the county with sites both north and south of the Park. There is one report of the Milk Snake and four for the Garter Snake within the Park in recent years, so they are present. We just did not cross paths with them on this trip.

Many amphibians are not numerically plentiful even where they do occur, and could be overlooked during a brief survey. This would include *Gyrinophilus porphyriticus*. The Spring Salamander is widely reported from the southern portion of Smyth County with a couple of reports from the Clinch Mountain WMA in the northwestern part of the county, including Pinder and Greenlee (1999), and one record from just a km south of the southern end of Hungry Mother Lake either within the Park or just outside. Hayslett (1992) in his narrative of the 1992 survey of several sites around Smyth County reported that one was found within the Park, although not precisely where in the Park. They must be present, but just were not observed on this survey.

*Desmognathus orestes*, the Blue Ridge Dusky Salamander, is known from Smyth County. There are numerous records in the FWIS database, however, those are from the southern half of the county. *Desmognathus ochrophaeus* the Alleghany Mountain Dusky Salamander which should occur at Hungry Mother State Park, has been reported from one of the tributaries flowing into the Lake from the north by Tilly who did the work to separate *D. orestes* from *D. ochrophaeus* (Tilly and Mahoney, 1996). We did quite a bit of searching in these tributaries and found only one specimen we thought was *D. ochrophaeus*. *Desmognathus orestes* is not found in the Park but only farther south in the county. Since we found the Northern Slimy Salamander *Plethodon glutinosus*, we did not find the White-spotted Slimy Salamander *P. cylindraceous* since they are generally parapatric. *Plethodon cylindraceous* is found only in the southern portion of the county. The absence of caves ruled out finding the Cave Salamander *Eurycea lucifuga*. The Five-lined Skink *Plestiodon fasciatus* is apparently rare in Smyth County, possibly due to the elevation. There are only two data entries in the FWIS, both farther north in the Clinch Mountain WMA. The VHS did not find the Five-lined Skink in our 1998 survey of the Clinch Mountain WMA either (Pinder and Greenlee, 1999).

Fowler's Toad *Anaxyrus fowleri*, the Worm Snake *Carphophis amoenus* and Red-backed Salamander *Plethodon cinereus* are relatively widespread throughout Virginia, and their absence is harder to explain. Fowler's Toad has been reported from the Park, and just south of it, but only from two FWIS records. The most recent FWIS record was in 2005 with no subsequent records for 2006-2007 when other herp species were reported for Hungry Mother State Park. This Toad must be relatively rare within the Park. The Worm Snake has been reported for Smyth County from Whitetop Mountain and also from just outside Hungry Mother State Park. However, since there are only two records, they may be quite scarce in the county and hence missed in our survey. There are a hundred records for the Red-backed Salamander in Smyth County. Most are for the Whitetop Mountain/Mount Rogers area, but others stretch across the entire

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southern portion of the county. There are also records for the Clinch Mountain WMA to the northwest, with Pinder and Greenlee (1999) recording 67 for that survey. The Red-backed Salamander may be absent locally from the Park since we did extensive searching in likely habitat and failed to find any. There were no other *Plethodon* prevalent in the Park which might competitively displace the Red-backed Salamander, so their absence remains a mystery.

In summary, in addition to the 25 species we did find, we might have expected to find a maximum of only an additional 13 further species. Those we did not find, which either have been previously documented at the Park or are likely to be present, include: *Ambystoma maculatum*, *Anaxyrus fowleri*, *Gyrinophilus porphyriticus*, *Lithobates sylvaticus*, *Plethodon cinereus*, *Pseudacris brachyphona*, *P. feriarum*, *Carphophis amoenus*, *Crotalus horridus*, *Heterodon platirhinos*, *Lampropeltis triangulum*, *Sternotherus odoratus*, and *Thamnophis sirtalis*. We observed two-thirds of the species expected at the Park. Those not observed were mostly species with low population numbers and could be overlooked on a brief survey. It is always rewarding to find and admire many species of herps, however, just the looking can also be rewarding.

Hungry Mother State Park, being the oldest in the Virginia Park System preserves a beautiful mature deciduous forest. The forests, streams and lake provide excellent habitat for many endemic southwestern species of amphibians and reptiles in Virginia. The Park is well-maintained with campsites, cabins and trails to provide the public easy access to enjoy these natural resources. The Park Staff has nature programs and makes a conscious effort to educate campers about the wildlife within the Park. Naturalists visited the campsite with a program directed at children, and accompanied one of the VHS groups to receive additional training on identifying salamanders. The Park is commended both on their excellent management of Virginia natural resources and their education programs.

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