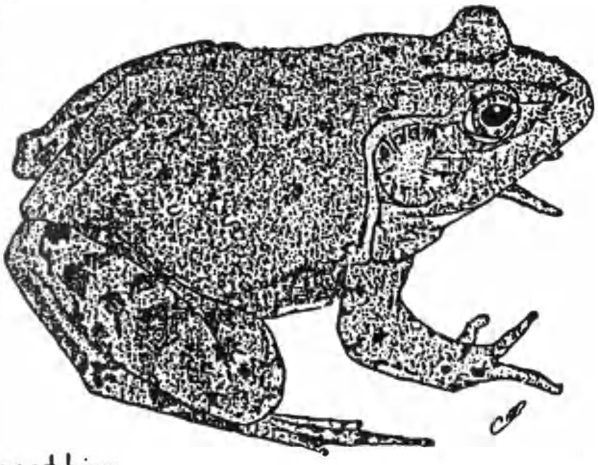
CATESBEIANA



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BULLETIN INFORMATION

Catesbeiana is published twice a year by the Virginia Herpetological Society. Membership is open to all individuals interested in the study of amphibians and reptiles and includes a subscription to *Catesbeiana*, two newsletters, and admission to all meetings. Annual dues for regular membership are $15.00 (see application form on last page for other membership categories). Payments received after September 1 of any given year will apply to membership for the following calendar year. Dues are payable to: Dr. Paul Sattler, VHS Secretary/Treasurer, Department of Biology, Liberty University, 1971 University Blvd., Lynchburg, VA 24502.

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EDITORIAL POLICY

The principal function of *Catesbeiana* is to publish observations and original research about Virginia herpetology. Rarely will articles be reprinted in *Catesbeiana* after they have been published elsewhere. All correspondence relative to the suitability of manuscripts or other editorial considerations should be directed to Dr. Steven M. Roble, Editor, *Catesbeiana,* Virginia Department of Conservation and Recreation, Division of Natural Heritage, 217 Governor Street, Richmond, VA 23219.

Major Papers

Manuscripts being submitted for publication should be typewritten (double spaced) on good quality 8½ by 11 inch paper, with adequate margins. Consult the style of articles in this issue for additional information, including the appropriate format for literature citations. The metric system should be used for reporting all types of measurement data. Computer diskettes (Word or WordPerfect format) are desired for longer papers. Submissions concerning the herpetofauna of selected areas, such as a state park or county, should be prepared in article rather than field note format. Articles will be refereed by the editor and at least one other qualified reviewer. All changes must be approved by the author before publication; therefore, manuscripts must be received by the editor before the first of March and September to be considered for publication in the spring or fall issue, respectively, of *Catesbeiana*. Reprints of articles are not available to authors; however, authors may reprint articles themselves to meet professional needs.

(Editorial policy continued on inside back cover)

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Bulletin of the Virginia Herpetological Society

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Pickerel frog (*Rana palustris*) from Powhatan County, Virginia (photograph by Jason D. Gibson).

Amphibians and Reptiles of Powhatan County, Virginia

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Introduction

Powhatan County is located in the Piedmont of central Virginia. Many species of reptiles and amphibians reach their eastern, western, and northern limits in Virginia in this area. Within the county there are varied natural habitats that include rivers, streams, swamps, beaver ponds, vernal pools, and mature upland and lowland hardwood and pine forests. Human alteration of land has also created grassland agricultural habitat, timbered habitat, railroad track open habitat, road ruts, planted pine plantations, and man-made ponds and lakes. Due to these diverse habitats and geography, Powhatan County should contain numerous species of reptiles and amphibians.

The herpetofauna of Powhatan County has not been systematically surveyed. Tobey (1985) recorded five salamanders, four anurans, three lizards, and five snakes, but no turtles. Mitchell and Reay (1999) recorded seven salamanders, 10 anurans, four turtles, four lizards, and 13 species of snakes. Mitchell (1994) recorded five turtles, four lizards, and 14 snakes. A brief field note on one species of lizard was reported by Wright (1996).

A review of the range maps in Tobey (1985), Mitchell (1994), and Mitchell and Reay (1999) indicates that several species of reptiles and amphibians that could potentially occur in Powhatan County have not been vouchered. It was the aim of this study to fill in gaps in data for this county.

Study Area

Powhatan County is a rural area approximately 30 km (20 miles) west of the City of Richmond (Fig. 1). The county encompasses 70,448 ha (272 mi^2) and ranges in elevation from 46 m to 122 m (150 to 400 ft) above sea level. The climate supports a southeastern mixed forest (oak, hickory, and pine dominating) with an annual average rainfall of 110 mm (44 inches) and an annual average temperature of 14.3 °C. The eastern region of the county has Triassic sedimentary deposits with coal having been mined in the 19th century. West of this region, the underlying rock is metamorphic and igneous. The entire county falls within the Piedmont physiographic province (Blankenship, 1999).

The northern boundary of Powhatan County is created by the James River. The southern boundary of this county is created by the convergence of the Appomattox River and Skinquarter Creek. Large areas of bottomland are created by the floodplains of the James and Appomattox rivers and Skinquarter Creek. The western and eastern boundaries are borders with Cumberland County and Chesterfield County, respectively.

Major roads that dissect the county include U.S. Route 60 (bisects county in half), County Route 711, and State Route 13, which run east to west and U.S. Route 522 and County Route 609, which run north to south. Other anthropogenic points of interest include two prison facilities in the northern section of the county, Powhatan Wildlife Management Area (4,000 acres), and numerous man-made lakes including Powhatan Lakes, Millquarter Lake, and Lake Shawnee.

The total land base of Powhatan County is 174,081 acres. Commercial forestland comprises 127,162 acres with 20,000 of these being cropland and the remainder being forest, including 5,000 acres of natural pines and 28,000 acres of planted loblolly pines (*Pinus taeda*). Logging and farming have been conducted since the 1700s. Today, 195 farms, covering an average of 221 acres, are found in the county. Corn, grains, soybeans, hay, tobacco, cows, and horses are the main agricultural products (Geyer, 1999).

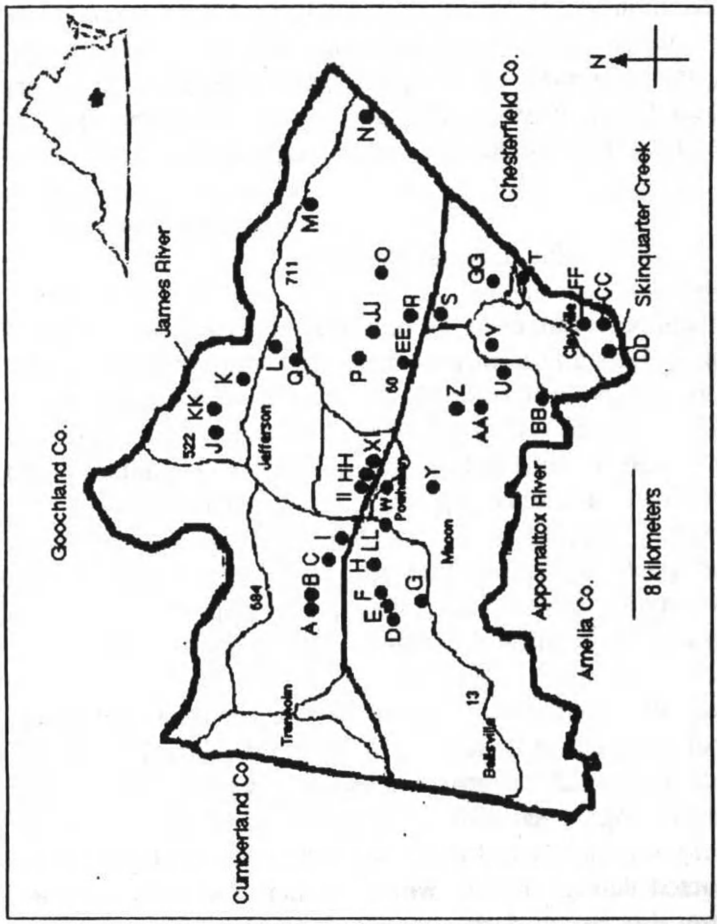

Figure 1. Map of amphibian and reptile sampling sites in Powhatan County.

The human population of Powhatan County in 1852 was 8,171. In 1990, the population was 15,328 and by 1995 had increased to 18,905, a 23% increase in five years. Census officials project the population will reach 21,700 in 2000. Many people are moving from the City of Richmond into the newly formed suburbs of Powhatan County. Evidence of suburbanization can be seen in the number of taxable parcels of land, which increased from 7,579 in 1985 to 11,042 in 1997 (Blankenship, 1999). Also, many new gas stations, supermarkets, housing developments, and restaurants are being constructed in the county every year. In the near future, interstate 288 will traverse the county, joining interstates 64 and 95. This will lead to more development.

Materials and Methods

My collections and observations of the herpetofauna of Powhatan County began in February 1997 and continued through November 2000. A full year of intensive field work to complete a master's thesis was conducted from August 1998 to August 1999. This field work was aimed at establishing the diversity and relative abundance of amphibians and reptiles, breeding dates and activity periods, and distributions throughout the county. Habitats sampled during the four years of data collection included vernal pools, ephemeral and perennial streams, upland and lowland forests, agricultural fields, residental developments, timbered forestland, powerline rights-of-way, ponds, and grassy fields.

Data were obtained on anurans by visual encounters and hand captures, dipnetting tadpoles and adults, road cruising and road kill collecting, and listening for vocalizing males during the breeding season. A frog call survey route, containing 18 sampling sites (A-F, I, K-N, R, S, U, V, Z, AA, BB) (Fig. 1), was established following techniques in Heyer (1994) and was conducted during the late winter, spring, and early summer. These sites were also visited during the summer after heavy rains. A diversity of sites including ditches, streams, ponds, lakes (man-made), swamps, floodplains, and vernal pools were selected to sample the highest diversity of frogs and toads. Larval and adult anurans were identified using Wright and Wright (1949) and Conant and Collins (1998).

Salamanders were sought in timbered cutover areas, vernal pools, mature upland and lowland hardwood forests, streams, and ponds. Aquatic dipnets and minnow traps were used to capture aquatic larvae and adults of some aquatic species. Terrestrial salamanders were found by lifting cover objects or by collecting in breeding pools at night. Larval and adult salamanders were identified using Petranka (1998).

Snakes and lizards were collected mainly by visual encounter and hand capture techniques. Cover objects were also over turned in various habitats including mature upland and lowland hardwood and pine forests, trash piles, and residential settings. Margins of ponds, streams, and swamps, early successional disturbed areas, ponds, and streams were surveyed for various species.

Turtles were collected by dipnetting, visual encounter (sometimes with binoculars) and hand capture, and road cruising (typically after rains) for both live and dead animals. Habitats sampled included ponds (beaver and man-made), lakes, streams, agricultural land, and both upland and lowland forests. Identifications of snakes, lizards, and turtles were verified using Mitchell (1994) and Conant and Collins (1998).

Results

A total of 45 species, including nine salamanders, 12 frogs and toads, six turtles, four lizards, and 14 snakes, were found during this survey (Table 1). Eight of these species were not recorded for Powhatan County by Tobey (1985), Mitchell (1994) or Mitchell and Reay (1999). Seven color slides and one tape recording that document the eight county records will be deposited in the VHS archives. The status of one additional species (*Hyla cinerea*) is uncertain. Natural history and distributional information for each reptile and amphibian found in Powhatan County follows in an annotated checklist. Site locations refer to plotted locations on Figure 1; these are described in Table 2. Species not previously reported from Powhatan County are denoted by an asterisk.

Annotated Checklist

Amphibians

Salamanders

Ambystoma maculatum (Spotted Salamander) - [A, B, E, F, H, I]

Spotted salamanders were found in and near breeding pools, including beaver ponds, vernal pools, road ruts, pools formed in ephemeral streams, depressions left by fallen trees, and forest land surrounding all breeding pools. This species is common in the appropriate habitat. Earliest activity dates for adults were 16 February 1999 and 19 February 2000. Latest adult activity date was 5 May 1997.

Ambystoma opacum (Marbled Salamander) - [A, B, E, H, DD]

Marbled salamander adults were found under logs in vernal pools, ephemeral streams, and forestland surrounding these breeding pools. This species was not found in large numbers. Larvae of this species were found in vernal pools where spotted salamanders were breeding. Adult and larval marbled salamanders were absent from more permanent breeding ponds (beaver ponds) and adjacent forests used by spotted salamanders. Seasonal activity dates for adults ranged from 29 April to 26 October. Data collected on the marbled salamander suggests a bimodal activity period during April - May and September - October. Larvae, juveniles, and adults have been found, indicating successful reproduction.

**Desmognathus fuscus* (Northern Dusky Salamander)

Northern dusky salamanders were found by a student at site KK on 14 September 2000. Both adults and juveniles were found under logs near a stream. This species is probably more widespread and abundant than this survey indicates.

**Eurycea cirrigera* (Southern Two-lined Salamander) - [A, AA]

Tobey's (1985) distributional data suggested that the northern two-lined salamander (*Eurycea bislineata*) is found in Powhatan County, however, Ghitea and Sattler (1990), using genetic testing data, showed that the southern two-lined salamander occurs in this area. Two-lined salamanders were found under logs near swamps, but they were not common. Early and late records are 19 March and 15 November, respectively.

Eurycea guttolineata (Three-lined Salamander) [A, AA]

Only two three-lined salamanders were found during this survey; one was found in a stream on 19 March 1997 and the other in leaf litter in an ephemeral streambed on 26 October 2000.

**Hemidactylium scutatum* (Four-toed Salamander) [A, B, V]

Two adults and one juvenile were found on 17 and 28 November 1998 and 31 October 1999. All were found under logs: two near swamps, and one at the edge of a lake. Sphagnum moss, a plant typically found in association with this salamander, was not common in areas sampled.

Plethodon cinereus (Red-backed Salamander) - [B, I, Q]

Red-backed salamanders were found in abundance at three sites; all were found under logs in mature hardwood forests and in timbered areas where waste logs and limbs were abundant. Virginia forests are attractive to the chip mill industry, which has major implications on the populations of this salamander (Gilliam, 1999). Of 110 salamanders captured, 56 exhibited the red stripe, 48 lead phase, and six had a bronze stripe. Earliest activity date was 10 March and the latest activity 28 November. This species is undoubtedly more widespread in Powhatan County than this survey indicates.

Plethodon cylindraceus (White-spotted Slimy Salamander) - [A, B, I]

The slimy salamander found in Powhatan County fits the phenotypic description of the white-spotted slimy salamander given in Highton et al. (1989). This is a very abundant salamander found under logs along the margins of small streams, ponds, and vernal pools. Both juveniles and adults were found. Activity dates ranged from 10 April to 28 November.

Notophthalmus viridescens viridescens (Red-spotted Newt) - [A, D, E, H, I, V, Z]

The red-spotted newt was the most commonly found salamander, both alive and DOR. It was observed during all months and in large numbers. Newts were observed swimming under ice during January. Many juveniles were seen on roads after summer rains. Newts were also found in beaver ponds, vernal pools, road ruts, ponds, and under logs in mature hardwood forests. Amplexus was observed on 23 January 1999 and 21 February 1999. Male newts had an average of 14 dorsal spots (range 7-40, n=42) and female newts had an average of 11.2 dorsal spots (range 7-23, n=13).

Anurans

Bufo americanus (American Toad) - [A, D, E, F, H, M, V]

The American toad is widely distributed throughout the county. Earliest activity date was 27 February and the latest 22 May. Males were heard calling from 27 February (2000) to 17 May (1999). Egg deposition corresponded with rain events and was observed on 29 March, 2 April, and 8 April in 1997, 1 April, 5 April, and 8 April in 1999, and on 12 March 2000. Two egg masses contained 3,347 and 4,693 eggs, respectively. Hatching occurred 6 days after deposition. Egg masses were found in vernal pools and road ruts. Many strings of eggs were observed crushed by vehicles and desiccated when ponds dried before hatching.

Bufo fowleri (Fowler's Toad) - [A, D, E, F, L, M, U, V, Z, BB]

Fowler's toads were more commonly found than American toads. During humid summer nights, many were collected on roads. This was the most commonly found DOR anuran. Observation dates ranged from 4 April to 10 August. Males were heard between 23 April and 28 June 1999. Egg deposition was observed on 24 April 1999. This egg mass was attached to the stem of a needle rush (*Juncus* sp.) and contained 4,512 eggs. Hatching occurred 5 days later. In Powhatan County, this toad is encountered in a wide variety of habitats including vernal pools, beaver ponds, road ruts, roads near breeding pools, mature upland and lowland hardwood forests, and man-made ponds. One adult toad was found with a missing hand, possibly an injury resulting from a predator attack.

Acris crepitans crepitans (Northern Cricket Frog) - [A, B, C, D, F, I, K, L, U, Z, CC]

Northern cricket frogs were recorded almost everywhere in the county with appropriate habitat. They were heard and captured in ponds, swamps, beaver ponds, and mature hardwood forests surrounding these habitats, typically in large numbers. This anuran was observed in every month. Males were heard calling from 8 April 1999 to 12 July 1999. Egg deposition was observed on 18 May 1999. Egg masses were found to have an average of 37 eggs (range 23-57, n=34). Of the 34 masses surveyed, twenty-six were attached to aquatic grass, five to needle rush (*Juncus* sp.) stems, one to an unidentified hardwood leaf, one to a white oak (*Quercus alba*) leaf, and one mass was not attached.

Hyla chrysoscelis (Cope's Gray Treefrog) - [C, E, F, S, AA]

Cope's gray treefrogs and common gray treefrogs were differentiated from one another by their mating calls. Both were heard calling from the same breeding ponds at three sites. Adults were encountered in ponds, vernal pools, streams, and in hardwood trees surrounding breeding areas. Males were observed calling on 12 and 28 June 1999.

Hyla cinerea (Green Treefrog) - [JJ]

One green treefrog was found by Wanda Hagy (Powhatan resident) near her swimming pool and brought to me. After searching the area, no other specimens could be found nor were any heard. Mrs. Hagy has observed only one green treefrog, presumably always the same individual, on the same wall of her garage for several years. Is this lone specimen a member of a breeding population, an escaped pet, or was it transported to Powhatan by unsuspecting humans? If there is a small breeding population in Powhatan County, this would represent the western limits of this species' range in Virginia. Mitchell and Reay (1999) noted that the western limits of its distribution need to be clarified. More surveys for this species need to be conducted before any conclusions can be made.

Hyla versicolor (Common Gray Treefrog) - [B, C, E, AA]

Common gray treefrogs were heard calling from the same breeding ponds as Cope's gray treefrogs at three of four survey sites; dates were 12 and 28 June 1999.

Pseudacris crucifer crucifer (Spring Peeper) - [A, C, D, E, F, I, K, L, R, S, V, Z, AA, BB]

The spring peeper is widely distributed throughout Powhatan County, often forming large breeding choruses. These anurans are found in man-made ponds, beaver ponds, streams, swamps, vernal pools, and mature hardwood forests surrounding these habitats. Spring peepers were observed from 21 January to 26 October. Males were observed calling from 20 February to 4 April in 1997, from 25 February to 15 April in 1998, and from 21 January to 23 April in 1999. Males are sometimes heard during late fall months when temperatures become cool.

Pseudacris feriarum (Upland Chorus Frog) - [E, M, N, S, V]

Upland chorus frogs were heard in many locations throughout the county, including ditches, road ruts, and swamps. Recorded activity dates ranged from 18 January to 12 April. Males were observed calling from 27 February to 5 April in 1997 and from 18 January to 12 April in 1999. Amplexus was observed on 4 March 1999. Egg deposition was recorded on five dates between 4 and 19 March 1999. Egg masses contained an average of 30 eggs (range 11-62, n=65). They were attached to aquatic grass (n = 50), white oak leaves (n = 2), Spanish oak (*Quercus falcata*) leaves (n = 5), needle rush stems (n = 1), and unidentified detritus (n = 1); one egg mass was not attached. A filamentous green alga was associated with the outer surface of 49 of 65 (75%) egg masses.

Rana catesbeiana (Bullfrog) - [B, D, E, I, M, CC]

Bullfrogs are widely distributed throughout the county, where they were found in ditches, road ruts, swamps, beaver ponds, man-made ponds, and on roads surrounding these habitats. Earliest activity date was 9 January and the latest 12 July. Tadpoles were found in all months. Calling males were heard from 28 March 1999 to 12 July 1999. Egg deposition was observed on 9 May 1999. Hatching occurred 5 days later from 15 masses surveyed. Some eggs became desiccated after water levels dropped. Two egg masses contained 4,498 and 6,875 eggs, respectively.

Rana clamitans melanota (Green Frog) - [A, B, C, D, E, M, Z, AA]

Green frogs were found in many locations throughout the county, including ditches, road ruts, beaver ponds, and man-made ponds. However, large numbers of this species were not observed. Early and late dates of activity corresponded to male calling dates of 18 April to 28 June 1999. Tadpoles can be dipnetted during all months.

**Rana palustris* (Pickerel Frog) - [A, B, C, D, E, F, I, M, T, U, Z]

Pickerel frogs are very abundant and widespread in Powhatan County. This frog can be found in beaver ponds, ditches, man-made ponds, vernal pools, swamps, and roads running through or near these habitats. Activity dates ranged from 9 February to 22 September. Males were heard calling from 28 March to 23 April 1999. In 1999, egg masses were found on 30 March, 31 March, and 19 April. Three masses contained 1,331, 1,877, and 2,041 eggs, respectively. Average hatching time was 10 days (n=3). Egg masses were deposited on the stems of underwater plants (unidentified), stems of spadderdock (*Nuphar luteum*), and submerged branches.

**Gastrophryne carolinensis* (Eastern Narrow-mouthed Toad) - [T, CC]

A breeding chorus of nine narrow-mouthed toads was heard at site CC on 7 July 1999. Only one frog was heard at site T on this same date. These toads were discovered in swamps after a storm that produced strong winds (60 mph) and heavy downpours. A voucher audiotape was made of the breeding chorus at site CC.

Reptiles

Turtles

Chelydra serpentina serpentina (Eastern Snapping Turtle) - [A, D, H]

Juvenile and adult snapping turtles were found at three sites between 30 April and 16 June, but not in large numbers. Snapping turtles can be found in streams, swamps, man-made ponds, and roads near these habitats. Two shells of dead snapping turtles were found in habitat surrounding a pond and a stream. Leeches (*Placobella* sp.) were attached to some snapping turtles. The population size, distribution, and activity period of this species is undoubtedly greater than this survey represents.

Chrysemys picta picta (Painted Turtle) - [A, C, D, H, S]

Painted turtles are widespread and abundant in Powhatan County, where they were observed in man-made ponds, streams, beaver ponds, and on roads near these habitats. Activity periods include 16 February to 23 May. Nesting was observed on 23 May 1999, but no eggs were deposited. A leech was attached to one specimen.

Pseudemys concinna (River Cooter) - [A, B, D, CC, HH, II]

River cooters were widely distributed and found in many locations, including beaver ponds, streams, man-made ponds, and roads near these habitats. Earliest date of activity was 13 January and the latest 7 July. The turtle captured on the former date was found repeatedly until its death in February; it had a large swelling in its cloacal region. Six dried shells were found at the margin of a pond (site A) in a 3 m x 3 m area. Two males were trying to mount a female on 1 April 1999 at the edge of a beaver pond. A juvenile was dipnetted at site D on 11 May 1999.

Terrapene carolina carolina (Eastern Box Turtle) - [A, B, C, D, F, I, K, V, DD]

Box turtles are common throughout Powhatan County. Recorded activity dates ranged from 14 May to 21 September. During the spring and summer months, many turtles were seen on roads after rainstorms. Nesting was observed on 28 June 1999; the female was digging in the middle of a dirt road. Many box turtle shells were found in mature hardwood forests and pond margins. One crushed turtle was found in a field that is frequently mowed.

Kinosternon subrubrum subrubrum (Common Mud Turtle) - [C, D, E, F, AA, CC]

Adult mud turtles were found in man-made ponds, beaver ponds, streams,

and roads and forests adjacent to these habitats. Observation dates ranged from 9 April to 29 August. Dried shells were found scattered along the margins of ponds. One turtle had a leech attached to its skin.

Sternotherus odoratus (Common Musk Turtle) - [A, E, CC]

Adults were found in beaver ponds, man-made ponds, and swamps; dried shells were found adjacent to these habitats. The earliest activity date was 11 February and the latest 17 July.

Lizards

Sceloporus undulatus hyacinthinus (Northern Fence Lizard) - [B, D, I, V]

Many fence lizards were seen and caught during the survey period, including both adults and juveniles. They were predominantly captured along the edges of mature hardwood forests and in open residential settings. Activity dates ranged from 6 April to 25 October.

Eumeces fasciatus (Five-lined Skink) - [Q]

Many skinks were seen, but few were caught. Two adult five-lined skinks were caught on the siding of a house on 10 May 1999. This lizard is undoubtedly more widespread in Powhatan County.

Eumeces inexpectatus (Southeastern Five-lined Skink) - [Q]

One adult southeastern five-lined skink was found in the same location and on the same date as the five-lined skinks. This lizard is also under-represented in this survey because few skinks were caught.

**Scincella lateralis* (Ground Skink) - [B, F, I, Q]

Numerous adult ground skinks were seen and heard in the leaf litter of mature hardwood forests. The earliest activity date was 6 January and the latest 12 August.

Snakes

Carphophis amoenus amoenus (Eastern Worm Snake) - [A, B, H, I]

Worm snakes were found abundantly in and under logs in mature hardwood forests. Activity dates ranged from 20 April to 22 September.

Coluber constrictor constrictor (Northern Black Racer) - [A, I, J, P, U, V, CC]

Northern black racers are widely distributed across Powhatan County. These snakes were found mainly in disturbed habitats such as grassy fields and early and late successional timbered habitats. One juvenile (SVL = 270 mm, total length= 359 mm) accidentally killed by a weed eater on 28 September 1999, was dissected and found to contain a skink (*Eumeces* sp.) in its stomach. Activity dates ranged from 8 April to 6 October.

Diadophis punctatus edwardsii (Northern Ring-necked Snake) - [I]

Ring-necked snakes were only found in one location despite searching under cover objects in mature hardwood forests. They are undoubtedly more widespread. The ring-necked snakes found were phenotypically variable. Several snakes captured had complete yellow neck bands and no black dots on the ventrum. One snake captured had a complete yellow neck band and a row of half moon black dots on its ventrum, indicating an intergrade between the northern and southern ring-necked snakes. This observation of a snake with characteristics of both the northern and

southern ring-necked snakes is consistent with data collected by Blem & Roeding (1983). Adults were observed from 19 May to 6 November.

Elaphe guttata (Corn Snake) - [P, V, U, EE]

Corn snakes were found mainly in mature hardwood forests, late stage successional timbered habitat, and roads near these habitats. On 3 June 2000 one snake (SVL = 872 mm, total length = 983 mm) was cornered and harassed by a domestic cat. The earliest activity date recorded was 15 May and the latest date was 25 August.

Elaphe obsoleta obsoleta (Black Ratsnake) - [B, C, G, K, P, O, S, V, W, X]

The black rat snake is one of the most abundant and widely distributed snakes in Powhatan County. These snakes are found in and around mature hardwood forests, margins of ponds, late stage successional timbered habitat, residential subdivisions, and on roads near these habitats. Early and late records are 10 April and 16 October, respectively.

Heterodon platirhinos (Eastern Hog-nosed Snake) - [I, Y, FF, LL]

Despite intensive surveys for this snake, very few were found. Both the patterned and melanistic phases were observed. Seasonal activity dates are 10 May to 5 October.

Lampropeltis calligaster rhombomaculata (Mole Kingsnake) - [X, AA]

Although very few mole kingsnakes were found during this survey, this species is probably more abundant and widespread. The earliest activity date was 2 June and the latest 4 October.

**Lampropeltis getula getula* (Eastern Kingsnake) - [A]

One eastern kingsnake was captured on 26 May 1999. It was found in a mature hardwood forest beside the margin of a lake in the Powhatan Wildlife Management Area.

Nerodia sipedon sipedon (Northern Water Snake) - [D, I, M, V, DD]

Both juvenile and adult northern water snakes were found in ditches and along the margins of ponds. Activity dates ranged from 20 April to 21 September.

Opheodrys aestivus (Rough Greensnake) - [A, B, P, Q, S, V]

This is a widespread and abundant snake in Powhatan County. The earliest activity date was 21 May and the latest 21 October.

**Storeria dekay dekayi* (Northern Brown Snake) - [U, V, GG]

Seasonal activity dates ranged from 3 June to 3 November. One northern brown snake (SVL = 221 mm, total length = 315 mm) was cornered and harassed by a domestic cat on 3 June 2000.

Storeria occipitomaculata occipitomaculata (Northern Red-bellied snake) - [U]

One adult red-bellied snake was found on 11 May 1998.

Thamnophis sirtalis sirtalis (Eastern Gartersnake) - [P, V]

Gartersnakes were not commonly found during this survey period. Observations of adults ranged from 15 June to 30 September.

Agkistrodon contortrix mokasen (Northern Copperhead) - [A, G, P, V]

Copperheads are very abundant and widespread throughout the county; they were found in lowland hardwood forests, timbered habitat, margins of ponds, and on roads adjacent to these areas. Early and late records are 18 May and 7 October, respectively. One copperhead, killed by a county resident on 11 June 1999, was dissected and found to contain a bullfrog (*Rana catesbeiana*).

Potential Species

The range maps in Mitchell and Reay (1999) suggest that many species of amphibians and reptiles that were not observed during this survey may eventually be documented in Powhatan County. Genetic testing of the slimy salamanders found in the County may determine that *Plethodon chlorobryonis* (Atlantic coast slimy salamander) is part of the herpetofauna; this species is documented in an adjoining county (Chesterfield) on the east side of Powhatan County. *Pseudotriton montanus* (mud salamander) has been documented in adjoining counties to the north and south.

Three species of anurans that are recorded from Chesterfield County were not found during this survey. These species are *Hyla femoralis* (pine woods treefrog), *Pseudacris brimleyi* (Brimley's chorus frog), and *Rana sphenocephala* (southern leopard frog). Also, *Rana sylvatica* (wood frog) has been documented in Cumberland County, which borders Powhatan County to the west.

Kinosternon baurii (striped mud turtle) and *Pseudemys rubriventris* (northern red-bellied cooter) are both recorded in surrounding counties to the east. *Clemmys guttata* (spotted turtle) is found to the north, east, and south. More searching along the James River and its tributaries may result in the discovery of these species.

Cnemidophorus sexlineatus sexlineatus (eastern six-lined racerunner) has been documented in both Chesterfield and Goochland counties near the Powhatan County border. *Eumeces laticeps* (broad-headed skink) will

almost certainly be added to the herpetofauna of Powhatan County with the capture of more skink specimens. This lizard is vouchered in counties to the east and west of Powhatan County.

Regina septemvittata (queen snake) and *Thamnophis sauritus sauritus* (eastern ribbonsnake) are two common species found in surrounding counties that should be added to Powhatan's herpetofauna in the near future. Both *Farancia erytrogramma erytrogramma* (common rainbow snake) and *Virginia striatula* (rough earthsnake) are vouchered for adjoining counties to the east of Powhatan County. With some searching, these could possibly be documented in Powhatan County.

Discussion

Five species of amphibians and reptiles recorded from Powhatan County by Mitchell and Reay (1999) were not found during this survey. These species are *Scaphiopus holbrookii* (spadefoot toad), *Pseudotriton ruber* (red salamander), *Ophisaurus attenuatus longicaudus* (eastern slender glass lizard), *Cemophora coccinea copei* (northern scarletsnake), and *Virginia valeriae* (smooth earthsnake). The exclusion of certain survey techniques such as pitfall trapping (Corn, 1994) and leaf litter bags (Mitchell, 2000) and the short duration of this survey may explain why some of these species were not encountered. *Scaphiopus holbrookii* was not encountered despite road cruising during heavy rainfalls.

Regional survey work in the Piedmont is underrepresented in the literature. This area of Virginia is undergoing major transformation due to suburbanization, deforestation, and other forms of habitat alteration. Declines in reptiles and amphibians around the state and country have been well documented (Blaustein and Wake, 1990; Blaustein, et al., 1994; Drost and Fellers, 1996; Mitchell, 1996). The need for baseline inventory data for each county is important to judge how land use practices are altering or endangering the herpetofauna.

This study combined with records in Mitchell and Reay (1999) and Mitchell (1994) documents a total of 22 species of amphibians and 27 species of reptiles for Powhatan County. These numbers are comparable

to records for other Piedmont counties. For example, 21 amphibians and 24 reptiles are known for Goochland County (Mitchell and Reay, 1999) and 22 amphibians and 30 reptiles have been estimated for Campbell County (Sattler, 1995). Chesterfield County, a Piedmont county to the east of Powhatan County, has records for 26 amphibians and 37 reptiles. This difference in the biodiversity of herpetofauna may be explained by its larger size, more varied habitat, and its proximity to the Coastal Plain.

This study is not complete. More field work needs to be conducted in the western and southwestern parts of the county, the floodplains of the James and Appomattox rivers, and the eastern border with Chesterfield County. Other field work in the Piedmont also needs to be conducted before the sprawl of Alexandria, Charlottesville, Fredericksburg, Richmond, South Boston, and Danville alters or reduces the biodiversity of the surrounding counties.

Acknowledgments

Lou Caudle, Ryan Fischer, Tom Hofelich, Steven Dingus, Brandon Ayers, Kelley Shepperson, Chris Kerns, Bubba Sing, Clay Gills, John Dolen, Kelly Hresan, Mack Dowtin, and many other students were very helpful in providing motivation and animal specimens for this survey. I would like to thank the staff of Pocahontas Middle School, especially Kay Hancock. The people of Powhatan County were very generous in allowing me to survey their land. Dr. Don Merkle, Dr. Paul Sattler, and Dana Johnson were members of my thesis committee and without them this paper would not have been possible. Dr. Steven M. Roble, Dr. Paul Sattler, Jennifer Gibson, John White, and an anonymous reviewer provided invaluable comments on the manuscript. The following people have fueled my interest in this field: Jim Gibson, Dean Bohon, Bill Lalonde, Dana Johnson, Paul Sattler, and Eric Rhoades. This paper is dedicated to Mark and Jennifer, my two sources of inspiration.

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Table 1. Summary of the herpetofauna of Powhatan County, Virginia. Species are classified as (M) those reported in Mitchell and Reay (1999) and Mitchell (1994), (O) those observed during this study, (P) possible species, and (N) new county records.

Species	M	O	P	N
AMPHIBIANS				
Ambystoma maculatum	*	*		
Ambystoma opacum	*	*		
Desmognathus fuscus		*		*
Eurycea cirrigera		*		*
Eurycea guttolineata	*	*		
Hemidactylium scutatum		*		*
Plethodon chlorobryonis			*	
Plethodon cinereus	*	*		
Plethodon cylindraceus	*	*		
Pseudotriton montanus			*	
Pseudotriton ruber	*			
Notophthalmus v. viridescens	*	*		
Bufo americanus	*	*		
Bufo fowleri	*	*		
Acris c. crepitans	*	*		
Hyla chrysoscelis	*	*		
Hyla cinerea		*		?
Hyla versicolor	*	*		
Pseudacris brimleyi			*	
Pseudacris c. crucifer	*	*		
Pseudacris feriarum	*	*		
Rana catesbeiana	*	*		
Rana clamitans melanota	*	*		
Rana palustris		*		*
Rana sphenocephala			*	
Rana sylvatica			*	
Gastrophryne carolinensis		*		*
Scaphiopus holbrookii	*			

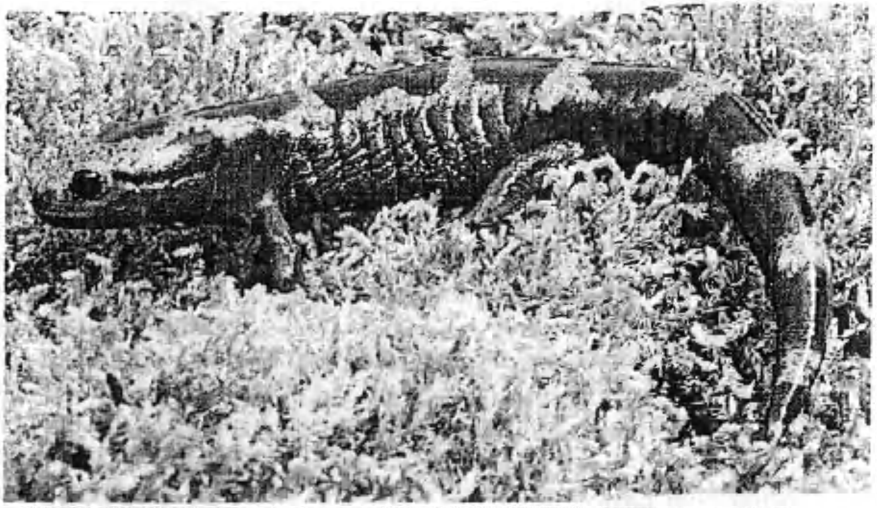
Species	M	O	P	N
REPTILES				
Chelydra s. serpentina	*	*		
Chrysemys p. picta	*	*		
Clemmys guttata			*	
Pseudemys concinna	*	*		
Pseudemys rubriventris			*	
Terrapene c. carolina	*	*		
Kinosternon baurii			*	
Kinosternon s. subrubrum	*	*		
Sternotherus odoratus	*	*		
Sceloporus undulatus hyacinthinus	*	*		
Cnemidophorus s. sexlineatus			*	
Eumeces fasciatus	*	*		
Eumeces inexpectatus	*	*		
Eumeces laticeps			*	
Ophisaurus attenuatus longicaudus	*			
Scincella lateralis		*		*
Carphophis a. amoenus	*	*		
Cemophora coccinea copei	*			
Coluber c. constrictor	*	*		
Diadophis punctatus edwardsii	*	*		
Elaphe guttata	*	*		
Elaphe o. obsoleta	*	*		
Farancia e. erytrogramma			*	
Heterodon platirhinos	*	*		
Lampropeltis calligaster rhombomaculata	*	*		
Lampropeltis getula		*		*
Nerodia s. sipedon	*	*		
Opheodrys aestivus	*	*		
Regina septemvittata			*	
Storeria d. dekayi		*		*
Storeria o. occipitomaculata	*	*		
Thamnophis s. sauritus			*	
Thamnophis s. sirtalis	*	*		
Virginia striatula			*	
Virginia valeriae	*			
Agkistrodon contortrix mokasen	*	*		

Table 2. Survey site locations (see Fig. 1) and habitat for Powhatan County herpetological survey.

Site	Location	Habitat
A	Lower Lake, PWMA (Powhatan Wildlife Management Area)	pond
B	Upper Lake, PWMA	pond
C	Route 684 at Stegger's Creek	creek and swamp
D	Bass Pond, PWMA	pond
E	Bullhead Pond, PWMA	pond
F	Sunfish Pond, PWMA	pond
G	Route 13 at Salle Creek	creek, hardwood forest
H	Salmon Creek, PWMA	creek and swamp
I	Pocahontas Middle School campus	pond, hardwood forest
J	0.5 km E jct. Route 522 x Route 617	road
K	Jct. Route 711 and Sherwood Forest Subdivision	swamp, vernal pool
L	Fine Creek Mills	creek
M	Millwood Plantation	ditch/agricultural
N	Jct. Route 711 x Route 714	Michaulk Creek
O	0.5 km N jct. Flint Hill Rd. x Route 614	residential
P	Mountain View Rd.	residential
Q	Lee's Landing Rd.	residential
R	St. John Neumans Catholic Church	vernal pool
S	New Dorsett Rd. at Swift Creek	Swift Creek
T	Genito Rd. at Chesterfield-Powhatan Co. line	swamp
U	1301 Avatar Drive	residential
V	Lock Gate Lake (at end of Lock Gate Lane)	man-made lake
W	Jct. Route 13 x Fighting Creek Road	residential
X	1.3 km E jct. Route 60 x Route 603	residential/ commercial
Y	Millquarter Lake	man-made lake
Z	Cundiff Pond	pond

Table 2 (continued)

Site	Location	Habitat
AA	Jct. Route 603 x Rocky Ford Road	creek
BB	Route 604 at Appomattox River	swamp
CC	Route 622 at Skinquarter Creek	swamp
DD	0.1 km W jct. Route 639 x Route 603	agricultural
EE	Jct. Route 60 x Rocky Oak Road	commercial
FF	1.1 km S jct. Route 604 x Route 622	road
GG	Bradbury Road	residential
HH	0.1 km E jct. Route 60 x Route 603	residential/ commercial
II	0.1 km E jct. Route 60 x Scottsville Road	two man-made lakes
JJ	2288 Mill Road	residential
KK	Old River Road	residential
LL	0.5 km S jct. Route 522 x Route 13	road



Marbled salamander (*Ambystoma opacum*) from Powhatan County, Virginia (photograph by Jason D. Gibson).

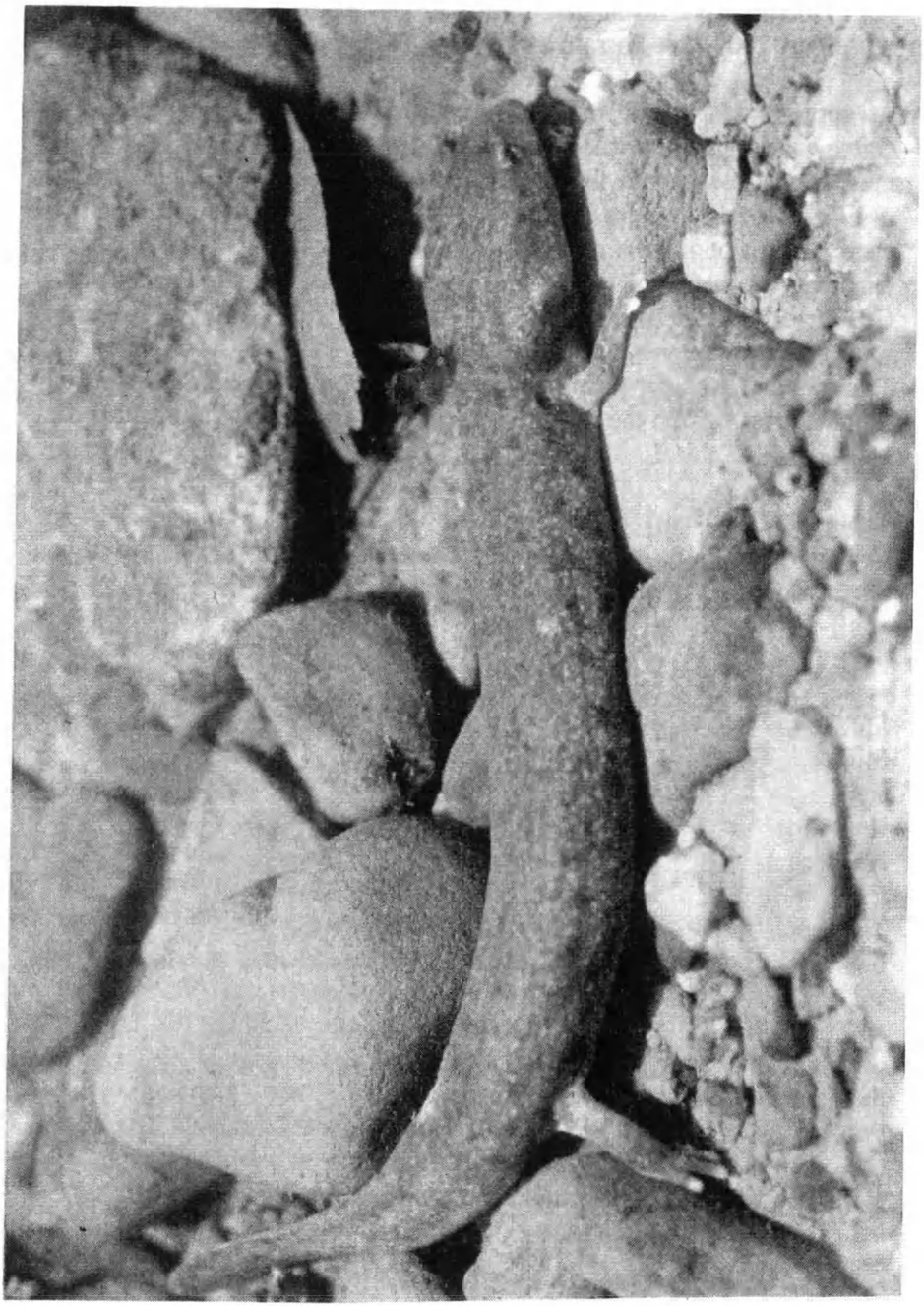
Mudpuppy (*Necturus maculosus maculosus*). VA: Smyth Co., South Fork Holston River mainstem, bridge on Co. Rt. 645 at jct. Co. Rt. 660. 25 August 2000. Joe Ferraro and George Palmer.

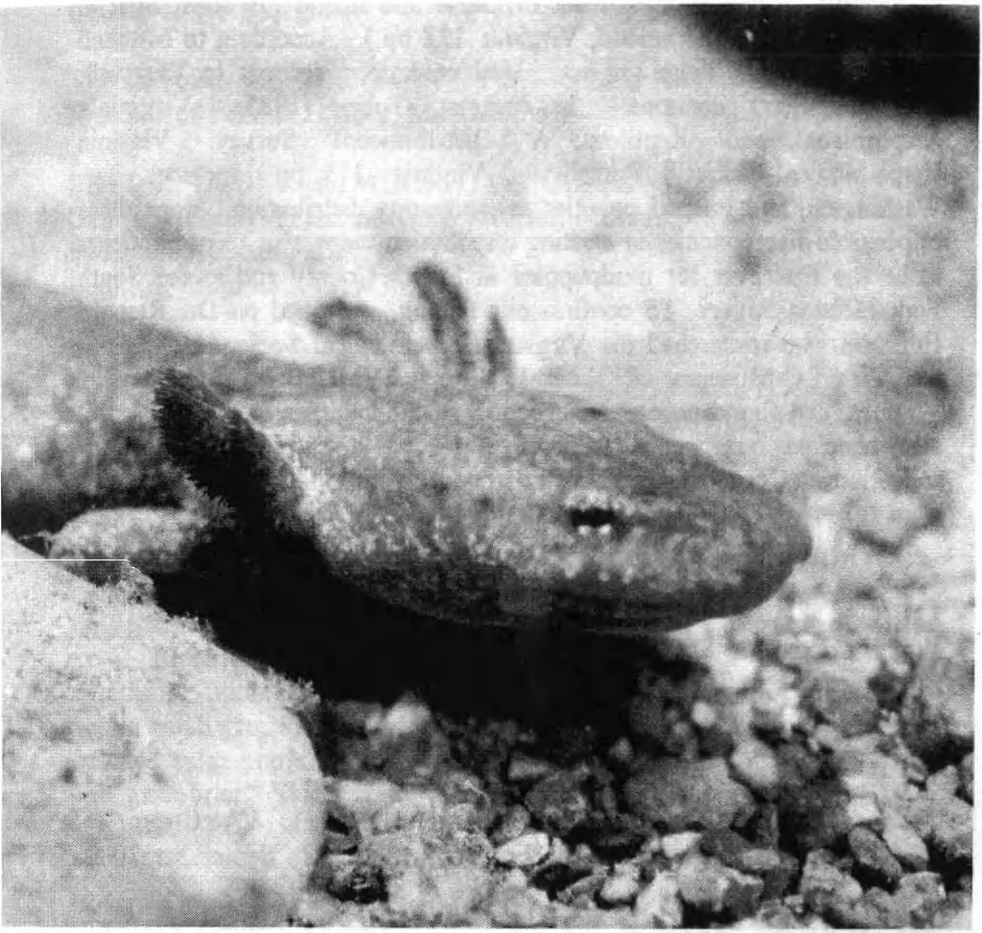
At approximately 1400 h on 25 August 2000, Virginia Department of Game and Inland Fisheries (VDGIF) biologists found two adult mudpuppies along with three adult eastern hellbenders (*Cryptobranchus a. alleganiensis*) using a barge electroshocking unit. Weather conditions were partly cloudy with no rain in the previous 24 hours. Air and water temperatures were not recorded. The specimens were found under the Co. Rt. 645 bridge at the junction with Co. Rt. 660. All five specimens were measured, weighed, implanted with PIT (Passive Integrated Transponder) tags for population monitoring, and released approximately 50 m upstream from the capture site on 28 August 2000. Recorded data are shown in Table 1.

Table 1. Size (cm) and weight (g) of *Necturus m. maculosus* and *Cryptobranchus a. alleganiensis* from the South Fork Holston River, Smyth County, Virginia.

	SVL	Total Length	Weight
Mudpuppy	15.9	22.9	52
Mudpuppy	14.2	20.0	36.5
Hellbender	24.8	37.0	255
Hellbender	28.0	42.1	340
Hellbender	27.4	42.4	340

The capture site is a deep run/pool habitat under the bridge with boulder/cobble/silt substrate and patches of submergent aquatic vegetation. Riparian vegetation on both sides from the bridge to approximately 65 m above the bridge consists of lawn. A church, a parking lot, and a house are on the left bank approximately 25-35 m from the stream. An abandoned school building and woody/herbaceous vegetation characterize the riparian area below the bridge. The release site, approximately 30 m above the bridge, is mainly run habitat with similar substrate. The mainstem in this area is stocked trout waters.





Left and above: mudpuppy (*Necturus maculosus maculosus*) from South Fork Holston River, Smyth County, Virginia.

The South Fork Holston River is a well-known site for hellbenders, but no previous confirmed records exist in Smyth County for mudpuppies (Mitchell, J. C. and K. K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia. Virginia Department of Game and Inland Fisheries, Special Publication No. 1, Richmond, Virginia. 122 pp.). According to Mitchell and Reay (1999), there are vouchered mudpuppy records in Tazewell, Lee, and Scott counties. In contrast, Tobey (1985. Virginia's Amphibians and Reptiles: A Distributional Survey. Virginia Herpetological Society, Purcellville, Virginia. 115 pp.) includes Lee, Washington, and Pulaski counties in mudpuppy distribution. Regardless of possible discrepancies in existing distribution maps, this record appears to be the first ever for mudpuppies in Smyth County and in the South Fork Holston River. To confirm our finding, we relied on Dr. Richard Hoffman who researched the Virginia Herpetological Society archives in the Virginia Museum of Natural History (VMNH) in Martinsville, Virginia, and found no previous records of mudpuppies in the area. We also checked our record with those in the herpetological specimen collection at Cornell University and found no information. Photographs were taken of one of the hellbenders and one of the mudpuppies upon release and are on file with VMNH in Martinsville, Virginia.

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Thamnophis sirtalis sirtalis **(Eastern Garter Snake).** VA: Craig Co., ca. 14 km W of New Castle on Virginia Rt. 311. 28 September 2000. Fred C. Huber and Mike W. Donahue.

On 28 September 2000, a DOR *Thamnophis s. sirtalis* was collected about 1530 h along State Route 311. The surrounding area was mainly post-burn emergent shrub and forb; this portion of Potts Mountain burned in 1995. This is the first vouchered record for this species from Craig County (Mitchell, J. C. 1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington, D.C. 352 pp.; Mitchell, J. C. and K. K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia. Virginia Department of Game and Inland Fisheries, Special Publication No. 1,

Richmond Virginia. 122 pp.). Mitchell (1994) shows several records for this species from adjoining counties (except Botetourt County), and Green and Pauley (1987. Amphibians and Reptiles in West Virginia. University of Pittsburgh Press. 241 pp.) document records in neighboring Monroe County in West Virginia.

The specimen will be forwarded to Dr. Richard Hoffman at the Virginia Museum of Natural History, Martinsville.

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***Eurycea guttolineata* (Three-lined Salamander).** VA: Middlesex Co., Dragon Swamp watershed, 0.6 km SW Glebe Landing Church. 18 October 2000. Anne C. Chazal and Katharine L. Derge.

The three-lined salamander is locally common in the Coastal Plain of Virginia, but the eastern parts of its range are not well defined (Mitchell, J. C. and K. K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia. Virginia Department of Game and Inland Fisheries, Special Publication No. 1, Richmond, Virginia. 122 pp.). One individual (SVL 59 mm) was collected at approximately 1530 h on 18 October 2000 among wet leaves from a small groundwater seep with a sandy substrate. Surrounding forest included tulip poplar, ironwood, red maple, American holly, spicebush, and greenbrier. Skies were partly cloudy and temperatures hovered around 20° C.

This specimen represents the first record of the three-lined salamander in Middlesex County as well as the first for the Middle Peninsula. The specimen will be deposited in the Virginia Museum of Natural History.

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***Ambystoma maculatum* (Spotted Salamander).** VA: Rockbridge Co., Co. Rt. 608, ca. 2.6 km N jct. Co. Rt. 710; ca. 60 m N of South River bridge, Marlbrook. 9 November 2000. Paul R. Cabe.

On 9 November 2000, I found an adult spotted salamander crossing County Route 608 in northeastern Rockbridge County. The sighting occurred at about 1930 h in a light drizzle, after a day of rain and moderate temperatures. The rain was the first measurable precipitation in this area in more than a month. The specimen was photographed the following day and released at the site of capture. A photograph has been deposited with Virginia Museum of Natural History.

This represents only the second recorded site for *Ambystoma maculatum* from Rockbridge County (Mitchell, J. C. and K. K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia. Virginia Department of Game and Inland Fisheries, Special Publication No. 1, Richmond, Virginia. 122 pp.) and is approximately 30 km from the previous county record and 25 km from collection sites in southeastern Augusta County. I am not aware of any temporal ponds in this area, although there are permanent spring-fed seepage/marsh pools directly adjacent to the road.

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***Rana sylvatica* (Wood Frog).** VA: Botetourt Co., Salt Pond, Jefferson National Forest, 2 km SW jct. Salt Pond Road and the Blue Ridge Parkway. 12 February 1999. William J Hunley.

While leading a group of Community School students on a field trip to Salt Pond, a vernal pool in the Glenwood Ranger District of the Jefferson National Forest, I observed a large breeding assemblage of wood frogs. I estimated that 800-1,000 frogs were present in and around the pond. It was not possible to get an accurate count because many frogs were egressing into the surrounding forest, where their cryptic coloration made them difficult to observe. Many pairs were seen in amplexus and a large

number of egg masses had already been deposited. The frogs were observed between 1300 and 1400 h on a relatively mild, overcast day. Despite rather strong westerly winds, the large number of calling males could be heard from a distance of approximately 1 km over wooded, hilly terrain.

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***Chelydra serpentina serpentina* (Eastern Snapping Turtle).** VA: James City Co., Lake Powell, 1.6 km S Williamsburg at jct. VA Rts. 199 and 31. 1 March 2001. C. Todd Georgel and Joseph C. Mitchell.

Mitchell (1994. The Reptiles of Virginia, Smithsonian Institution Press, Washington, D.C. 352 pp.) noted that seasonal activity in snapping turtles usually begins in late-March, as he found no earlier observations. Aerial basking behavior in snapping turtles is relatively common at northern latitudes but observed only occasionally at southern latitudes (M.E. Obbard and R.J. Brooks. 1979. Factors affecting basking in a northern population of the common snapping turtle, *Chelydra serpentina*. Canadian Journal of Zoology 57:435-440; C.H. Ernst et al., 1994. Turtles of the United States and Canada. Smithsonian Institution Press, Washington, D.C. 578 pp.). Such behavior occurs less in warmer summers than in cooler summers (G.P. Brown et al. 1990. Radiotelemetry of body temperatures of free-ranging snapping turtles (*Chelydra serpentina*) during summer. Canadian Journal of Zoology 68:1659-1663). Most basking behavior in snapping turtles occurs while floating on the surface of the water (Ernst et al., op cit., W.M. Palmer and A.L. Braswell. 1995. Reptiles of North Carolina. University of North Carolina Press, Chapel Hill, NC. 412 pp.). Aerial basking behavior in snapping turtles has been observed in Virginia but only rarely (Mitchell, op cit.). Roble and Garriock (1998. Field notes: *Chelydra serpentina serpentina*. Catesbeiana 18:53-54) observed two snapping turtles basking on dead limbs on 17 April 1998 in Pulaski County and one subadult on a stump on 3 June 1998 in Isle of Wight County. We observed an adult snapping turtle basking in Lake Powell on a log near shore at 1515 h EDT on 1 March 2001. We did not capture the turtle and could not determine its sex or measure its size.

The weather was clear and air temperature was about 15° C. This observation represents an early activity record and the earliest observation of aerial basking by snapping turtles in Virginia.

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Herps of Savage Neck Dunes Natural Area Preserve: Addendum

Roble et al. (2000. A preliminary survey of the amphibians and reptiles of Savage Neck Dunes Natural Area Preserve, Northampton County, Virginia. Catesbeiana 20: 63-74.) recorded ten amphibians and seven reptiles from this state-owned property on Virginia's Eastern Shore. They also listed 19 additional, hypothetical species for the preserve. On 1 November 2000, an adult ring-necked snake (*Diadophis punctatus*) was found by Steven M. Roble and Richard L. Hoffman near the north end of the preserve in a rotten stump. The specimen had a complete neck ring ("collar") and a row of black half-moons confined to the posterior portion of the belly, indicating that it was an intergrade between the northern and southern subspecies (*Diadophis punctatus edwardsii* x *D. p. punctatus*). The snake was released at the capture site after a brief examination.

The ring-necked snake was omitted from the hypothetical list for the Savage Neck area due to the lack of previous records for Northampton County (Mitchell, J. C. 1994. The Reptiles of Virginia, Smithsonian Institution Press, Washington, D.C. 352 pp.; Mitchell, J. C. and K. K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia. Virginia Department of Game and Inland Fisheries, Special Publication No. 1, Richmond, Virginia. 122 pp.). Savage Neck is only the third known locality on the Virginia portion of the Delmarva Peninsula (Mitchell and Reay, op. cit.), representing a southwestern range extension of ca. 80 km.

Mary J. Rybitski (Obituary)

Dr. Mary J. Rybitski, 37, a member of the Virginia Herpetological Society since 1991, was killed on 8 April 2001 in an automobile accident. She had been an assistant visiting professor of biology at Randolph-Macon College in Ashland, Virginia, since 1999, where she taught courses in general biology, animal physiology, freshwater ecology, and vertebrate field biology. A native of Pennsylvania, Mary obtained a Bachelor of Science degree (graduated Cum Laude) in biology from Wilkes University in Wilkes-Barre, Pennsylvania. She then entered graduate school at the Virginia Institute of Marine Science (VIMS), The College of William and Mary, Gloucester Point, Virginia, where she studied the effects of organochlorine pollutants on amphibians and reptiles. Mary obtained a Master of Arts degree in 1993, completing a thesis entitled "Distribution of organochlorine pollutants in sea turtles" under the direction of Drs. Robert C. Hale and John A. Musick. Portions of this research were presented at four scientific meetings, including three annual symposia (1992-94) on sea turtle biology and conservation. Mary received the Best Student Paper Award for her presentation at the 1993 sea turtle meeting and claimed second place in judging for Outstanding Student Presentation at the 1992 meeting of the Society for the Study of Amphibians and Reptiles (SSAR). In addition to the VHS, Mary was a member of SSAR and the American Society of Ichthyologists and Herpetologists (ASIH). Her master's thesis was published in 1995 in *Copeia*, the professional journal of ASIH.

Mary remained at VIMS for her doctoral studies, where she pursued research on the effects of organochlorine pollutants on amphibian larvae and their role in amphibian decline. She received a seed grant from the Declining Amphibian Populations Task Force in support of this research. Last year, Mary obtained a Ph.D. degree in Marine Science for her dissertation entitled "Effects of PCBs on development and sexual differentiation in ranid tadpoles," which was completed under the direction of Drs. Hale, Musick, and Wolfgang K. Vogelbein. She presented a poster at the 1998 meeting of ASIH in Guelph, Ontario, entitled "The effect of chronic exposure to Aroclor 1242 on metamorphosis of ranid tadpoles."

In addition to her graduate studies, Mary was involved in the design and maintenance of an independent mentorship program with research and lecture components. She mentored at least two undergraduates and nine high school students, both independently and in collaboration with other mentorship programs, including the Virginia Governor's School. Mary also assisted local schools by consulting on science projects in elementary grade levels, speaking to middle school science classes, and introducing pre-school children to science.

Like most members of the VHS, my interactions with Mary were limited to conversations during our spring and fall meetings. She was very personable and friendly, willing to talk about a range of topics that included the VHS and herps in general, her research projects, and her family. Mary was an enthusiastic supporter of the VHS and served on the society's Membership Committee. In this role, she designed and printed a membership recruitment poster for placement in local schools, libraries, and other public places; copies of the poster were distributed at the spring 1998 VHS meeting. Mary participated in at least the following spring field surveys: Fort A.P. Hill (1995), Massanutten Mountains (1996), and Clinch Mountain Wildlife Management Area (1998). She often brought her family to VHS meetings. Mary's survivors include her husband, Karl Oldershaw, two young sons, Alaric and Ethan, her parents, and two brothers. On behalf of the VHS, I extend our condolences to Mary's family and friends. She will be missed at future VHS meetings.

Steve Roble, Editor, *Catesbeiana*

President's Corner

Well spring has sprung and things are hoppin' around here, and I'm so busy I could croak. While at the same time, as I observe the young tads around me metamorphosing, I know it is time for yet another President's Corner. I know, I know, bad prose will get me nowhere.

Thanks to the Wintergreen Nature Foundation, and particularly Kathryn McConnell, for providing us with a fantastic venue (and kitchen) for the Fall 2000 Meeting and Teacher's Workshop. Those who attended the afternoon session of the meeting were treated to a full slate of excellent presentations - a word of appreciation to those speakers, thanks. Jason Gibson and Carol Heiser did an excellent job developing, organizing, and conducting this well-attended teacher's workshop. Thanks.

This spring, during our business meeting in Verona, VHS members will have the opportunity to vote on substantive changes to the By-laws of the Society (as described in detail in the Spring 2001 Newsletter). It is my hope that these changes, given membership's approval, will encourage a broader spectrum of VHS members to serve as officers of the Society. If approved, the changes will be in effect prior to our nomination and election of officers this fall. So please consider serving as an officer of the Society. VHS can only grow and evolve with fresh minds guiding it.

I am looking forward to the upcoming spring survey. Biologists Dawn Kirk and Fred Huber of the U.S. Forest Service are helping to coordinate the VHS survey of the Loves Run pond complex and Green Pond. The Loves Run sinkhole pond complex is near the Maple Flats complex and, like Maple Flats, a number of species associated with the Coastal Plain and lower Piedmont have been documented there. This is an outstanding survey opportunity given the unique nature of the Loves Run complex, and Green Pond (at an elevation of approximately 3200 feet). I encourage as many members as can include the May 19th survey in their schedules to participate, and to bring any neophyte herpetophiles along for the adventure.

Our thoughts and heart-felt condolences go out to the friends and family of Mary Rybitski. She was a valued member of the Society and will be missed.

Bob Greenlee, VHS President

Minutes of the VHS Fall Meeting
September 28, 2000
Wintergreen, VA

Bob Greenlee opened the meeting at 10:30 AM. The minutes of the Spring 2000 meeting were accepted as printed in *Catesbeiana* 20(2). The Treasurer's Report was accepted as printed in *Catesbeiana* 20(2). Paul Sattler stated that since the September report deductions had reduced the checking account to approximately $3,000 with the savings account at $1,700. The cost of printing and postage for *Catesbeiana* 20(2) would reduce the checking account further, but income was exceeding expenses. The editor's report for *Catesbeiana* was delivered via an email from Steve Roble. For Volume 20 Number 2 there were a total of 175 printed at a cost of $318.97 plus $106.95 for postage. Lori Williams gave the editor's report for the Newsletter. There were 190 copies of the Summer Newsletter mailed out at a cost of $70.83. Further costs for the Newsletter are expected to increase with use of a commercial printer. John White was thanked for the outstanding job he has done with the VHS Web page. Members were encouraged to check it out. Anyone can send John pictures of species which do not have a picture posted. Some suggestions for improving the Web page included updating the "Current News" section and seeing if a sponsor for the Web page could be found which does not require advertisement for credit card applications at the bottom of the Bulletin Board.

Bob Greenlee presented two changes to the VHS By-laws. The first would remove the stipulation that the President-elect would assume the office of President. The President-elect would be called the Vice-President and serve a two-year term, with specific duties, but not be required to automatically assume the office of President after their term as President-Elect/Vice President. The office of President would be filled by a vote taken every two years. The second change would remove Article II. Section 4.d as it conflicts with Article III. Section 3. Both of these amendments will be published in the Spring 2001 Newsletter and come up for a vote at the Spring 2001 meeting.

In the area of membership outreach, John White has designed a new VHS flyer. Several members have already used it and additional copies will be distributed for more widespread use in the future.

Mike Pinder reported that the snake brochure is currently in the design layout stage. January 2001 is the current completion date estimate. Mike said he would eat a bug if it was not out by the next VHS meeting. Any funds for the brochure donated from the VHS would need to be addressed to the Nongame Fund. A motion was made to donate the $1,700 currently in the savings account to help fund the brochure. The motion was seconded and carried.

Various locations for the Spring 2001 meeting were discussed. A survey utilizing some combination of Douthat State Park, Lake Moomaw, and Gaithright Wildlife Management Area was suggested as one possibility. Jason Gibson, as President-Elect has the responsibility of choosing the site.

Thanks were given to Jason Gibson and Carol Heiser for organizing the Teachers Workshop, which was a great success with 16 participants.

Paul Sattler
VHS Secretary/Treasurer

Dues Reminder

Membership in the Virginia Herpetological Society is on a calendar year basis (expires annually on December 31). Many members have not yet paid their dues for 2001. Please check the date on your mailing label to determine the last year for which you paid dues. If the year is highlighted, our records indicate that you have not renewed your VHS membership and this is the last society publication that you will receive unless we receive payment for 2001. A membership renewal form can be found on the last page of this bulletin. Dues can be paid at the spring meeting or mailed to the Secretary/Treasurer.

Treasurer's Report
March 29, 2001

Previous Checking Balance	$3,632.21
Disbursements:	
Fall 2000 Workshop Postage	$ 4.08
Snake Brochure	$1,700.00
New River Engraving	$ 78.38
Catesbeiana 20(2)	$ 425.92
March 2001 Newsletter	$ 83.78
Total	$2,292.16
Receipts:	
Transfer from Savings	$1,714.55
November Memberships/Fall Meeting	$ 558.00
December Memberships	$ 60.00
January Memberships	$ 43.00
February Memberships	$ 75.00
March Memberships	$ 360.00
Total	$2,810.55
March Balance	$4,150.60

Paul Sattler
Secretary/Treasurer

ANNOUNCEMENT
SPRING 2001 MEETING OF THE
VIRGINIA HERPETOLOGICAL SOCIETY

This year we will be surveying two distinct habitat units on the George Washington-Jefferson National Forest in Augusta County. The Loves Run Pond complex is a series of seasonal and perennial sinkhole ponds near the Maple Flats complex. As with the Maple Flats ponds, a number of plant and animal species generally associated with the Coastal Plain and/or the lower Piedmont have been found in the Loves Run Pond complex. The second primary survey area, Green Pond, is located at an elevation of approximately 3200 feet and is adjacent to the St. Marys Wilderness Area.

Schedule:

Friday May 18, 2001

7:00 PM	Business meeting at the Augusta County Government Center in Verona
7:45 PM	Break (with snacks and drinks provided)
8:00 PM	Slide show of potential species, and initial coordination meeting for survey on Saturday
8:45 PM	Adjourn

Saturday May 19, 2001

8:00 AM	Meet at Sherando Lake to coordinate Survey **NOTE**: Due to the nature of survey locations this year, it is important to attend this meeting prior to heading out for survey.
8:30 AM	Break into survey groups and travel to designated survey locations
12:30 PM	Free to survey outside of initial survey locations
5:30 PM	Meet at Sherando Lake outdoor pavilion to compile survey reports, compare adventures, and photograph collected specimens

Accommodations:

- Numerous hotels/motels are located in Waynesboro, Verona, or Staunton, with Waynesboro being closest to the survey locations.
- Camping is available at Sherando Lake and numerous other locations in the National Forest.

Directions to Augusta County Government Center, Verona, Virginia:

Take I-~~64~~ 81 to Exit 225 – Woodrow Wilson Parkway. Left on Woodrow Wilson Parkway (Route 275). Go 1.5 miles to Lee Highway (first light). Right on Lee Highway (US 11). Go 1 mile to right on Dick Huff Lane. Look for Government Center and VHS signs.

Directions to Sherando Lake:

Sherando Lake is located off Route 664 in Augusta County. It can be accessed via I-64 or I-81. We will have signs in the Sherando Recreation Area directing VHS members where to meet.

Equipment list:

- Sampling equipment: insect repellent, taxonomic identification guides, waders, seines, dip nets, collection jars/bags, snake stick, snake bag, camera.
- Rain gear and other clothing suitable for changeable May weather

Note: We have been asked by U.S. Forest Service personnel to follow appropriate equipment cleaning procedures prior to entering the survey locations. This includes thorough cleaning of dip nets, waders, etc.

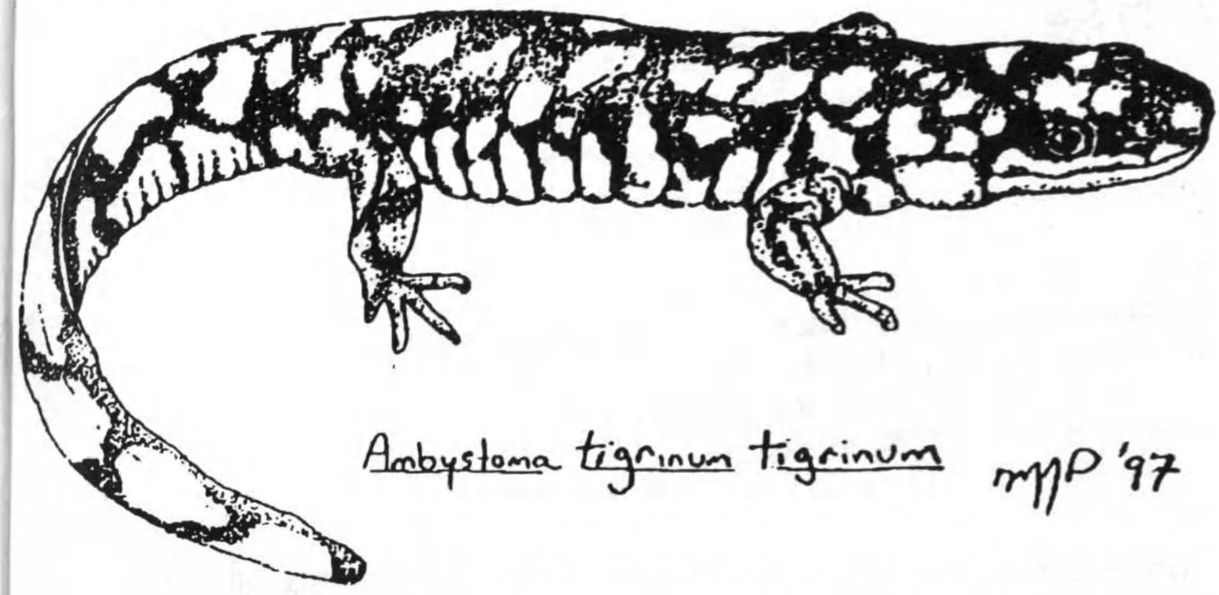
Potential Species List for the Region

Amphibians

Ambystoma jeffersonianum	Jefferson salamander
Ambystoma maculatum	Spotted salamander
Ambystoma opacum	Marbled salamander
Ambystoma tigrinum	Eastern tiger salamander
Desmognathus fuscus	Northern dusky salamander
Desmognathus monticola	Seal salamander
Eurycea cirrigera	Southern two-lined salamander
Eurycea guttolineata	Three-lined salamander
Eurycea longicauda longicauda	Longtail salamander
Gyrinophilus porphyriticus	Spring salamander
Hemidactylium scutatum	Four-toed salamander
Notophthalmus viridescens viridescens	Red-spotted newt
Plethodon cinereus	Red-backed salamander
Plethodon cylindraceus	White-spotted slimy salamander
Pseudotriton ruber	Red salamander
Acris crepitans crepitans	Eastern cricket frog
Bufo americanus americanus	Eastern American toad
Bufo fowleri	Fowler's toad
Hyla versicolor	Gray treefrog
Pseudacris crucifer crucifer	Northern spring peeper
Pseudacris feriarum	Southeastern chorus frog
Rana catesbeiana	Bullfrog
Rana clamitans	Green frog
Rana palustris	Pickerel frog
Rana sylvatica	Wood frog
Scaphiopus holbrookii	Eastern spadefoot

Reptiles

Chelydra serpentina serpentina	Eastern snapping turtle
Chrysemys picta picta	Eastern painted turtle
Clemmys guttata	Spotted turtle
Kinosternon subrubrum subrubrum	Eastern mud turtle
Sternotherus odoratus	Eastern musk turtle
Terrapene carolina carolina	Eastern box turtle
Cnemidophorus sexlineatus sexlineatus	Eastern six-lined racerunner
Eumeces anthracinus anthracinus	Northern coal skink
Eumeces fasciatus	Five-lined skink
Eumeces laticeps	Broad-headed skink
Sceloporus undulatus hyacinthinus	Northern fence-lizard
Scincella lateralis	Little brown skink
Agkistrodon contortrix mokasen	Northern copperhead
Carphophis amoenus amoenus	Eastern wormsnake
Coluber constrictor constrictor	Northern black racer
Crotalus horridus	Timber rattlesnake
Diadophis punctatus	Ring-necked snake
Elaphe guttata	Corn snake
Elaphe obsoleta	Black ratsnake
Heterodon platirhinos	Eastern hog-nosed snake
Lampropeltis calligaster rhombomaculata	Mole kingsnake
Lampropeltis getula	Common kingsnake
Lampropeltis triangulum triangulum	Eastern milksnake
Liochlorophis vernalis	Smooth greensnake
Nerodia sipedon sipedon	Northern watersnake
Opheodrys aestivus	Rough greensnake
Pituophis melanoleucus melanoleucus	Northern pinesnake
Regina septemvittata	Queen snake
Storeria dekayi dekayi	Northern brownsnake
Storeria occipitomaculata occipitomaculata	Northern red-bellied snake
Thamnophis sauritus sauritus	Eastern ribbonsnake
Thamnophis sirtalis sirtalis	Eastern gartersnake
Virginia valeriae	Smooth earthsnake


Ambystoma tigrinum tigrinum
mjp '97

MEMBERSHIP APPLICATION

I wish to _____ initiate _____ renew membership in the Virginia Herpetological Society for the year _____ 2001 _____ 2002_____2003.

Name _____

Address _____

_____

_____

_____ Phone _____

email address: _____

Dues Category: ____ Regular - $15.00
____ Family - $20.00
____ Under 18 - $8.00
____ Life - $225.00

Interests: ____ Reptiles ____ Amphibians
____ Distribution ____ Research
____ Captive Husbandry
____ Specifically _____

Make checks payable to the Virginia Herpetological Society and send to: Dr. Paul Sattler, VHS Secretary/Treasurer, Department of Biology, Liberty University, 1971 University Blvd., Lynchburg, VA 24502

Visit the VHS web site at: http://vhsociety.home.mindspring.com/

Field Notes

This section provides a means of publishing natural history information on Virginia's amphibians and reptiles that does not lend itself to full-length articles. Observations on geographic distribution, ecology, reproduction, phenology, behavior, and other topics are welcomed. Field Notes will usually concern a single species. The format of the reports is: Scientific name (followed by common name in parentheses), state abbreviation (VA), county and location, date(s) of observation, observer(s), data, and observations. The name(s) and address(es) of the author(s) should appear one line below the report. Consult the editor if your information does not readily fit this format. ALL FIELD NOTES MUST INCLUDE A BRIEF STATEMENT EXPLAINING THE SIGNIFICANCE OF THE RECORD (e.g., new county record) OR OBSERVATION (e.g., unusual or rarely observed behavior, extremely early or late seasonal record, abnormal coloration, etc.). Submissions that fail to include this information are subject to rejection. Relevant literature should be cited in the body of the text (see Field Notes in this issue for proper format). All submissions will be reviewed by the editor (and one other person if deemed necessary) and revised as needed; all changes must be approved by the author(s) before publication.

If the field note contains information on a new county (or state) record, verification is REQUIRED in the form of a voucher specimen deposited in a permanent museum (e.g., Virginia Museum of Natural History) or a color photograph (print or slide) deposited in the archives of the Virginia Herpetological Society. Photographs should be sent to the editor for verification and archiving purposes; the identity of voucher specimens must be confirmed by a museum curator or other qualified person. Include the specimen number if it has been catalogued. Prospective authors of distribution reports should consult Mitchell and Reay (1999. *Atlas of Amphibians and Reptiles in Virginia*), Mitchell (1994. *The Reptiles of Virginia*), Tobey (1985. *Virginia's Amphibians and Reptiles: A Distributional Survey*) and other recent literature to determine if they may have a new county record. Species identification for observational records (e.g., behavior) should be verified by a second person whenever possible.

The correct citation format is: Tobey, F. J. 1989. Field notes: *Coluber constrictor constrictor. Catesbeiana* 9(2): 35.

Photographs

High contrast black-and-white photographs of amphibians and reptiles will be considered for publication if they are of good quality and are relevant to an accompanying article or field note. Submissions should be no larger than 5 x 7 inches and printed on glossy paper. Published photographs will be deposited in the archives of the Virginia Herpetological Society.