

# SURVEY OF Loudoun COUNTY, VIRGINIA FOR THE STATE THREATENED WOOD TURTLE, *CLEMMYS INSCULPTA*

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The Virginia Herpetological Society's 16-17 April, 1993 spring meeting provided VHS members and others with a unique opportunity to assist the Virginia Department of Game and Inland Fisheries in efforts to protect and conserve one of Virginia's rarest reptile species. High levels of turbidity and increased stream velocities from storm events the week prior to the survey precluded the discovery of our target species, the state endangered wood turtle, *Clemmys insculpta*. Nevertheless, participants identified potential habitat, as well as unsuitable habitats, of the wood turtle in Loudoun County, thereby reducing area and search requirements needed for this species in future surveys in this county. Results of the survey also increased our knowledge of the herpetofauna of Loudoun County, having documented the occurrence of numerous species of amphibians, reptiles, and other animals.

Wood turtles hibernate in aquatic environments during fall and winter months and in Virginia and are known to begin emerging from clear brooks and streams during the month of April (Ernst 1986). Therefore, we chose mid-April to conduct our survey. The rationale was that the likelihood of success in finding these rare animals would be increased during this time, as they would be relatively confined in the stream environment, are easy to visually locate from the stream bank in the clear water which they seem to prefer (pers. observ.), and would have just begun to move about, basking on logs, and perhaps even foraging about within riparian areas of streams. During later months of spring, summer, and even early fall, these animals are known to travel extensively on land in search of food and nest sites, thus decreasing chances of finding them. Nine sub-watersheds of the Potomac River Basin were pre-selected for survey efforts with input from a wood turtle expert (John McBreen, pers. comm.), and other biologists familiar with both the drainage and the biology of the species (Phil Stevenson, and Kurt Buhlmann, pers. comm.).

## Methods

On 17 April, 1993, instream habitat and riparian areas were searched within reaches of eleven tributaries of the Potomac River in Loudoun County. Where possible during stream investigations, long-handled dip-nets were used to probe and search log jams, woody debris, overhanging root systems and banks, muskrat burrows and any other instream habitat encountered. Because wood turtles in other parts of their range inhabit marshy fields and woodland bogs, and are known to wander extensively on land in search of food and appropriate nesting sites, riparian areas adjacent to targeted streams also were searched. Riparian habitats that were investigated included small pools and tributaries, moist areas, and any understory vegetation which potentially could conceal a wood turtle. Nine survey teams ranged in size from 2 to 9 persons; average team size was six individuals. Except for one 15 minute search which ended prematurely due to steep terrain and absence of a floodplain, search time per team/per site ranged from 0.5 to 3 hours, with an average of 1.6 hours. Water temperatures ranged from 12-14°C; weather was partly cloudy, breezy and cool (air temperature roughly 16°C).

## Results

To follow is a list, by stream, of the herpetofauna and other animals observed and subsequently released by survey participants at 19 sampling stations within the Potomac River Basin. Sites that contained habitat conditions suitable for wood turtles, which warrant further investigation for the potential occurrence of this state threatened species, are labeled "**high**". Area covered per survey site (longitudinal stream length) is indicated in parentheses. Area of floodplain habitats that were searched varied between groups and sites, were not recorded consistently and thus are not reported here. Sites labeled "**low**" were considered to be of poor quality and should not be revisited during the

next survey for wood turtles in Loudoun County, Virginia. "**Moderate**" sites should be visited if time, funding, and personnel allow; priority, however, should be given to targeting other unexplored, potentially high quality areas in Loudoun County.

Piney Run - from Rt. 686 bridge crossing and upstream for ~0.8 km (~0.8 km distance; Harper's Ferry 7.5' quad). Search effort: 5 persons, 1.5 hr per person. **Potential for wood turtles: high.**

snapping turtle (*Chelydra serpentina*) juvenile  
painted turtle (*Chrysemys picta*) male, crossing road  
box turtle (*Terrapene carolina*) live individual plus partial plastron

Piney Run - headwaters at Rt. 687 crossing (~500 m distance; Harper Ferry's 7.5'quad). Search effort: 5 persons, 0.5 hr per person. **Potential for wood turtles: low.**

Redback salamander (*Plethodon cinereus*)  
slimy salamander (*Plethodon cylindraceus*)

Dutchman Creek - Rt. 674 crossing, near mouth and upstream from confluence with Potomac River (~200 m distance; Harper's Ferry 7.5' quad). Search effort: 8 persons, 2 hr per person. **Potential for wood turtles: high.**

eastern ribbon snake (*Thamnophis sauritus*)  
redback salamander (*Plethodon cinereus*)  
redbelly turtle (*Pseudemys rubriventris*) juvenile  
northern two-lined salamander (*Eurycea bislineata*)  
beaver

Sugarland Run - ~0.8 km. N. of Co. Rt. 1208 (Thomas Ave.) crossing, ~.8 km north of Herndon Junction (~0.8 km distance; Seneca MD-VA 7.5'quad) **Note:** this reach was severely impacted by recent diesel oil spill (Colonial Pipeline, 29 March, 1993, at Reston, VA). Floodplain tree species: sycamore, river birch, sweetgum. Herbaceous cover was flooded (diesel fuel still a major component of water column, as judged by strong diesel odor). Rocks along several bank areas were checked for signs of animal life; 2 earthworms were the only live animals found in 0.8 km reach surveyed. Search effort: 7 persons, 1.25 hr per person. **Potential for wood turtle habitat: low.**

dead crayfish  
Asiatic clam (dead valves only)  
raccoon and deer tracks observed  
earthworms (n=2)

North Fork Catoclin Creek - at Rt. 690 bridge crossing, southeast of Hillsboro, downstream for ~1.5 km (~1 km distance; Purcellville 7.5' quad). Search effort: 7 persons, 1.5 hr per person. **Potential for wood turtle habitat: high. Flagging observed indicative of potential encroaching development.**

redback salamander (*Plethodon cinereus*) lead and red varieties  
spotted salamander (*Ambystoma maculatum*) live & dead eggs  
pickrel frog (*Rana palustris*)  
eastern garter snake (*Thamnophis sirtalis*) n=3  
eastern box turtle (*Terrapene carolina*)

North Fork Catoclin Creek - at Rt. 752 crossing, upstream to Rt 287 bridge crossing (~2.5 km distance; Purcellville 7.5' quad). Search effort: 7 persons, 1.25 hr per person. **Potential for wood turtles: high**

spring peeper (*Pseudacris crucifer*)  
black rat snake (*Elaphe obsoleta*) 1.5' long, missing an eye  
eastern garter snake (*Thamnophis sirtalis*)  
pickrel frog (*Rana palustris*)  
redback salamander (*Plethodon cinereus*) lead variety; abundant

Little River - from Rt. 776 crossing (2 km sw of Middleburg) downstream to 0.3 river km downstream of Facquier/Loudoun Co. line (~1.5 km distance; Middleburg 7.5'quad). Search effort: 7 persons, 3 hr per person.

**Potential for wood turtles: high.**

eastern garter snake (*Thamnophis sirtalis*)

queen snake (*Regina septemvittata*)

pickereel frog (*Rana palustris*)

green frog (*Rana clamitans*)

spring peeper (*Pseudacris crucifer*)

eastern elliptio (freshwater mussel)

Atlantic spike (freshwater mussel)

Beaverdam Creek - From Rt. 630/790 intersection downstream to Rt. 790 bridge crossing (~0.8 km distance; Bluemount, VA 7.5'quad). Search effort: 2 persons, 2 hr per person. **Potential for wood turtles: high.**

green frog (*Rana clamitans*)

box turtle (*Terrapene carolina*)

water snake (*Nerodia sipedon*)

pickereel frog (*Rana palustris*)

spotted salamander (*Ambystoma maculatum*) eggs in floodplain pool

wood frog tadpoles (*Rana sylvaticus*)

painted or spotted turtle (i.d. uncertain)

Beaverdam Creek - Rt. 623 crossing, ~0.8 km south of Howardsville (~0.8 km distance; Bluemount 7.5' quad). Search effort: 2 persons, 1 hr per person. **Potential for wood turtles: moderate, but note:** local farmer claimed "having seen a few wood turtles from time to time".

green frog (*Rana clamitans*)

Beaverdam Creek - just downstream from Rt. 626 crossing, 0.8 km southeast of Unison (~1.5 km distance; Bluemount 7.5' quad). Search effort: 2 persons, 1.5 hr per person. **Potential for wood turtles: high.**

green frog (*Rana clamitans*)

box turtle (*Terrapene carolina*)

S.F. Catoctin Creek - Rt. 698 crossing at Waterford (~1.5 km distance; Waterford 7.5' quad). Search effort: 7 persons, 1 hr per person. **Potential for wood turtles: high.**

american toad (*Bufo americanus*) DOR

Catoctin Creek - 200 m west of Rt. 15 bridge over Potomac River, at Point of Rocks (~1.5 km distance; Point of Rocks 7.5' quad). Search effort: 7 persons, 2.5 hr per person. **Potential for wood turtles: moderate** northern water snake (*Nerodia sipedon*)

redback salamander (*Plethodon cinereus*)

Potomac River - immediately downstream from U.S. 15 bridge at Point of Rocks (~0.8 km distance; Point of Rocks 7.5' quad). Search effort: 7 persons, 1 hr per person. **Potential for wood turtles: moderate.**

redback salamander (*Plethodon cinereus*)

northern two-lined salamander (*Eurycea bislineata*)

american toad (*Bufo americanus*)

Potomac River - south bank of river from Algonquin Regional Park west to unnamed tributary of Potomac River (~1.5 km distance; Sterling VA-MD 7.5'quad). Search effort: 7 persons, 2 hr per person. **Potential for wood turtles: low (however, unnamed tributary to Potomac River: high).**

redback salamander (*Plethodon cinereus*) n=13

marbled salamander (*Ambystoma opacum*) n=1

northern brown snake (*Storeria dekayi*) DOR in park; n=1

eastern garter snake (*Thamnophis sirtalis*) n=1

pickerel frog (*Rana palustris*)  
green frog tadpole (*Rana clamitans*)  
spotted salamander (*Ambystoma maculatum*) in floodplain pool

North Fork Goose Creek - Rt. 611 stream crossing and extending downstream for 0.8 km (~0.8 km distance; Lincoln 7.5' quad). Search effort: 7 persons, 3 hr per person. **Potential for wood turtles: moderate.**

eastern garter snake (*Thamnophis sirtalis*)  
*Nerodia* sp.

North Fork Goose Creek - from confluence with Goose Creek, upstream to ~1.2 km above confluence with Crooked Run (4.5 km distance; Lincoln 7.5' quad). Search effort: 5 persons, 1 hr per person. **Potential for wood turtles: high.**

green frog (*Rana clamitans*) n=3  
redback salamander (*Plethodon cinereus*) n=33+  
spring peeper (*Pseudacris crucifer*)  
box turtle (*Terrapene carolina*) carapaces only; n=3

Goose Creek - 0.3 km east of Rt.733/763 intersection, just upstream of unnamed tributary at Marble Quarry Road (old ford); surveyed right ascending bank only (survey terminated prematurely because steep slopes and lack of floodplain precluded further progress; Lincoln 7.5' quad). Search effort: 5 persons, 15 min per person. **Potential for wood turtles: low.**

no animal observations reported

Goose Creek - from confluence with N.F. Goose Creek upstream to intermittent tributary (~1.2 km distance; Lincoln 7.5' quad). Search effort: 5 persons, 0.5 hr per person. **Potential for wood turtles: high.**

no animal observations reported

Milltown Creek - Rt. 691 crossing, 1.5 km west of Rt. 287, 1st house on right after beaver dam swamp (~100 m distance; Purcellville 7.5' quad). Search effort: 8 persons, 1 hr per person. **Potential for wood turtles: moderate.**  
no animal observations reported

### **Comments and Recommendations**

Water levels were approximately 2-3 m above normal on the survey date, and as judged by fresh floodplain debris observed, many streams exceeded full-bank just prior to the survey. The number of animals observed and recorded at each of the sites surveyed is not a valid indicator, by itself, of the potential presence or absence of wood turtles. Observed physical condition of habitats, and existing level of commercial and/or residential development and other threats, weighed heavily in judging whether survey sites had the potential to support wood turtle populations.

Because the VHS meeting dates, accommodations, etc. were fixed, we did not have the luxury of postponing our survey. As was made obvious during our survey attempt, good weather conditions are crucial for achieving success in attempts to find wood turtles. The benefits of having a large group of energetic volunteer surveyors (many eyes, great effort, opportunity to educate many people about rare animals) must be weighed against the inflexibility that is associated with employing such a method (inability to postpone survey).

It is the opinion of the author that, for reasons stated previously, mid-April is an appropriate time to conduct a survey for wood turtles in Loudoun County. However, stream conditions during this time of high discharge are subject to rapid fluctuations. An alternative sampling time which could be chosen is in the fall, when water levels typically are low, more predictable, and when mating activities of the wood turtle are occurring (Ernst and McBreen 1991). In addition, alternative sampling methods should be considered in addition to or potentially in replacement of, those used during this survey. Snorkeling techniques in stream environments has been shown to be an effective method for finding rare stream fishes and mollusks (Ensign et al., pers. observ.), and may be suitable for wood turtle surveys as well.

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#### **Literature Cited**

Ernst, C.H. 1986. Environmental temperatures and activities in the wood turtle, *Clemmys insculpta*. Journal of Herpetology 20:222-229.

Ernst, C.H., and J.F. McBreen. 1991. Wood turtle, *Clemmys insculpta*. pp. 455-457 In K. Terwilliger (Coordinator), Virginia's Endangered Species. McDonald and Woodward Publishing Co., Blacksburg, Virginia.

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