

A Survey for Freshwater Mussel Fauna in
Beaverdam Run and an unnamed tributary
at "The Broadlands" Property,
Loudoun County, Virginia

Submitted to:

Broadlands Associates
11911 Freedom Drive, Suite 300
Reston, Virginia 22090
and
Wetlands Studies and Solutions, Inc
14088-M Sullyfield Circle
Chantilly, VA 22021

Submitted by:

Philip H. Stevenson
Consulting Ecologist
P.O. Box 17144
Richmond, Virginia 23226
Phone (804) 288-5605
Fax (804) 673-6756

July 25, 1994

Introduction

Broadlands Associates currently is developing a residential development named The Broadlands in Loudoun County, Virginia. Their consultant, Wetlands Studies and Solutions, Inc., is acting on behalf of Broadlands Associates to obtain permits from the U.S. Army Corps of Engineers. As a result of a recommendation from the U.S. Fish and Wildlife Service, Wetlands Studies and Solutions, Inc. requested Philip H. Stevenson to undertake a survey of Beaverdam Run and an unnamed tributary to determine the presence of the green floater (*Lasmigona subviridis*) and other freshwater mussel species.

Methods

Beaverdam Run in Loudoun County, Virginia was surveyed for the presence of rare freshwater mussels. The survey focused on the green floater. This species is listed as a state special concern species and is a candidate for federal listing. Survey areas were all adjacent to proposed sanitary sewer extensions from The Broadlands. The survey area of Beaverdam Run extended from approximately 600 meters downstream of the County Route 643 upstream to approximately 300 meters upstream of the County Route 625 crossing. A second survey area occurred on the northern edge of the property, extending from County Route 643 200 meters downstream. This second area borders an unnamed and probably intermittent tributary. Figure 1, selected portions of the U.S. Geological Survey topographic 7.5 minute map of the Sterling, Virginia and Leesburg, Virginia quadrangles, indicates the survey areas. The author added annotations to indicate the approximate site of mussel habitat survey.

Searching was largely limited to those areas of habitat which are considered to be significant for the green floater. These habitats generally are reported as slower waters with sand and gravel substrates (Clark, 1985; Johnson, 1970; Ortmann, 1919). Survey methods included waterscoping, handpicking, and raking the substrate. In addition, stream banks were searched for middens of shells discarded by predators and shells cast on bars by flood. Field survey occurred on July 17, 1994. Philip H. Stevenson conducted the field survey. Voucher specimens, as appropriate, will be deposited in the Virginia Museum of Natural History, Martinsville, Virginia.

Results and Discussion

The survey found no mussel species. In Beaverdam Run, searching was only performed intensively from the downstream boundary of the survey area to approximately 50 meters upstream of the County Route 643 crossing. This area comprised the only possibly appropriate habitat available within the survey areas.

Beaverdam Run below County Route 643 was generally composed of shallow pools. Water depth was from 0.1 to 0.4 meters deep,

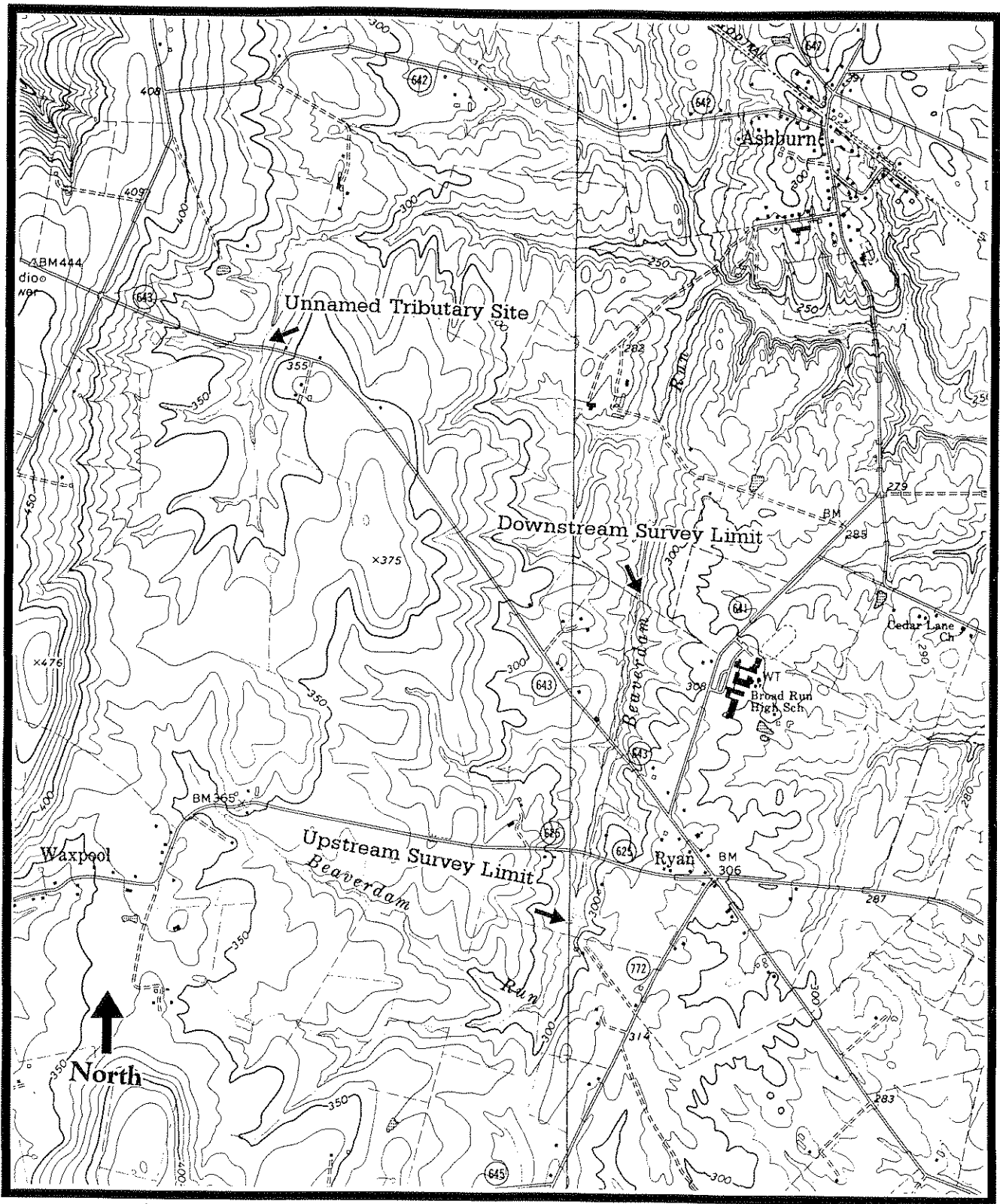


Figure 1. Mussel Survey Sites in Beaverdam Creek and an unnamed tributary, The Broadlands, Loudoun County, Virginia

typically being 0.2 meters deep. Water visibility was moderate in this area, varying from pool to pool. The stream bed was from 3-5 meters wide, bordered by low, moderately steep and well-vegetated banks. The pools tended to extend across the stream width. The pools tended to have either a muddy sand and gravel substrate or moderately thick mud/silt substrate.

There was almost no flow in Beaverdam Run on the day of the survey. The areas which might constitute riffles in higher flow were either dry or had a very narrow (ca. 0.1 meter wide), shallow trickle of water flowing in them. Of these "riffle" areas, the areas which possessed some flow generally had a gravel/cobble substrate. Bedrock substrate also occurred here. Bedrock exposures were most frequent in the lower two thirds of the reach below County Route 643. The stream bed was typically dry throughout its length where it followed bedrock exposures. Nearly half of the stream bed in this survey area was dry. Dry, bedrock streambed also occurred above the County Route 643 crossing, upstream of a muddy pool immediately at the crossing.

The fauna observed in Beaverdam Run was as expected of a headwater stream. Few fish, all cyprinids, were seen. No darters were observed. The mollusks were reduced to 2 species of fingernail clam (family Sphaeriidae) and a common planorbid snail (*Helisoma* sp.). Crayfish were extremely common and active on the day of the survey. Additionally, ranid frogs and a painted turtle (*Chrysemys picta*), both species of ponded environments, were seen. No pleurocerid snails or *Campeloma decisum* snails were seen. Both snails are typical of permanent streams and frequently occur with common and rare freshwater mussels.

Visual inspections of Beaverdam Run at the County Route 625 crossing revealed no appropriate habitat. The land along Beaverdam Run here was active pasture with no riparian buffer between the fields and the stream. The stream was clearly visible to the upstream limit of the survey area and for several hundred meters downstream. The predominate habitat was small, turbid pools with some marshlike emergent vegetation. There was no barrier of access to cattle to the stream. Similarly, visual inspection of the survey area of the unnamed tributary revealed a mostly dry creek bed with no appropriate habitat for rare mussels.

Summary

No species of freshwater mussel were found in Beaverdam Run. Due to the small size of the stream, its nearly intermittent nature, the disturbed portions of habitat, lack of any mussel fauna, I believe there is virtually no possibility of rare mussels being present in the survey area. The construction of the proposed sewer extensions should not affect populations of any rare mussel species.

References

Clarke, Arthur H. 1985. The tribe Alasmidontini (Unionidae: Anodontinae), part II: Lasmigona and Simpsonaias. Smithsonian Contributions to Zoology No. 399.

Johnson, Richard I. 1970. The systematics and zoogeography of the Unionidae (Mollusca: Bivalvia) of the southern Atlantic slope region. Bulletin of the Museum of Comparative Zoology 140(6): 263-450.

Ortmann, A. E. 1919. A Monograph of the Naiades of Pennsylvania. Part III. Systematic Account of the Genera and Species. Memoirs of the Carnegie Museum Vol. VIII No. 1 page 1-385.