

A Survey for Freshwater Mussel Fauna in
Lickinghole Creek, Hanover County, Virginia

Submitted to:

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and

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Introduction

Hanover County currently seeks to install 1700 linear foot sewer line adjacent to Lickinghole Creek, Hanover County. J.K. Timmons and Associates, acting on behalf of Hanover County to obtain appropriate permits, received a recommendation from the U.S. Fish and Wildlife Service to survey for a federally listed endangered species, the dwarf wedgemussel (*Alasmidonta heterodon*) rare freshwater mussels (U.S. fish and Wildlife Service, 1994). J.K. Timmons and Associates requested Philip H. Stevenson to undertake a survey of Lickinghole Creek to determine the presence of the dwarf wedgemussel (*Alasmidonta heterodon*) and other freshwater mussel species adjacent to the proposed sewer extension.

Methods

Lickinghole Creek in Hanover County, Virginia was surveyed for the presence of rare freshwater mussels. The survey focused on the dwarf wedgemussel, a federally listed endangered species. The area surveyed extended from 500 meters below the Route 802 crossing upstream to a private road crossing of Lickinghole Creek. Figure 1, a selected portion of the U.S. Geological Survey topographic 7.5 minute map of the Yellow Tavern quadrangle, indicates the survey boundaries. The author added annotations to indicate the approximate site of several features noted during the survey.

Intensive searching focused on areas of habitat which are considered to be significant for the dwarf wedgemussel. Reported observations indicate that throughout its range dwarf wedgemussel depends on environments that are lotic to seasonally lotic in nature (Michaelson, 1993). Other rare mussels of concern tend to occur in areas of sand or gravel substrates in unsilted, generally lotic, habitats (Adams, W. F. et al., 1990; Clarke, 1985; Johnson, 1970). Deep pools with thick silt and organic layers represent poor habitats for dwarf wedgemussel and other rare freshwater mussels. Survey methods included waterscoping, handpicking, and raking the substrate. In addition, stream banks were searched for muskrat middens of discarded shells and shells cast on bars by flood. Philip H. Stevenson conducted the field surveys on May 23 and June 2, 1994.

Results

The survey found no freshwater mussel species. No other freshwater bivalves were found. Additionally, no operculate snails of the families Viviparidae and Pleuroceridae were observed. Fish were scarce with no darter species noted.

Lickinghole Creek was generally a narrow, well-shaded, moderate gradient stream. Between the Route 802 crossing and the downstream survey boundary, the creek habitat was typically 2-3 meters wide. the predominate habitat was a shallow, slow runs or pools. These areas typically extended the width of the stream. Water depth was generally from 0.1-0.2 meters deep, with some small

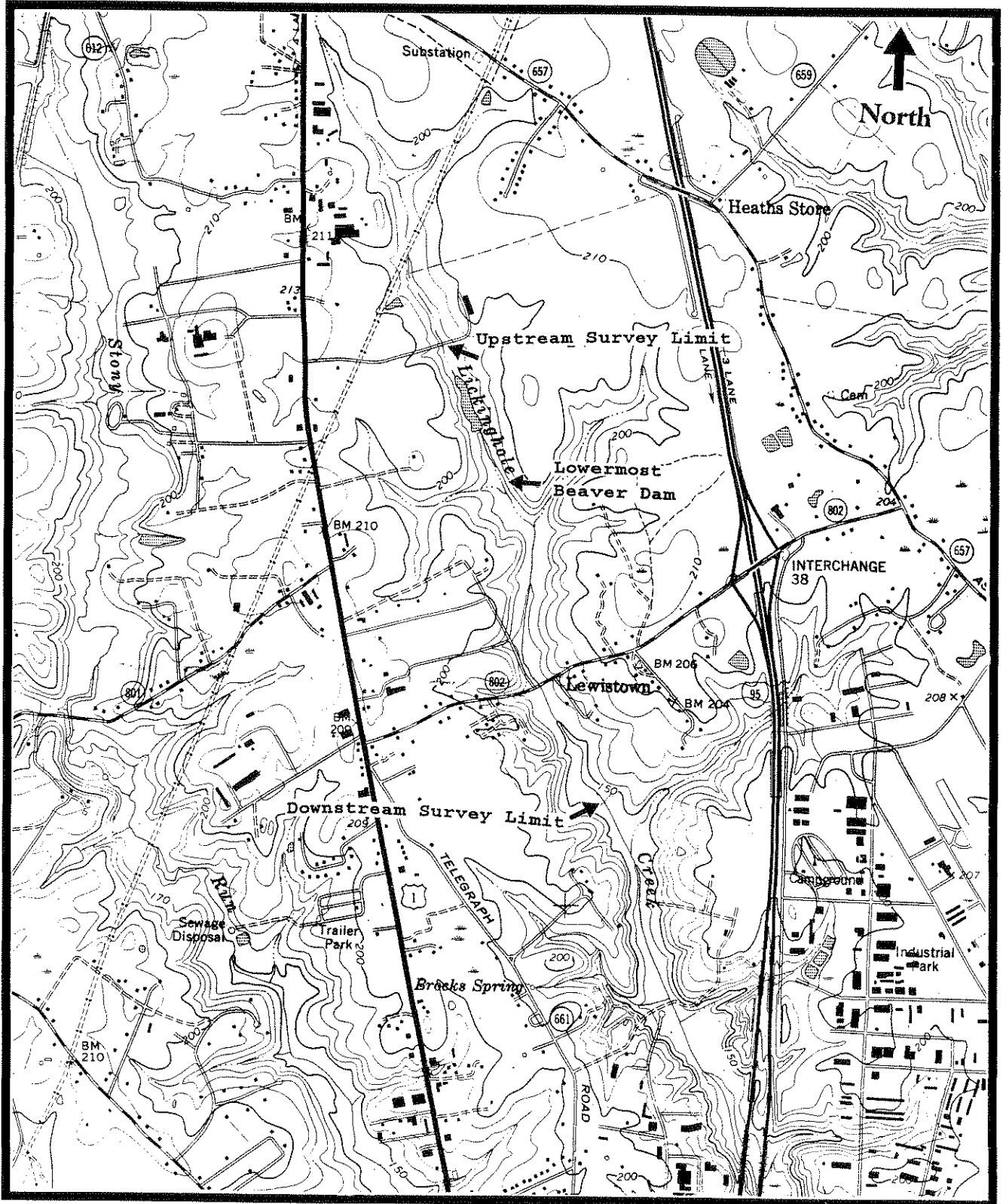


Figure 1. Mussel Survey Site in Lickinghole Creek,
Hanover County, Virginia

deeper pools located at relatively sharp bends of the stream. The substrate was generally a moderately silted sand/gravel mix. Short, narrow riffles were dispersed along the length of the stream here. The riffles were approximately 1 meter wide and were 5-10 centimeters deep. A coarser pebble/gravel substrate occurred in these areas. Riffles were less than 5 meters long and bordered clean swept bars of similar substrate. Stream banks were low and sharp, being 0.5 to 1 meter high.

Above Route 802, the creek divides into roughly three habitat areas. The lowermost area extends from the Route 802 crossing upstream 600 meters to the its confluence an intermittent stream. This lowermost area resembles the area below Route 802, except that a long, continuous pool extends upstream 100 meters from the crossing. This pool is created by the culverts of the Route 802 crossing. Additionally, the banks are much higher on the ascending left side here. A large number of concrete pads, possibly an old roadway surface, have deposited at the creek edge. The concrete does not appear to affect flow in the stream. Above the long pool, the creek resembles well the section below Route 802 in size and substrate composition.

Above the confluence with the unnamed intermittent tributary and below the first encountered beaver dam, Lickinghole Creek narrows appreciably. The stream width is more typically 2 meters or less. The riffle areas tend to be 0.5 meters or less in size. Stream depth is virtually never greater than 0.3 meters deep. The substrate tends to be quite similar to the downstream areas, but is somewhat sandier. Throughout this area and downstream to the Route 802 crossing, the stream is well-shaded.

Once the first beaver dam is encountered, the stream is largely a pool or sluggish trickle flowing through a marsh or wet meadow. Beaver impoundments alter the stream from the point at which the first beaver dam is encountered, shown on Figure 1, upstream to above the private road where the survey was terminated. Throughout the beaver-altered area, the stream substrate tended to be thick mud. I noted the water to be much more turbid in this area. This area does not constitute a habitat for rare mussels. Note that the impoundment indicated in figure 1 roughly 200 meters below the private road no longer exists. A beaver meadow occupies this area. The survey was terminated at the private road given the similar nature of the habitat and small size of the stream upstream from that point.

Discussion

Lickinghole Creek apparently contains no populations of freshwater mussel species. I found no shell of any kind. As evidenced by the lack of other freshwater bivalves and freshwater snails, the molluscan fauna is very poor. Rare mussels typically occur at sites which contain both a diverse mussel fauna. Also all known Virginia sites with dwarf wedgemussel possess populations of *Corbicula* clams, fingernail clams (family Sphaeriidae), or the large operculate snails (families Viviparidae, Pleuroceridae) in

some combination. The paucity of fishes including no observations of darters further indicates a low potential for rare species; the darter species *Etheostoma nigrum* and *E. olmstedii* have been shown to serve as hosts for the parasitic glochidial life cycle stage of dwarf wedgemussel (Michaelson, 1993). I conclude that no rare mussels occur in Lickinghole Creek within the survey area and the proposed activity will not harm any such species.

Summary

No freshwater mussels were found. Given the lack of finds of any freshwater mussels and other mollusks, Lickinghole Creek is not a significant habitat of any rare freshwater mussels including the federally listed endangered dwarf wedgemussel (*Alasmidonta heterodon*).

References

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