

A SURVEY OF THE FRESHWATER MUSSEL FAUNA
IN THE RIVANNA RIVER AT GLENMORE ESTATES,
ALBEMARLE COUNTY, VIRGINIA

Prepared for:

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INTRODUCTION

Glenmore Associates, a land development corporation in Albemarle County, Virginia, is seeking a permit to construct a water withdrawal structure in the Rivanna River adjacent to its property. The Virginia Marine Resources Commission, after its review of Glenmore Associates application, recommended a survey of the freshwater mussel fauna in the Rivanna River at the project site as there was potential for the endangered James spiny mussel, Pleurobema collina, and there were nearby historic records for the rare mussel species, the yellow lance, Elliptio lanceolata, the Atlantic pigtoe, Fusconaia masoni, and the green floater, Lasnigona subviridis. Subsequently, the Virginia Department of Conservation and Recreation's Division of Natural Heritage (DCR-DNH) was contracted to perform this survey.

The Division of Natural Heritage is the Commonwealth's principal manager of data on natural heritage resources, "the habitat of rare, threatened, and endangered plant and animal species, and rare or state significant natural communities or geologic sites, and similar features" (Virginia Natural Areas Preserves Act, Code of Virginia sections 10.1-209 et. seq.). The act mandates DCR-DNH to inventory natural heritage resources. These resources are indicators of the most environmentally significant and sensitive natural areas remaining in Virginia. By determining the status and location of each natural heritage resource occurrence, priorities for the conservation of Virginia's biodiversity can be established. This information can be provided to land managers for use in land use and natural resource planning.

METHODS

The Rivanna River in Albemarle County was surveyed for the presence of freshwater mussels. The survey area was adjacent to the Glenmore estate. The upstream boundary of the survey area was the location of the proposed intake structure. This was located adjacent to an historic boat lock and an island/bar complex. The downstream boundary of the survey area was a point 0.5 mile downstream from the intake structure site. This boundary was slightly downstream of the confluence of Carroll Creek and the Rivanna River. The survey area is indicated on Figure 1. The entire survey area was traversed by the survey team. The survey methods used were waterscoping, snorkeling, and checking banks and shorelines for shells. Snorkeling was reserved for those areas of somewhat higher flow as the James spiny mussel is considered to prefer lotic conditions. The survey was performed on November 14, 1991, by Phil Stevenson, Aquatic Zoology Research Assistant, and Kurt Buhlmann, Field Zoologist, of DCR-DNH.



Figure 1- Rivanna River Survey Site, Glenmore Estates, 1991
(from USGS topographic map- Simeon, Va; scale = 1:24,000)

RESULTS AND DISCUSSION

No specimens of the James spiny mussel or any other freshwater mussel were found within the survey area. The exotic Asiatic clam, Corbicula fluminea was the only bivalve found.

The river in the survey area is approximately 30 meters wide. The river is typically composed of slow run habitats with interspersed pools and riffles. Water depth rarely exceeded 1 meter and was typically 0.6 m or less. The substrate was predominantly muddy gravel and sand tending to be dominated by coarser material in the riffles and fast runs. The pool areas generally had a silt layer completely covering any coarser substrate.

There were two areas of faster flow of significant extent, over 90 meters long, in the survey area. Both areas were located in the upstream half of the survey area. Each area had a riffle area associated with the upstream portion and graded into a relatively fast run habitat. One of these areas was located next to the boat lock and intake site. The boat lock was located on an island connected to the northern shore by an existing historic dam structure. The channel to the southern side of this island was not impacted by the dam. Immediately downstream of the boat lock island was a second island, also connected to the northern shore by a channel which was dry at the time of the survey. The associated riffles adjacent to these islands were noticeably less silty than the downstream portion of the survey area. There was a healthy growth of aquatic vascular plants here also; and, aquatic snails were common.

The second large area of faster flow was located roughly 200 meters below the lock area. This area consisted of a very short gentle riffle with a longer extent of relatively fast run habitat. A long bar, approximately 60 meters in length, bordered this area and abutted to the southern bank of the stream. The substrate was noticeably siltier here than in the lock area and aquatic vegetation was scarce. Snails were also less abundant. Further downstream, there was a small area of relatively faster run habitat associated with shallows near the mouth of Carroll Creek. This area was smaller in extent than either of the upstream runs. This area was relatively silty. No submerged aquatic vegetation was present and snails were uncommon. There was a low growth of filamentous alga on the pebbles and coarse gravel here. The water in Carroll Creek was noticeably siltier than the water of the Rivanna River.

Both of the faster upstream run areas were snorkeled extensively. 2 man-hours were spent snorkeling these areas and Corbicula was commonly found live. Additionally, all of the adjoining islands and bars were inspected for shells. Corbicula shells were very common on the bars and islands; however, no mussel shells were observed. Waterscopes were used in these areas and

produced the same results. The area in the vicinity of Carroll Creek also was waterscoped extensively; and, only Corbicula was found.

After the primary survey was completed, two relict shells of the Eastern elliptio, Elliptio complanata, were found approximately 300 meters downstream of Carroll Creek. This species is an most ecologically tolerant species in Virginia and is generally a common species of rivers where mussels are found. That this species was not found live in the survey area would tend to indicate that mussel populations, especially of species requiring unimpacted conditions, are not present. The absence of mussel shells in the survey area also seems to indicate that few if any mussels are present.

RECOMMENDATIONS

No populations of the endangered James spiny mussel, Pleurobema collina, were located. The proposed intake structure should have no impact on any existing populations of this species. The area indicated as the structure site is in a pool area adjacent to a relatively healthy portion of riffle and run habitat in the main channel of the river. Construction activities for this structure should be limited to the nearshore area to avoid disturbing this habitat.