

**THE FRESHWATER NAIAD (MUSSEL) FAUNA
OF THE NOLIN RIVER IN THE GREEN RIVER
DRAINAGE OF CENTRAL KENTUCKY
(MOLLUSCA: BIVALVIA)**

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ABSTRACT

A survey of the freshwater mussels (naiads) of Nolin River of the Green River, Kentucky, drainage, produced specimens of twenty-one species of naiads, and the Asian Clam, Corbicula fluminea. Six of the species reported from the Nolin are considered Endangered or of Special Concern by the Kentucky Academy of Science. Villosa ortmanni is considered endangered by most malacologists because it is restricted in distribution to the Green River drainage. At present, however, it is the most commonly found species in the Nolin River.

Ortmann (1926) recognized the importance of the Green River as a freshwater mussel stream. Individuals were abundant, species were numerous. The typical Ohioan fauna of this stream was identical with the Kentucky River and other Ohio River tributaries to the north, but distinctly different from the Cumberlandian

fauna of the Cumberland and Tennessee Rivers just to the south.

Clench and van der Schalie (1944) did additional work on the mainstem Green River and made extensive collections in several major tributaries, such as the Nolin, Barren and Rough Rivers. Additionally, during the 1950's

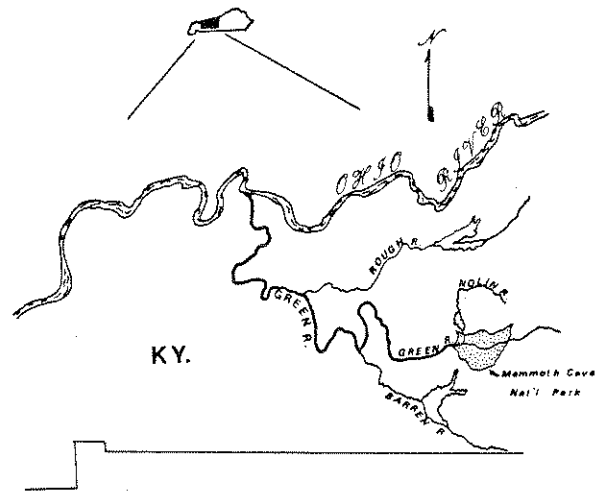
and 1960's David Stansbery (1965) and others from Ohio State University collected extensively in the Green River. Their work, including that of their predecessors, produced a list of 64 species resident in the Green River drainage and led Stansbery (1965) to state that the mussels in the Green River . . . "comprise the finest representative Ohioan naiad fauna yet in existence."

Within the last twenty-five years adverse effects of damming have come to the unique Green River. At the present time all the major tributary headwaters, including the mainstem, have been dammed. While no studies documenting a concomitant decline in mussel populations have been forthcoming, it must be assumed, based on numerous other studies, that the dams will have deleterious effects.

The dams and the large lakes behind them, which are unsuitable habitat for most stream forms, are formidable barriers and restrict the free flow of host fish species between the mainstem Green River and tributary headwaters. The full long-term effect of such barriers has not yet been documented. Baseline data on the mainstem Green River are readily available through the works of the previously-mentioned authors. There is, however, a dearth of recent information available on some of the major tributaries.

Clench and van der Schalie (1944) collected the Barren River extensively and composed a list of 36 resident species. Their work at two stations on the Rough River netted 22 species, and limited collecting on the Nolin River produced only 8 species. I have been unable to find additional papers on this drainage, and in this paper an attempt is made to fill a gap in the data base. The only previous collections on the Nolin reported in the literature were made nearly forty years ago and prior to impoundment of the river. This paper reports on extensive collecting in the river, above Lake Nolin, during the summer of 1981.

The Nolin River is one of two major tributaries of the Green River which enter from the north. The Nolin originates in the Mississippian Plateau Province of central Kentucky. The origin in Larue Co. is located a few miles south



of the Abraham Lincoln Birthplace National Historical Site. The river then flows through Hardin, Grayson and Edmonson Counties to its confluence with the Green River within the confines of Mammoth Cave National Park.

Collecting Stations

1. Nolin River at White Mills, Hardin County, Kentucky, two miles E of State Rt. 84 on County Rd. 1904.

2. Nolin River, four miles due west of village of Flint Hill on State Rd. 720 on Hardin/Grayson Co. line. (This site roughly corresponds to one site reported by Clench and van der Schalie.)

3. Nolin River at Millerstown, at intersection of State Rt. 224 and 479. (Extremely rich area for several hundred meters above and below the bridge.)

Numerous other sites were visited, but these three were by far the most productive. The Millerstown site is to the Nolin River what Munfordville is to the Green River, the site where all conditions seem to be prime for mussel habitation.

Naiad Species Recorded from the Nolin River

1944 = Previously recorded (Clench and van der Schalie, 1944). 1981 = Recently collected (Taylor, 1981).

<i>Strophitus u. undulatus</i> (Say, 1817)	1944; 1981
<i>Alasmidonta viridis</i> (Raf., 1820)	1981

<i>Lasmigona costata</i> (Raf., 1820)	1944; 1981
<i>Tritogonia verrucosa</i> (Raf., 1820)	1981
<i>Quadrula cylindrica</i> (Say, 1817)	1981
<i>Quadrula p. pustulosa</i> (Lea, 1831)	1981
<i>Amblema p. plicata</i> (Say, 1817)	1944; 1981
<i>Fusconaia m. macidata</i> (Raf., 1820)	1981
<i>Fusconaia flava</i> (Raf., 1820)	1944; 1981
<i>Cyclonaias tuberculata</i> (Raf., 1820)	1981
<i>Pleurobema sintoxia</i> (Raf., 1820)	1981
<i>Elliptio dilatata</i> (Raf., 1820)	1944; 1981
<i>Ptychobranchus fasciolaris</i> (Raf., 1820)	1981
<i>Actinonaias l. carinata</i> (Barnes, 1823)	1981
<i>Villosa ortmanni</i> (Walker, 1925)	1981
<i>Lampsilis r. luteola</i> (Lam., 1819)	1944; 1981
<i>Lampsilis ventricosa</i> (Barnes, 1823)	1981
<i>Lampsilis fasciola</i> (Raf., 1820)	1981
<i>Epioblasma triquetra</i> (Raf., 1820)	1981
<i>Epioblasma cincinnatiensis</i> (Lea, 1840)	1981
<i>Epioblasma torulosa rangiana</i> (Lea, 1839)	1981
<i>Corbicula fluminea</i>	1944; 1981

Clench and van der Schalie reported *Villosa lienosa* and *L. ovata*, but I did not find them.

Discussion

A total of twenty-one species of naiads plus the exotic Asian Clam is about what could be expected from a stream of this size in this part of the country at the present time. The stream is unique in that it contains a good number of species of concern to contemporary biologists. The State of Kentucky does not have an official Rare and Endangered List, but the Kentucky Academy of Science (Branson et al., 1981) has recently produced a list of Endangered, Threatened and Rare Animals of the State. This list includes the following Endangered species found in the Nolin River: *Quadrula c. cylindrica* (Say, 1817), *Fusconaia m. maculata* (Raf., 1820), *Epioblasma torulosa rangiana* (Lea, 1839), *Villosa ortmanni* (Walker, 1925). *Epioblasma triquetra* (Raf., 1820) is a species which should be monitored, as it may, for a variety of reasons, become endangered.

Quadrula c. cylindrica

Found only in the area of White Mills and only as fresh dead shells. This species may very well be on the way out in the Nolin River. It is absent throughout most of its former range.

Fusconaia m. maculata

Fairly common throughout the study area.

Epioblasma torulosa rangiana

Found at only the Millerstown site, but

several dozen freshly dead specimens were taken from a raccoon midden at this locality.

Epioblasma cincinnatiensis

Found only as a badly eroded single valve at the Millerstown site.

Epioblasma triquetra

Represented at two sites by a single specimen each. Apparently very rare in this stream.

Villosa ortmanni

Known only from the Green River drainage and thus deserves the designation of Endangered. It is, however, doing quite nicely within the Nolin River. In total numbers it is by far the most common mussel found in this study and hundreds of specimens were found at each of the stations mentioned above. Stansbery related (pers. comm.) that the nacre of Green River specimens is always orange, but the nacre of all the Nolin River specimens is violet to deep-purple.

All other species in the composite list were found in fairly good numbers at several stations.

I did not find *Lampsilis ovata* which was reported by Clench and van der Schalie. All my specimens were typical *ventricosa*. I did, however, find several specimens of *L. ovata* with the strongly acute posterior ridge characteristic of this species in a single collection from the Green River, approximately ten miles upstream of Munfordville. In the spirit of working with animals that are all under the threat of reduced numbers, no live specimens were taken if a fresh dead one could be collected for a voucher specimen. Voucher specimens have been accessioned to the Marshall University Malacological Collections and the Ohio State University Museum of Zoology.

ACKNOWLEDGMENTS

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