

Surveys for northern riffleshell (*Epioblasma torulosa rangiana*) in the Detroit River north of the Grosse Isle Toll Bridge.

Prepared by:
Peter J. Badra
Michigan Natural Features Inventory
PO Box 30444
Lansing, MI 48909-7944

For:
BASF Corporation

July 10, 2006
MNFI Report Number 2006-10

Introduction

Michigan Natural Features Inventory completed a native freshwater mussel (Unionidae) survey at an area in the Detroit River specified by BASF. These surveys were performed with SCUBA, using visual and tactile methods for detecting both live mussels and empty shells. The presence of exotic freshwater mussels (zebra mussels, *Dreissena polymorpha*) was noted. An assessment of potential habitat for the northern riffleshell (*Epioblasma torulosa rangiana*) was made for the area.

Methods

Surveys were completed on June 28 and 29, 2006. Seventeen transect searches were performed. Transects 1-13 were 30m long by 3.2m wide and transects 14-17 were 60m long by 3.2m wide, for a total area of 2,016 m². In addition four short meander searches were performed. The shoreline not covered by rip rap or other manufactured material was searched for shells by walking along the waters edge. Transects and meander searches were distributed within an area bound by the Grosse Isle Toll Bridge at the southern end and a steel retaining wall approximately 365m (1200ft.) north of the bridge (T4S R11E section 5).

Results

No live native freshwater mussels were found. Eleven empty shells representing nine species were found including one northern riffleshell (*Epioblasma torulosa rangiana*) (Table 1). An empty shell of the wavy-rayed lampmussel (*Lampsilis fasciola*), a state listed as threatened species, was also found. Empty zebra mussel shells (*Dreissena polymorpha*) were found in five transects. No shells or live mussels were found in the four meander searches. The substrate within the survey area consisted mainly of silt, cobble, and boulder with a few areas of gravel (Table 2). The cobble and boulder present consisted of rip rap and other manufactured materials that had been placed at the site rather than naturally occurring rock. Depth of transects ranged from 1m to 7m.

Discussion

Typical habitats for the northern riffleshell are medium to large rivers with swift flowing water and gravel substrate. The substrate observed within the survey area is poorly suited for northern riffleshell as well as most other native species of mussel. This species is known to be more sensitive to silt than most native mussel species.

It is very difficult to judge time post mortem from an empty shell. Generally increased wear on a shell is assumed to mean greater time post mortem. The presence of soft tissue such as muscle and/or ligament on an empty shell indicates the individual was alive fairly recently, for example a matter of days versus a matter of months. The empty northern riffleshell shell found was heavily worn and had no soft tissue attached. Time post mortem for this individual is likely on the order of months. Areas that support

populations of native mussels typically have a higher number of empty shells scattered throughout than what was found in this study area.

The lack of suitable habitat (due to excessive siltation and other historical habitat alterations), absence of live native mussels of any species within survey transects, and low number of shells found indicates a very low probability that any live northern riffleshell are present within the study area.

Table 1. Numbers of mussel shells (Unionidae) found within each transect. No live individuals were found.

| Species | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | shore |
|-------------------------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|-------|
| <i>Elliptio dilatata</i> | | | 1 | | | | | | | | | | | | | 1 | | |
| <i>Epioblasma torulosa rangiana</i> | | | | | | | | | | | | | | | | | | 1 |
| <i>Fusconaia flava</i> | | | 1 | | | | | | | | | | | | | | | |
| <i>Lampsilis fasciola</i> | | | | | | | | | | | | | | | | 1 | | |
| <i>Lampsilis siliquoidea</i> | | | | | | | | | | | | | | 1 | | | | |
| <i>Lampsilis ventricosa</i> | | | | | | | | | | | | | | | | | | 1 |
| <i>Leptodea fragilis</i> | | | | | | | | | | | | | | 1 | | 1 | | |
| <i>Ligumia nasuta</i> | | | | | | | | | | | | | | | | 1 | | |
| <i>Ptychobrancus fasciolaris</i> | | | | | | | | | | | | | | | | | | 1 |

Table 2. Percent composition of each substrate size class estimated for each transect.

| | boulder | cobble | pebble | gravel | sand | silt |
|----|---------|--------|--------|--------|------|------|
| 1 | | 10 | | 60 | | 30 |
| 2 | 15 | 15 | | 50 | | 20 |
| 3 | | | | | | 100 |
| 4 | | | | | | 100 |
| 5 | | | | 5 | | 95 |
| 6 | | | | | | 100 |
| 7 | 20 | | | | | 80 |
| 8 | | 5 | | 15 | | 80 |
| 9 | | | | | | 100 |
| 10 | | | | | | 100 |
| 11 | | | | | | 100 |
| 12 | | | | | | 100 |
| 13 | | | | | | 100 |
| 14 | | 20 | | 20 | | 60 |
| 15 | | | | | | 100 |
| 16 | | | | | | 100 |
| 17 | 60 | 5 | | 5 | | 30 |