

# Unionid Population Survey in Susquehanna Tributaries

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## ABSTRACT

Unionid bivalves or freshwater pearly-mussels (Unionoidea: Unionidae) serve as an exemplary system for examining many of the problems facing systematists and conservation biologists today. We surveyed unionid populations in Susquehanna River tributaries. Unionids have sizable populations in some areas, but, in other areas, we found no living unionids. Our varied results may indicate water quality variations.

## INTRODUCTION

Native freshwater mussels (unionids) are an important part of river ecosystems because they remove particulate matter from the water column and are excellent indicators of water quality (Strayer & Jirka, 1997). Because freshwater mussels are filter feeders, often dependent on one species of fish for reproduction, and are basically sedentary as well as long lived, they are adversely affected by long-term water quality problems (pollution), physical barriers such as dams and locks, and changes in the abundance of fish, algae and other microorganisms (West Virginia DNR, 2003).

Concentrations of zebra mussels (*Dreissenia polymorpha*), at the posterior end of an unionid, impacts its balance and equilibrium during locomotion (Claudi & Mackie, 1994).

## METHODS

We surveyed unionids in one or two locations on five different tributaries of the Susquehanna River in New York. Zebra mussels attached to the unionids were also counted.

Live unionids are found under rocks and buried in the river bottom; view buckets and clam rakes were used to find unionids in these difficult spots. Our view buckets had Plexiglas™ bottoms that aided finding lotic bottom organisms in rippled areas. These view buckets allowed us to see the bottom in shallow water, and enhanced our vision in places where the stream bottom held loose sediment. We used rakes to move streambed materials to find unionids.

When live unionids were found, one of each species not listed as rare, threatened, or endangered (RTE) were cut open for positive identification and placed in a bucket annotated with location name and date. We subsequently placed these shells in zip-lock bags with a writeable strip which we used to record sample date and location. We also placed the shells of recently dead RTE unionids in annotated zip-lock bags.

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Back at the laboratory, we counted unionids by species and location and recorded the results on a spreadsheet which was organized to display unionids by their tributary and species. If unionids had zebra mussels attached to them, we annotated this.

## RESULTS

In some areas of Susquehanna River tributaries no unionids were found, however in other areas many unionids were found (Table 1). In the Otselic River, zebra mussels were found on unionid samples. In the Tioughnoiga River and Butternut Creek, no unionids were found at sites sampled. In the Chenango, Otselic, and Unadilla Rivers, many unionids were found. At our Chenango, Otselic, and Unadilla River sample sites, the current was slow and the bottom was full of cobble rocks.

Species	Tioughnioga	Chenango	Otselic	Unadilla	Butternut
<i>Strophitus undulatus</i>	0	7	13	6	0
<i>Alasmidonta varicosa</i>	0	10	4	1	0
<i>Elliptio complanata</i>	0	10	7	4	0
<i>Lampsilis radiata</i>	0	13	8	7	0
<i>Lampsilis cariosa</i>	0	10	3	5	0
<i>Dressenia polymorpha</i>	0	0	35	0	0

Table 1. Unionids and zebra mussels (*Dressenia polymorpha*) found in tributaries surveyed.

## DISCUSSION

Unionids were found in many tributaries in varying population sizes. Our varied results may indicate water quality variations and justifies a recommendation for careful monitoring of tributary water quality.

## REFERENCES

- Claudi, R. and G. L. Mackie. 1994. Practical Manual for Zebra Mussel Monitoring and Control, Lewis Publishers, Boca Raton, FL
- Lydeard, C., R. Milton, and J. Williams. 2000. Prodigious polyphyly in imperilled [sic] freshwater pearly-mussels (Bivalvia: Unionidae): a phylogenetic test of species and generic designations. Geological Society, London, Special Publications; Vol. 177; p. 145-158 as viewed from <http://sp.lyellcollection.org/cgi/content/abstract/177/1/145>
- Strayer, D. and K. J. Jirka. 1997. The pearly mussels of New York State. Mem. NY State Mus. pp. 1-113 + plates 1-27.
- West Virginia DNR. 2003. Freshwater Mussels. <http://www.wvdnr.gov/Wildlife/Mussels.shtm>

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