RESULTS OF A ONE-DAY FRESHWATER MUSSEL (BIVALVIA: UNIONIDAE) SURVEY AT THE UNIVERSITY OF WISCONSIN – EAU CLAIRE PROPOSED RIP-RAP PROJECT SITE, CHIPPEWA RIVER, WISCONSIN.

MWBC 2050000

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INTRODUCTION

The University of Wisconsin – Eau Claire proposes rip-rapping approximately 1200ft of shoreline up to 60ft in width, along the left descending bank of the Chippewa River, Eau Claire County, Wisconsin. The legal description of this proposed project site is T27N, R9W, section 29, NE¼ OF NW¼ OF NW¼ and NW¼ OF NE¼ OF NW¼ and NE¼ OF NE¼ OF NW¼. The proposed project's purpose is to stabilize a steep bank located on the outside bend of the river.

Two state protected mussel species, *Tritogonia verrucosa* (buckhorn) and *Plethobasus cyphyus* (bullhead) have been recording living from within 14 rivermiles downstream of the proposed project (Balding, 1992 and Balding, Unpub. data). Also, from other portions of the Chippewa River, two lithophilic state protected species, *Simpsonaias ambigua* and *Cumberlandia monodonta* occur. All four of these species and possibly others, may occur at the proposed rip-rap site.

Due to the possible occurrence of protected mussel species at this site and the potential harmful effects of a rip-rap project on individuals of these species, the Wisconsin Department of Natural Resources (WDNR) required that a mussel survey be done in the immediate impact zone. The purpose was to determine the presence or absence of a significant mussel aggregation and to determine the presence or absence of state or federally listed species. WDNR staff from the Eau Claire and La Crosse service centers conducted a one-day survey on May 24, 2001. This report summarizes findings from that survey.

METHODS

Two SCUBA divers spent a total of 281 minutes underwater searching for all living mussels and empty shells within an approximately 1100ft by 130ft area adjacent to the left descending bank (Figure 1). Using flashlights and digging up to 5 inches into the substrate, divers searched the bottom from the shoreline channelward approximately 120ft. In addition, substrate beneath about 200 boulders and concrete slabs were searched for *S. ambigua* and *C. monodonta*.

In addition to the underwater sampling, an approximate area of 102,000ft^2 of mostly dry land along the right descending bank about 1200 ft upstream of the proposed rip-rap project site (Figure 1) was searched for a total of 120 minutes.

RESULTS

Left Descending Bank Site

This site was located on an outside bend. Bottom substrate consisted primarily of rubble and gravel. Current velocity was high at most locations within the site. The shoreline (Figure 2) was vegetated with moderate-sized trees and had been rip-ripped with waste concrete during 1968 (Dan Koich, WDNR-Eau Claire, Pers. Comm.). Divers inspected almost the entire length of the toe of the existing concrete rip-rap. They did not find any evidence of erosion or degradation and the site appeared stable.

Living individuals of nine taxa were found living among a total of 39 specimens (Figure 3) collected during SCUBA diving in and adjacent to the proposed rip-rap project area (Table 1). Catch per effort was about 6.19 mussels/hr. The catch per effort and species richness were comparatively low compared to other locations in large rivers in Wisconsin. No state or federally listed species were found. No zebra mussels (*Dreissena polymorpha*) were seen. Although mussel population densities were not measured, we would not refer to this area as a significant mussel bed.

Table 1. Number of Freshwater Mussels Found Living and Dead During SCUBA Dives in and Adjacent to the UW-Eau Claire Proposed Rip-Rap Project Site.

TAXON	LIVE	DEAD
Alasmidonta marginata	3	0
Anodonta grandis form *corpulenta*	3	0
Lampsilis siliquoidea	16	1
Lampsilis cardium	4	1
Leptodea fragilis	2	0
Ligumia recta	5	0
Obovaria olivaria	1	0
Potamilus alatus	4	0
Truncilla truncata	1	0
unidentified	0	1
TOTAL	39	3

Right Descending Bank Shore Site

Due to the larger area that can be sampled per unit effort and hence, greater number of individuals, shore sampling can sometimes provide supplemental information about species presence than underwater sampling. At the right descending bank shoreline site, a total of 115 individuals from 14 species

were found (Table 2). Only two individuals were found living. The five species found here and not at the proposed rip-rap site included *Elliptio dilatata, Lasmigona complanata complanata, Obliquaria reflexa, Quadrula pustulosa pustulosa* and *Strophitus undulatus undulatus.* One living *E. dilatata* was found – the only living example of this species found on the lower Chippewa River that we are aware of.

Table 2. Number of Freshwater Mussels Found Living and Dead During shoreline searches on the Right Descending Bank in the Vicinity of the UW-Eau Claire Proposed Rip-Rap Project Site.

TAXON	LIVE	DEAD
Alasmidonta marginata	0	2
Anodonta grandis form *corpulenta*	0	1
Elliptio dilatata	1	1
Lampsilis siliquoidea	0	17
Lampsilis cardium	0	29
Lasmigona complanata complanata	0	2
Leptodea fragilis	0	12
Ligumia recta	0	21
Obliquaria reflexa	0	1
Obovaria olivaria	1	12
Potamilus alatus	0	4
Quadrula pustulosa pustulosa	0	1
Strophitus undulatus undulatus	0	5
Truncilla truncata	0	5
TOTAL	2	113

Balding (1992, and Unpub. data) found 560 living individuals representing 21 taxa from the 2 rivermiles upstream of the proposed rip-rap project site downstream 12 rivermiles during 1987, 1988 and 1996. Taxa represented by living examples found by him and not in this survey include*: Actinonaias ligamentina carinata, Amblema plicata plicata, Fusconaia flava, Lasmigona complanata complanata, Lasmigona costata, Obliquaria reflexa, Pleurobema sintoxia, Quadrula pustulosa pustulosa, Strophitus undulatus undulatus, Toxolasma parvus, Tritogonia verrucosa and Truncilla donaciformis.*

The greater number of species found by Balding is probably a function of the greater number of individuals reported by him (560 *vs.* 41) and the greater variety of microhabitats collected in. In the proposed rip-rap location,

substrates were primarily unembedded rubble and gravel with small areas of consolidated clay. The location lacked a mixture of sand, rubble and gravel, a substrate type often associated with more dense mussel aggregations in the Chippewa River. The paucity of sand may be related to the site's close proximity to the Dells Dam, whose impoundment probably sequesters upstream sand depriving some nearby downstream locations. Very fast currents at site may also minimize sand deposition.

REFERENCES USED

Balding, Terry. 1992. Distribution, abundance, and diversity of mollusks (Bivalvia: Unionidae) from the Lower Chippewa River, Wisconsin. Wis. Acad. Sci., Arts & Lett. 80: 163-168.

Figure 1. Location of UW-Eau Claire Rip-Rap Project Site and Shoreline Sampling Site.

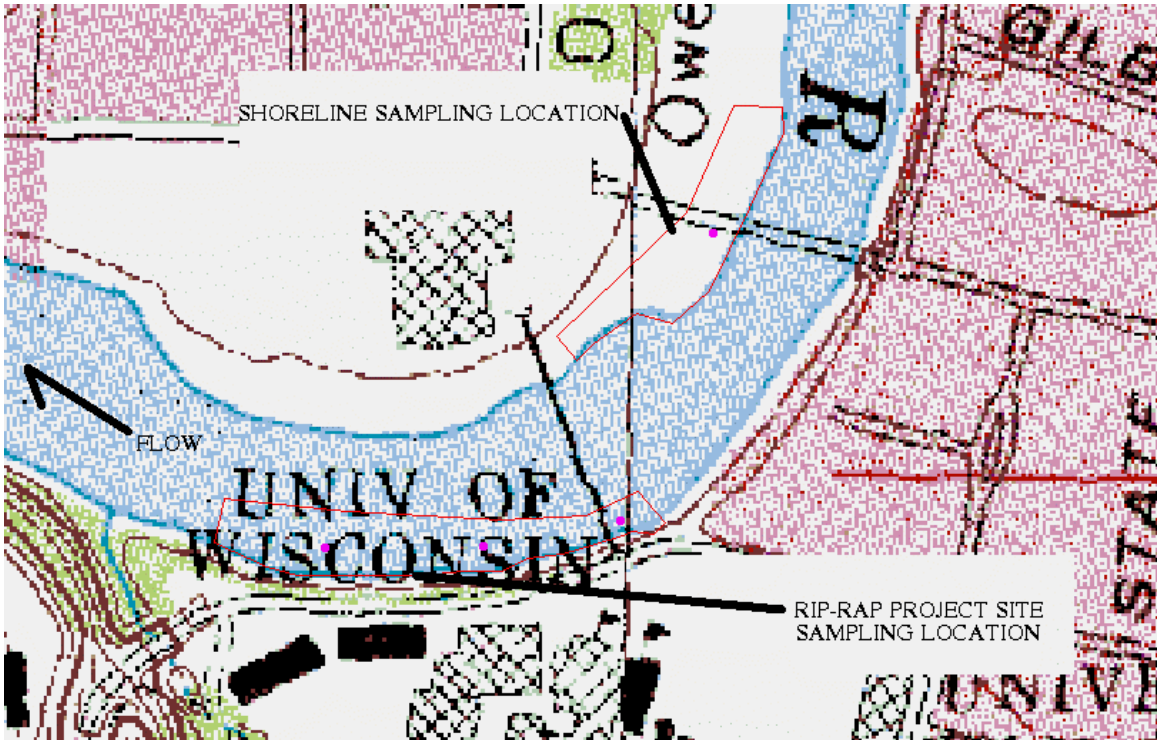

Figure 2. View from upstream of upstream portion of UW-Eau Claire proposed rip rap project, 24 May 2001.

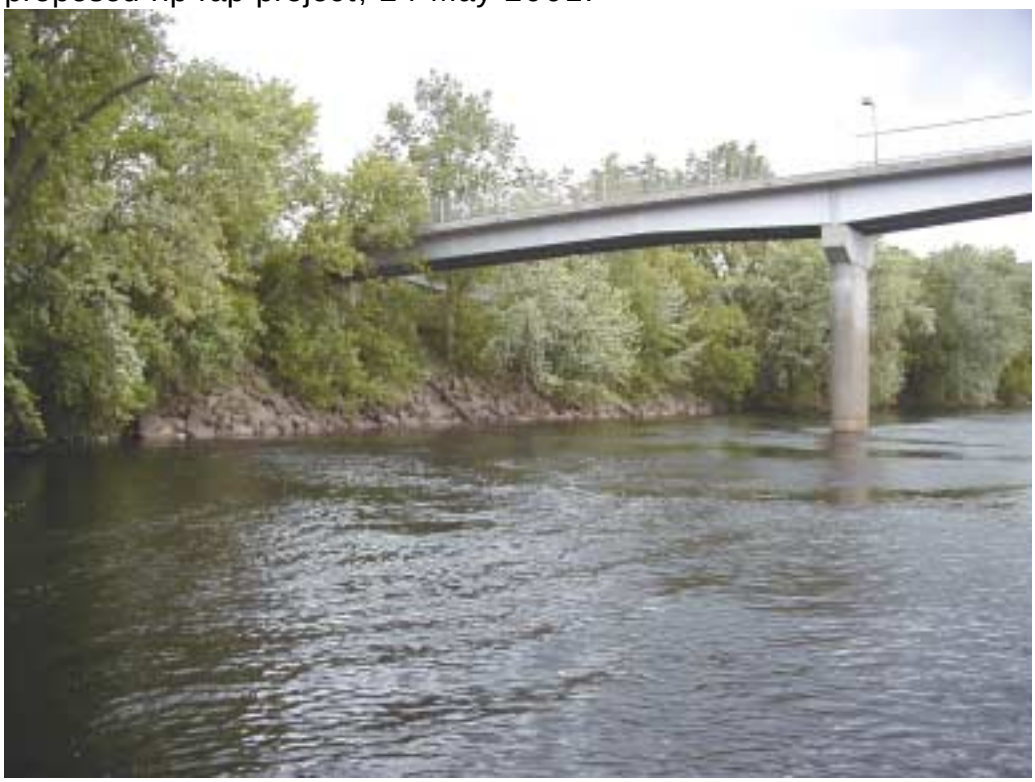

Figure 3. Mussels collected from the proposed UW-Eau Claire rip-rap project, 24 May 2001.