

Wisconsin Channel, Mississippi River Pool 4 *Lampsilis higginsii* Reintroduction Area Monitoring – 2010

MN DNR Report to the St. Paul District Corps of Engineers

Introduction:

Lampsilis higginsii subadults have been reintroduced to the Wisconsin Channel of Upper Pool 4 beginning in 2002. In 2010 several timed searches were done along the left descending bank between the outlet of Goose Lake and the outlet of Dead Slough Lake (Figure 1) to assess the status of the existing mussel community and to search for evidence of natural recruitment of *Lampsilis higginsii*.



Figure 1. Area of timed searches in 2010.

Methods:

Timed Searches: Timed searches were conducted by SCUBA diving. In turbid water like we encountered in the Wisconsin Channel, searching is mostly by feel with the searcher sweeping the bottom surface and digging into the substrate a few centimeters to find mussels. After a period of time, usually 20 minutes for each person searching, all live mussels and empty shells collected are brought to the boat and sorted and enumerated by species. Catch Per Unit Effort (CPUE) is calculated for each site by dividing the number of live mussels collected by the total

time spent searching. Each species is then sorted into two age categories; ≤ 5 years and >5 years.

Results:

Three hundred eighty five live mussels representing thirteen species were collected among the six timed search sites in the Wisconsin Channel. Table 1 lists the species found according to their abundance in all the samples combined. Three state listed species were collected, *Arcidens confragosus* (E), *Quadrula metanevra* (T), and *Megalonaias nervosa* (T) . No *Lampsilis higginsii* were found live or as empty shells during this survey. Species numbers among the six sites ranged from three to eight (Figure 2).

Species	Common Name	Total
<i>Amblema plicata</i>	Threeridge	309
<i>Obliquaria reflexa</i>	Threehorn Wartyback	27
<i>Fusconaia flava</i>	Wabash Pigtoe	25
<i>Quadrula pustulosa</i>	Pimpleback	13
<i>Quadrula metanevra</i>	Monkeyface (Threatened)	2
<i>Pyganodon grandis</i>	Giant Floater	2
<i>Arcidens confragosus</i>	Rock Pocketbook (Endangered)	1
<i>Truncilla truncata</i>	Deertoe	1
<i>Quadrula quadrula</i>	Mapleleaf	1
<i>Lampsilis cardium</i>	Plain Pocketbook	1
<i>Utterbackia imbecillis</i>	Paper Pondshell	1
<i>Leptodea fragilis</i>	Fragile Papershell	1
<i>Megalonaias nervosa</i>	Washboard (Threatened)	1
Grand Total		385

Table 1. Relative abundance of mussel species collected live in the Wisconsin Channel.

Wisconsin Channel Timed Search Results Mussels 2010

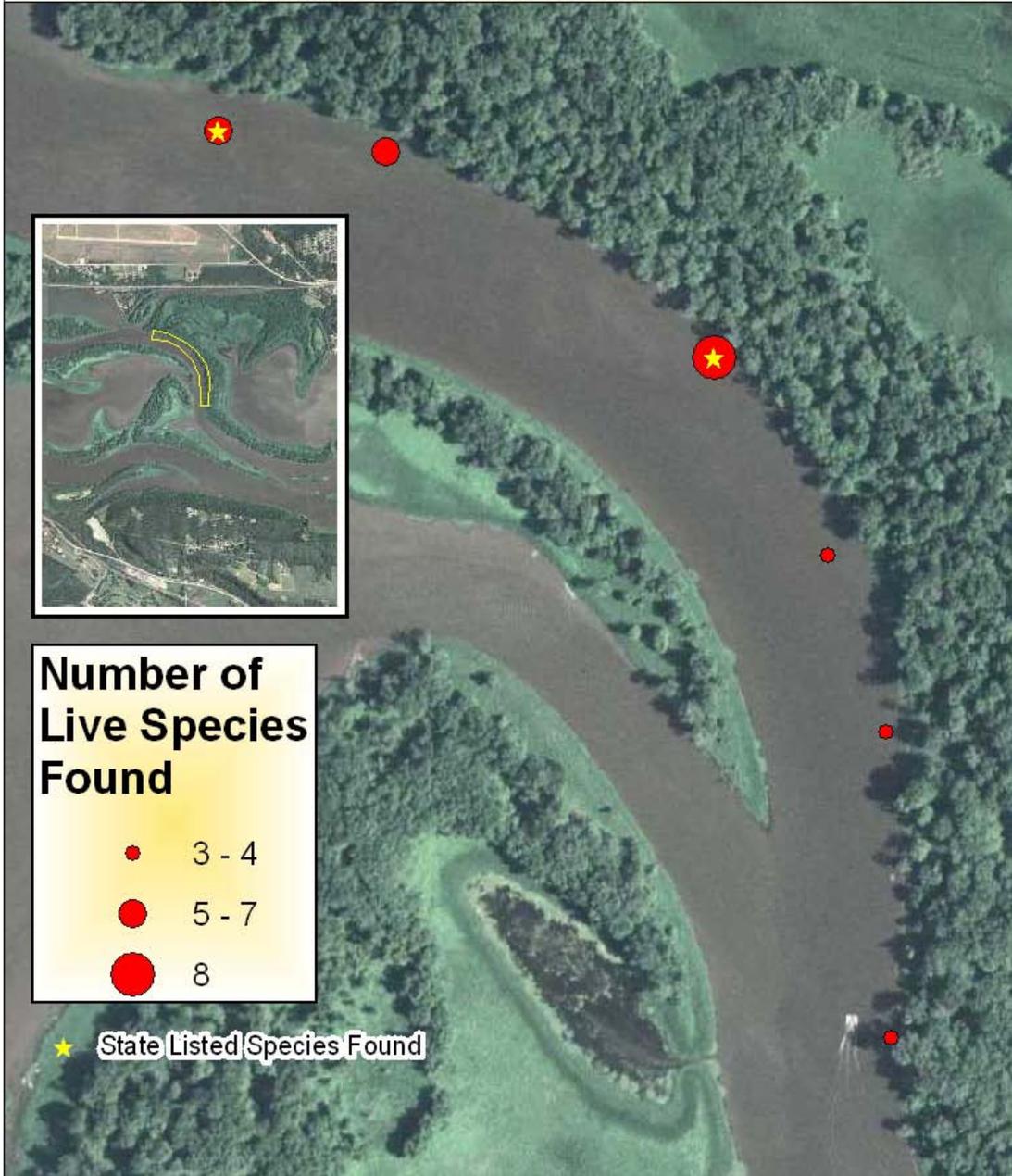


Figure 2. Number of species collected at each site and the location of sites where listed species were collected.

Catch per Unit Effort (CPUE) among the sites ranged from less than one mussel/minute to nearly three per minute at one site (Figure 3).

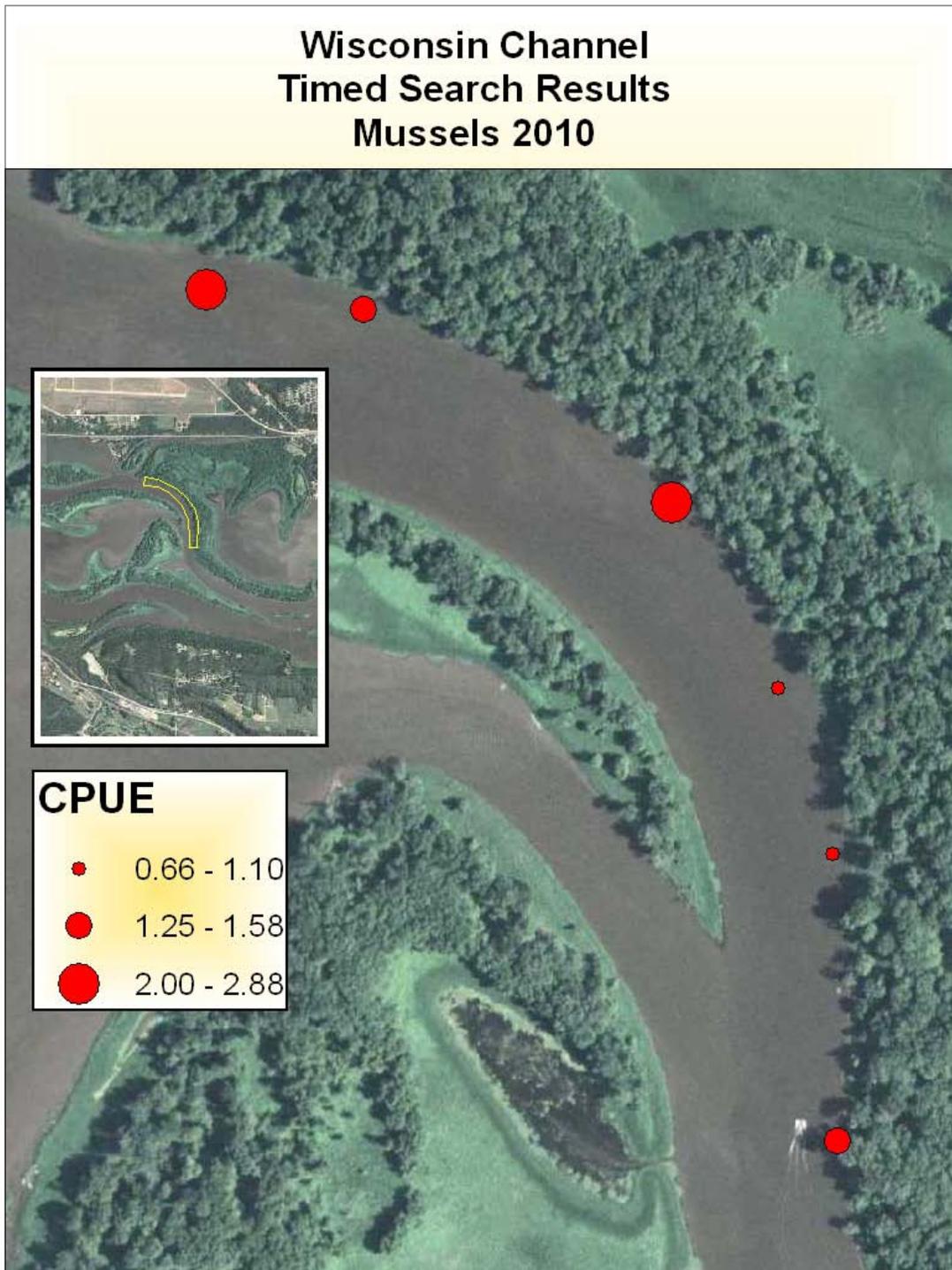


Figure 3. CPUE at each timed search site.

Discussion:

Mussels in this area are concentrated along the left descending bank in silty sand and woody debris, further into the channel the substrate is 100% sand bed load with moving dune formations and very few mussels are found. CPUE at the sites surveyed in 2010 is relatively low for the Mississippi River but the continuing presence of state listed species here over the past decade is an indication of its potential for supporting a self renewing population of *Lampsilis higginsii* eventually.

With the exception of *Obliquaria reflexa*, the mussel population appears to be composed mostly or entirely of individuals greater than 5 years of age (Table 2). However, timed searches are not as reliable a collection method as total substrate samples from a quadrat since collectors may fail to detect and therefore collect small individuals that may be present.

Species	≤5	>5	Total
<i>Amblema plicata</i>	9	300	309
<i>Obliquaria reflexa</i>	12	15	27
<i>Fusconaia flava</i>	0	25	25
<i>Quadrula pustulosa</i>	0	13	13

Table 2. Age distributions of four mussel species collected in the Wisconsin Channel in 2010.

Lampsilis higginsii have been placed in Upper Pool 4 in varying numbers since 2000 (Table 3) nearly always within grids at a very small site along the right descending bank just downstream of the Goose Lake outlet. In 2009 150 sub-adult *Lampsilis higginsii* were placed through the area of this years survey. In years prior to 2009 sub-adults were placed into grids, the 2003 cohort was placed beneath a wire mesh blanket to protect it from predators and remains concentrated within this small area. In September of this year 2,946 individuals of the 2008 cohort were scattered from a boat along the length of the area surveyed. It has been hoped that the earlier reintroductions would result in natural recruitment, possibly locally within the Wisconsin Channel, but so far this has not been documented.

Upper Pool 4 Wisconsin Channel	Cohort	No.
2000-2010 Total	2000	3
	2001	356
	2002	564
	2003	1,608
	2005	150
	2006	150
	2008	2,946
	Total	5,777

Table 3. *Lampsilis higginsii* reintroductions in the Wisconsin Channel of Pool 4.