Report on 2005 Placement of *Lampsilis higginsii* into the Wisconsin River near Orion, Wisconsin.

Wisconsin Department of Natural Resources, U. S. Army Corps of Engineers, St. Paul District and the U. S. Fish and Wildlife Service, Genoa National Fish Hatchery.

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ACKNOWLEDGEMENTS

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INTRODUCTION

This is a report on the 2005 placement of *Lampsilis higginsii* into the "Orion – Lower" bed, Wisconsin River, Wisconsin during 2005. This effort was part of a mussel propagation program related to the continued operation and maintenance of the Mississippi River System Navigation project by the U. S. Army Corps of Engineers in cooperation with associated, multi-agency Mussel Coordination Team. Persons involved in this 2005 translocation were staff from the Wisconsin Department of Natural Resources, the U. S. Fish and Wildlife Service, Genoa National Fish Hatchery, Minnesota Department of Natural Resources and the U. S. Army Corps of Engineers, St. Paul District.

From 2001-2005, many individuals of federally endangered *Lampsilis higginsii* (mollusca: bivalvia: unionidae) were artificially inoculated on thousands of smallmouth bass, largemouth bass and walleye. These inoculated fish were placed in cages at various locations for rearing in the upper Mississippi River, primarily Lake Pepin. After these mussels excysted from fish, they drift to the cage bottom. During the fall of that same year, juvenile mussels are consolidated into fewer cages. These consolidated mussels are normally reared for at least two years and inspected annually. The purpose of extended rearing, is to allow sufficient growth to deter predation by vertebrates. Once mussels reach sufficient size, ~50mm total length, these "subadults" are outplanted to locations needing introductions or population supplementation. Fish and mussel propagation, rearing, inoculation methods and cage design are described in Gordon, 2001 and Gordon and Brady, 2003.

During the fall of 2005, we outplanted 1441 "subadult" *L. higginsii* into the lower Wisconsin River at a mussel aggregation known as "Orion – Lower" located near Orion, Wisconsin. This report describes the details of that outplanting.

METHODS and RESULTS

We retrieved a total of 1441 "subadult" mussels from cages in Lake Pepin, Mississippi River, near Frontenac, Minnesota on 27 September 2005. These mussels were from the 2003 propagation efforts. Immediately after retrieval, we hand-cleaned these of attached zebra mussels (*Dreissena polymorpha*). We externally tagged them using numbered adhesive labels or rubber toughened cyanoacrylate based adhesive (Flash Black Rubber Toughened Flexible Super Glue®, Nor-Pack, Inc.) forced cured with a cyanoacrylate accelerator (Insta-Set For All Ca Glues®, VoTaw Tool, Inc) or both.

Of these 1441 mussels, 1200 (1196 *L. higginsii*, 4 *L. siliquoidea*) "St. Croix River strain" were tagged with two cyanoacrylate black dots on each valve, and had no numbered labels. On a total of 200 were placed two black dots and a blue-colored numbered tag. These were also "St. Croix strain".

On the remaining 41 mussels we placed two black dots and a yellow-colored numbered tag. These were “Mississippi River, Cassville strain”. For those 241 mussels with numbered adhesive tags we measured total length of each individual. Mussels with no numbered adhesive tags but just double black adhesive dots were not measured.

We transported all in an oxygenated tanker truck 95 miles to the Genoa National Fish Hatchery, located near Genoa, Wisconsin. Here they spent the night in mesh bags placed in flowing troughs supplied with groundwater. On 28 September 2005, we then transported them in an oxygenated tanker truck 63 miles to the Orion Public Boat Landing.

At the Orion Public Boat Landing, we hand cleaned and recounted all mussels and sorted them into three groups based on their tag identity. We placed a 1200 unnumbered “St. Croix River strain” “subadults” along a pre-established 40ft long anchored leadline (Figures 1 and 2). We placed the 200 blue-tagged numbered “St. Croix River strain” mussels within three 3ft by 3ft anchored leadline grids. Finally, we placed a total of 41 yellow-tagged numbered “Cassville, Mississippi River strain” mussels within one 3ft by 3ft anchored leadline grid. The linear leadline and the four grids had a centrum of 43° 12’ 06.5”N, 90° 25’ 32.3”W.

Lengths for the 241 measured, tagged mussels are given in Tables 1 and 2. In the future, mussels will be monitored for survival and growth and a comparison of growth and survival will be made among the two “strains”.

REFERENCES USED

Gordon, Roger. 2001. Lampsilis higginsi recovery project Genoa National Fish Hatchery. 2001. Genoa National Fish Hatchery, Genoa, Wisconsin. 8 pp.

Gordon, Roger and Tony Brady. 2003. Lampsilis higginsi recovery project Genoa National Fish Hatchery 2003. 10 pp.

Figure 1. 2005 General Location of *L. higginsii* "Subadult" Placement at the "Orion – Lower" Mussel Bed near Orion, Wisconsin River, Richland Co., Wisconsin.

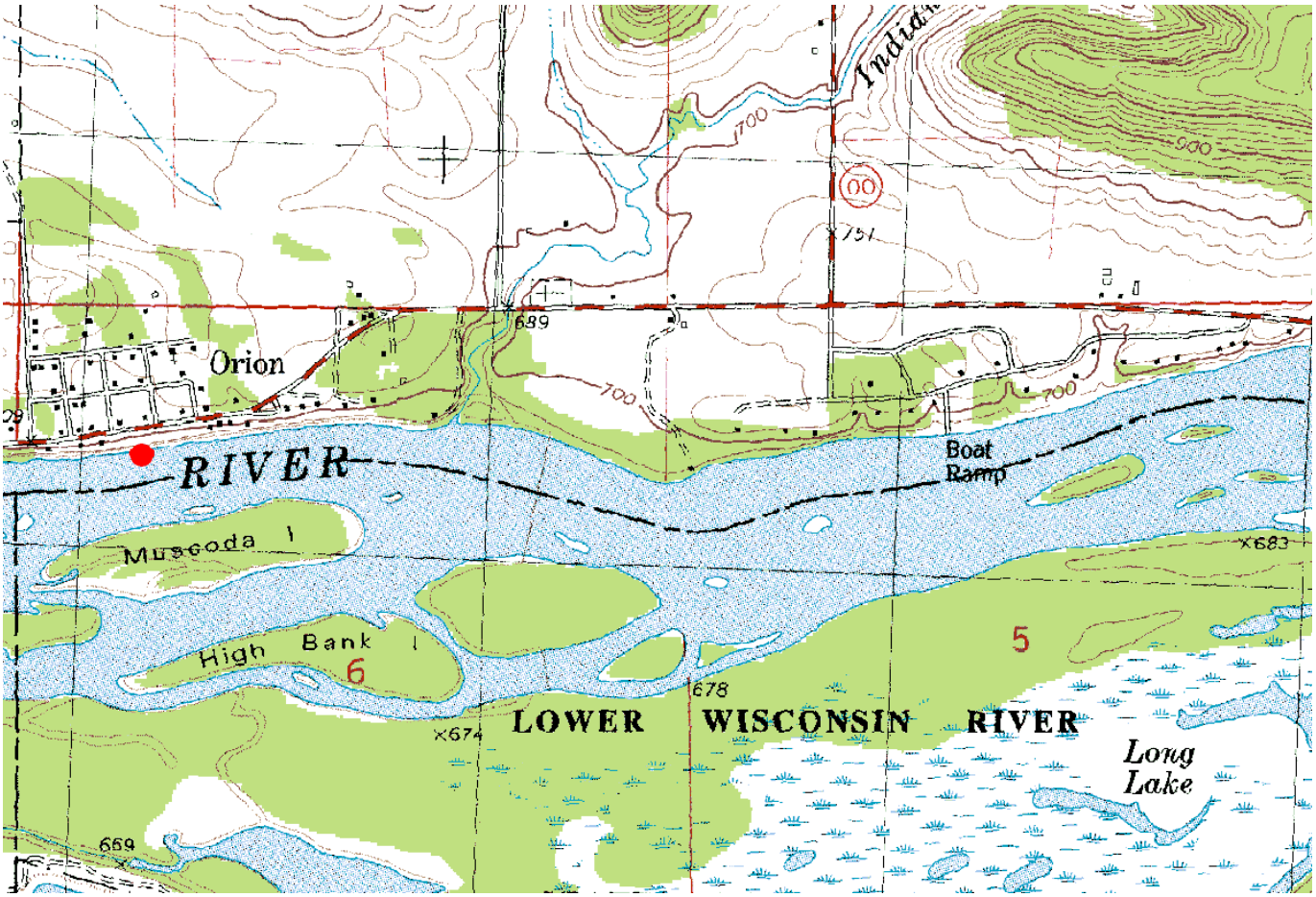

Figure 2. 2005 Specific Location of *L. higginsii* "Subadult" Placement at the "Orion – Lower" Mussel Bed near Orion, Wisconsin River, Richland Co., Wisconsin. Centrum Located at 43° 12' 06.5"N, 90° 25' 32.3"W

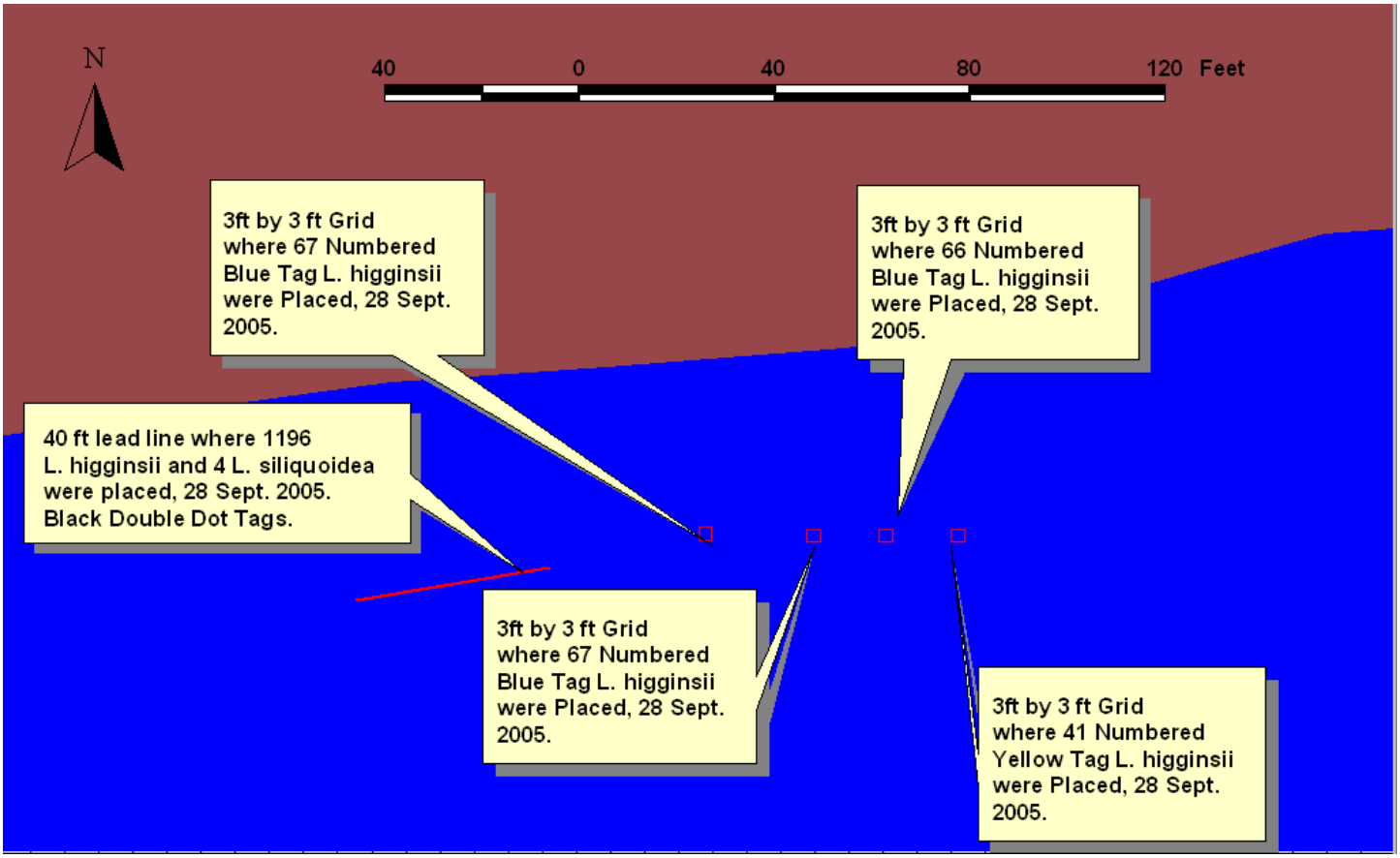

Table 1. Tag Number, Total Length and Age of 200 Blue-Tagged, Black Double-Dotted *L. higginsii* Placed at "Orion – Lower" during 2005.

Tag	Length (mm)	Age
C001	47	2
C801	60	2
C802	76	2
C803	58	2
C804	57	2
C805	47	2
C806	60	2
C807	66	2
C808	53	2
C809	66	2
C810	52	2
C811	53	2
C812	62	2
C813	55	2
C814	57	2
C815	63	2
C816	44	2
C817	53	2
C818	55	2
C819	51	2
C820	52	2
C821	51	2
C822	64	2
C823	50	2
C824	60	2
C825	60	2
C826	44	2
C827	48	2
C828	48	2
C829	54	2
C830	50	2
C831	50	2
C832	50	2
C833	55	2
C834	66	2
C835	54	2
C836	51	2
C837	70	2
C838	58	2
C839	64	2
C840	52	2
C841	43	2
C842	64	2
C843	74	2
C844	54	2
C845	60	2
C846	66	2
C847	67	2
C848	51	2
C849	70	2
C850	63	2
C851	50	2
C852	55	2
C853	50	2
C854	54	2
C855	54	2
C856	52	2
C857	46	2
C858	40	2
C859	40	2
C860	43	2
C861	51	2
C862	48	2
C863	54	2
C864	54	2
C865	50	2
C866	63	2
C867	58	2
C868	64	2
C869	65	2
C870	66	2
C871	53	2
C872	70	2
C873	61	2
C874	63	2
C875	60	2
C876	60	2
C877	57	2
C878	52	2
C879	68	2
C880	66	2
C881	53	2
C882	63	2
C883	56	2
C884	62	2
C885	45	2
C886	53	2
C887	50	2
C888	51	2
C889	48	2
C890	58	2
C891	50	2
C892	54	2
C893	50	2
C894	50	2
C895	56	2
C896	57	2
C897	54	2
C898	82	2
C899	64	2
C900	53	2
C901	46	2
C902	68	2
C903	42	2
C904	45	2
C905	51	2
C906	52	2
C907	57	2
C908	58	2
C909	44	2
C910	64	2
C911	45	2
C912	56	2
C913	41	2
C914	67	2
C915	50	2
C916	41	2
C917	53	2
C918	53	2
C919	47	2
C920	52	2
C921	50	2
C922	66	2
C923	64	2
C924	53	2
C925	49	2
C926	56	2
C927	60	2
C928	64	2
C929	63	2
C930	47	2
C931	57	2
C932	58	2
C933	52	2
C934	48	2
C935	57	2
C936	41	2
C937	62	2
C938	50	2
C939	72	2
C940	57	2
C941	54	2
C942	53	2
C943	54	2
C944	52	2
C945	52	2
C946	53	2
C947	47	2
C948	50	2
C949	57	2
C950	47	2
C951	60	2
C952	52	2
C953	48	2
C954	51	2
C955	50	2
C956	50	2
C957	57	2
C958	46	2
C959	58	2
C960	58	2
C961	55	2
C962	55	2
C963	50	2
C964	50	2
C965	60	2
C966	61	2
C967	56	2
C968	73	2
C969	53	2
C970	53	2
C971	45	2
C972	51	2
C973	60	2
C974	56	2
C975	63	2
C976	51	2
C977	51	2
C978	47	2
C979	50	2
C980	65	2
C981	74	2
C982	60	2
C983	74	2
C984	61	2
C985	50	2
C986	73	2
C987	61	2
C988	48	2
C989	56	2
C990	65	2
C991	76	2
C992	81	2
C993	60	2
C994	64	2
C995	70	2
C996	80	2
C997	60	2
C998	51	2
C999	55	2

Table 2. Tag Number, Total Length and Age of 41 Yellow-Tagged, Black Double-Dotted *L. higginsii* Placed at "Orion – Lower" during 2005.

Tag	Length (mm)	Age
C711	50	2
C712	54	2
C713	66	2
C714	52	2
C715	58	2
C716	54	2
C717	54	2
C718	50	2
C719	60	2
C720	62	2
C721	54	2
C722	53	2
C723	55	2
C724	60	2
C725	56	2
C726	50	2
C727	63	2
C728	53	2
C729	52	2
C730	52	2
C731	58	2
C732	58	2
C733	56	2
C734	52	2
C735	65	2
C736	50	2
C737	47	2
C738	55	2
C739	61	2
C740	51	2
C741	47	2
C742	53	2
C743	51	2
C744	51	2
C745	62	2
C740	53	2
C747	52	2
C748	57	2
C749	77	2
C750	71	2
C751	72	2