

St. Croix National Scenic Riverway  
Zebra Mussel Activities  
2007



Byron N. Karns  
St. Croix National Scenic Riverway  
National Park Service  
February 28, 2008

## **Background**



Zebra mussels have been a threat to the St. Croix watershed since the early 1990. In 1992, the first mussels were discovered in the Mississippi above the confluence with the St. Croix River. The first boat discovered with attached zebra mussels was in 1994 and reproduction was pinpointed by 2000. The need for extensive monitoring within the watershed to determine the rate and extent of zebra mussel spread is extremely important. While determining control methods and mitigation is a high priority for all stakeholders, a broad list of continuing efforts is in place.

The St. Croix Aquatic Invasive Species Task Force\* (formally the St. Croix Zebra Mussel Prevention Task Force) was formed in 1992, to help formulate policies and direct actions that might stop or slow the spread of zebra mussels into the St. Croix National Scenic Riverway. In 1998, an interstate management plan for aquatic nuisance species (as specified in the National Invasive Species Act of 1996) was developed by the Task Force. Since then the two states and the Great Lakes Indian Fish and Wildlife Commission (GLIFWC) have received grants to implement the plan. Also, each spring since 1993, the Task Force has created an annual action plan for zebra mussel prevention and mitigation.

Since the establishment of the prevention plan in 1993, the five elements of the plan have included: information and education, inspections and access management, monitoring, remediation, and research. This report briefly highlights 2007 efforts in promoting the five elements of the initial prevention plan and 2007 action plan. Details concerning the interstate management (State of Minnesota, 2007) can be found in Appendix A of this report.

\*Participants in the Task Force have included: National Park Service (NPS), U.S. Fish and Wildlife Service (USFWS), Wisconsin and Minnesota Departments of Natural Resources (WDNR, MDNR), Xcel Energy, University of Minnesota Sea Grant Program (MN Sea Grant), Macalester College, Biological Resources Division of the U.S. Geological Survey (USGS), U.S. Coast Guard (USCG), U.S. Army Corps of Engineers (USACE), Great Lakes Indian Fish and Wildlife Commission (GLIFWC), and the St. Croix Marinas Association.

## **Actions**



### *Outreach:*

Three visitor centers are operated along the Riverway at various dates and times throughout the year. Staff contact visitors both at these centers or outside along the river. During the 2007 open water season 31,052 people were contacted by park educators at

visitor centers, at programs, or on the water. Educators routinely provide invasive species information to visitors during these contacts.

In addition, law enforcement rangers, maintenance staff and natural resource management biologists contact visitors with information regarding zebra mussels and other aquatic invasive species. In 2007, the aquatic invasive species biologist presented three programs related to invasive species along the Riverway. Sixty-seven folks attended one of these meeting, 24 the second and 16 the third.

Finally, the park benefits from the public service announcement, billboards, press releases, flyers, banners and other outreach materials and efforts performed by the Minnesota and Wisconsin Departments of Natural Resources.

### *Inspections and Access Management:*

Again this year watercraft or trailers were inspected by agency staff for aquatic invasive species. During these inspections no zebra mussels were found on any watercraft entering the St. Croix River. As detailed in the report at the end of this document, from May through August, Minnesota DNR staff inspected boats and trailers and contacted visitors at landings and launches north of Prescott to Interstate Park within the St. Croix National Scenic Riverway. These Watercraft Inspectors are stationed at St. Croix Bluffs Regional Park, Fourth Street City Launch in Bayport, the St. Croix Boomsite Public Access, William O'Brien State Park, Osceola Landing, Interstate Park, MN Lion's Club Park, and Wild River State Park. As boats are leaving these landings, they are checked for, and information is provided on, Eurasian watermilfoil, zebra mussels and other aquatic invasive species. The vast majority of time spent and contacts made occurred at the Boomsite and St. Croix Bluffs.

Great Lakes Indian Fish and Wildlife Commission staff collected field data from public and private boat landings within the St Croix watershed documenting the location and existing aquatic invasive species signage at each landing. Additional landings were inventoried during fall fishery assessments, but data have not been summarized yet. Commission staff shares this information with the Wisconsin DNR and use this data in combination with aquatic invasive species distribution data to prioritize future sign placement so that infested waters are properly posted.

By using support from the Wisconsin DNR's Clean Boats—Clean Waters campaign, a watercraft inspector was hired in 2007. This WI DNR contract allows the National Park Service to conduct the watercraft inspections using federal employees specifically on the Wisconsin side of the St. Croix. The inspector conducted watercraft inspections at St. Croix Falls Lions Club Park, Somerset Landing, Hudson City Ramp, and the City of Prescott Public Launch. A summary of the efforts at the boat launch sites in 2007 showed staff logged in 192 hours, inspected 462 boats and contacted 892 boaters.

Law enforcement Rangers patrol the area around the High Bridge (about 3 miles north of Stillwater) to ensure compliance with the boat restrictions, in place at this location since

2001. There are 6 buoys (3 lighted) positioned across the river just south of the bridge instructing boater that movement upstream of this point via boat is restricted. Several nearby posted signs and a larger downstream floating buoy emphasize this rule. The intention is to prevent attached or planktonic zebra mussels (or other aquatic species) from “hitching” a ride on an upstream bound vessel. During the summer of 2007, three citations were issued to boaters who had disregarded the restriction, while numerous warnings were provided to inattentive operators.

*Monitoring:*

Active

Qualitative Monitoring Dives took place over four days in mid-June. The purpose of this exercise is to determine the range or extent of spread of zebra mussels in the lower St. Croix River. During this and other diving/monitoring activities within the last 52 miles of the River, no zebra mussels were found upstream of the Stillwater Lift Bridge (mile 23.3). The following is the dive narrative for the week.

**6/18/2007**

The week began with two boats launching from the MN DNR Boomsite Ramp. Five divers were able to search seven sites for a total of 6.25 hours of dive-time. No zebra mussels were found at any of the 7 sites. These locations were all above the Lift Bridge and extended to the NPS boat check point (restricted access area) located at the Soo Line High Bridge at river mile 28.4. The table below details each site:

Table 1. Day 1 Dive Locations.

Location	High Bridge	Pillar Is.	Rock Buoy	Boom Marina	Wolf Marine	Still. Levy	Lift Br.
Mile	28.4	27.8	26.2	24.9	24.5	23.4	23.3
Time(mins)	84	53	41	42	53	54	48
ZMs	0	0	0	0	0	0	0

**6/19/2007**

On day two, both boats took off from Hudson Public Launch and headed for the Hudson Swing Bridge, where a total of 56 minutes of dive time was spent by the four divers. At this first site, catfish were removed from winged maple leaf propagation cages. Four other sites were explored within the narrows and locations upstream of the I-94 Bridge for a total of 6.25 hours. At all sites, depending on substrate, several dozen to hundreds of zebra mussels were found.

Table 2. Day 2 Locations.

Location	Swing Bridge	Grand Duchess Pier	S. Beer Can Is.	I-94 Bridge, N. side rip-rap WI Shore	Hudson Narrows Relocation Site
Mile	17.3	16.7	16.6	16.1	16.4
Time(mins)	56	52	44	46	38
ZMs	100+	100+	50-100	100+	50-100

**6/20/2007**

Day three found the dive team back at the Boomsite Launch with two boats. The dive team went to a total of nine sites for a total of 6.07 hours. At these locations, zebra mussels were collected haphazardly within 15 minute timed searches. The mussels collected were pooled, counted and measured. The table below provides total number (n) at each site, with the largest, mean and smallest given to the nearest millimeter.

Table 3. Day 3 Locations.

Location	MN Shore ¼ S of Lift Br.	Stillwater Relocation Site	King Plant	S. HiLine Beach	N. HiLine Beach	Bayport Marina Outside Riprap	MN Shore SYC Beach	Lake Mallalieu Dam	Swing Br. upstream WI Shore
<b>Mile</b>	22.5	23	21.5	21	21	19	18.2	17.9	17.4
<b>Time(mins)</b>	35	50	49	32	50	48	38	34	28
<b>ZMs (mm)</b>	n=6, 27,21,10	n=8, 27,17,12	n=74, 39,27,14	n=36, 33,19,8	n=7, 25,18,6	n=62, 27,21,10	n=140, 29,21,17	n=90, 30,20,11	n=11, 28,20,15

**6/21/2007**

On day four, the dive team left from Windmill Marina, in Afton. Boat one had three divers and went to four sites. The second boat had two divers and went to four locations. Total dive time at these eight locations was 5 hours. At all but two of the sites, zebra mussels were again collected, pooled, sub-sampled (n=20), and measured. Results are in the following table.

Table 4. Day 4 Locations

Location	WI peninsula S. of I-94	St. Mary's Point	WI Shore across from SMPPoint	S of Beach	Afton City Docks	½ mile S. of Catfish Bar	Black Bass Bar	Afton SP
<b>Mile</b>	15.9	12.5	12.6	12	11.4	11	10.2	8.5
<b>Time(mins)</b>	70	20	30	38	33	15	51	43
<b>ZMs (mm)</b>	n=23 35,18,4	n=20 22,18,12	n=20 35,17,8	n=20 35,20,10	"fewer"	None collected	n=20 28,20,13	n=20 22,17,14

Passive

PVC Plate samplers have been placed in the river from the headwaters to the mouth since the mid 1990's. Two to three dozen sites from the City of Stillwater (~mile 25.4) upstream to the Gordon Dam and the entire Namekagon River are installed yearly and monitored by the NPS. From Stillwater downstream to Prescott, nine sites (some with multiple samplers at each = 27 total), are maintained by the Fish and Wildlife Service— Fisheries Resources Office in Onalaska, WI. Samplers are a modified Hester-Dendy type invertebrate sampler, cut so each square is smaller than the one below it, forming a

pyramid of PVC plates. The initial North American zebra mussel literature suggested this substrate and configuration provided ideal settling for early infestations, thus alerting managers of a problem before detection on the river bottom might otherwise occur. Plates are checked every 2-4 weeks from May through October, and each sampler has affixed glass microscope slides to increase the chances for early detection. As in past years, MN DNR staff has checked these slides for post-veliger settlement. To date, no zebra mussels have been found on samplers in the NPS managed zone.

Within the FWS managed zone, several of the samplers are allowed to overwinter. Glass slides are also affixed and examined as above. No zebra mussels were found on samplers at Wolf Marine in Stillwater. Samplers found with attached zebra mussels were at Pt Douglas (Prescott), St Croix Bluffs Regional Park (MN side upstream from Prescott), Windmill and Afton Marinas (Afton, MN), St. Croix Marina gas dock (Hudson), Hudson Sailboat Mooring Dike, Bayport Marina, and Sunnyside Marina (Oak Park Heights). Beginning with the initial check in the spring a fair amount of winter carry-over was noted on samplers within the lowest pools (Prescott to Windmill). These were all large adults, not many juveniles. A similar increase of adults carried-over at marina samplers at Windmill, Afton, Hudson, and Bayport. It took a while for spring settlement to show-up on the samplers, but by early June, staff found a very large increase in young mussels on all samplers up to Bayport, and some increase at Sunnyside. This trend continued throughout the summer and may reflect a “heavy infestation” year from the Stillwater Bridge south to Prescott. Contacts with Marina crews and boaters suggests many were finding increased amounts of mussels on boats as well, with increasing numbers the further south from Stillwater the boats had been moored. While there have been no positive finds on samplers above the Stillwater Bridge, both Stillwater and Wolf Marinas are reporting a great increase in numbers on the boats pulled at their docks, which may suggest it is a matter of time before the upstream population increases and substrate zebra mussel finds are located at those sites.

### Veliger Sampling

The U.S. Army Corps and the Wisconsin DNR collected cross-sectional composite water samples at Prescott and Hudson, during July, August and September of the 2001 through 2005 field seasons. The NPS has aided the WI DNR/USACE efforts since 2004 and worked with the Corps to take samples north of Stillwater. Since 2004 sampling in the St. Croix basin included Prescott, Hudson, just north of Stillwater, south of St. Croix Falls, and the Sunrise and Snake rivers. These samples were taken in July and August, but the early September sampling efforts at all sites was dropped in 2005.

Notable results from 2007 occurred at the confluence with the Mississippi at Prescott. Veliger counts at this location had shown detectable numbers since 2001. These low numbers had been steady until the significant detection in July. Of equal interest was the drop off of animals collected during the August sampling. Further significance of these results are discussed in the status report, “Zebra mussel population age structure dynamics on a large Midwestern river—status report for 2007.”

The samples are processed and veligers counted at the U.S. Army Engineer Research and Development Center, Vicksburg, MS. The data table from the Corps results through 2007 is included below.

Table 5. Veliger Abundance in the St. Croix and Select Tributaries 2001 to 2007.

Tributaries	Veliger Abundance (#/L)																			
	July							August							September					
	2001	2002	2003	2004	2005	2006	2007	2001	2002	2003	2004	2005	2006	2007	2001	2002	2003	2004	2005	
	<b>Live Veligers</b>																			
St. Croix R. (Hudson)	0.07*	0	0	0.70	0	0.76	6.63	0.60*	0	0	0.5	0	1.11	3.00	0.22*	0	-	0.22	0	
St. Croix R. (Prescott)	0.1	4.53	0	5.94	2.20	9.17	71.56	2.39	0	0.62	5.69	3.56	3.28	1.74	2.03	0.17	0.64	9.03	4.25	
St. Croix (Stillwater)	-	-	-	0	0	0	0	-	-	-	0	0	0	0	-	-	-	0	0	
St. Croix Falls	-	-	-	0	0	0	0	-	-	-	0	0	0	0	-	-	-	0	0	
Snake River	-	-	-	0	0	0	0	-	-	-	0	0	0	0	-	-	-	0	0	
Sunrise River	-	-	-	0	0	0	0	-	-	-	0	0	0	0	-	-	-	0	0	
	<b>Dead Veligers</b>																			
St. Croix R. (Hudson)	0.01*	0	0	0.13	0	0.11	0.25	0.06*	0	0	0.04	0	0.22	0.53	0.02*	0	-	0	0	
St. Croix R. (Prescott)	0.01	0.47	0	0.78	0.61	0.33	0.11	0.02	0	0.12	0.83	0.25	0.08	0.09	0.08	0.07	0.06	0.64	0.08	
St. Croix (Stillwater)	-	-	-	0	0	0	0	-	-	-	0	0	0	0	-	-	-	0	0	
St. Croix Falls	-	-	-	0	0	0	0	-	-	-	0	0	0	0	-	-	-	0	0	
Snake River	-	-	-	0	0	0	0	-	-	-	0	0	0	0	-	-	-	0	0	
Sunrise River	-	-	-	0	0	0	0	-	-	-	0	0	0	0	-	-	-	0	0	

\* represents sample from Kinnickinnic R. mouth

[ Table adapted from draft data provided by USACE]

In addition to the composite water sampling conducted throughout the Upper Mississippi Basin as part of the long term monitoring described above, NPS, Great Lakes Indian Fish and Wildlife Commission, the WI DNR, Sea Grant and others conduct aquatic invasive species sampling throughout Wisconsin. During the past several years, sampling has been conducted in state waters for zebra mussel veligers and other aquatic nuisance species, such as the spiny water flea (*Bythotrephes cederstroemi*).

In 2007, NPS staff captured water samples at ten Wisconsin lakes and flowages within the St. Croix Basin. The results of these plankton tows were sent to the DNR lab in Madison for analysis. The table below details the activities. No veligers were detected in these samples. Plans are to continue this monitoring in 2008 and to add understanding of calcium levels in these water bodies such that they can be plugged into the recently developed risk assessment model.

Table 6. Veliger Sampling at Select Wisconsin Lakes - 2007

Location	Ref #	County	Ck'd by	Veligers	Date Sampled
St. Croix River – Gordon Dam	none	Douglas	WIDNR	NO	07/25/07
Yellow Lake	2675200	Burnett	WIDNR	NO	07/26/07
Clam Lake, upper	2656200	Burnett	WIDNR	NO	07/26/07
Big Trade Lake	2638700	Burnett	WIDNR	NO	07/26/07
Big Round Lake	2627400	Polk	WIDNR	NO	07/26/07
Bone Lake	2628100	Polk	WIDNR	NO	07/26/07
Balsam Lake	2620600	Polk	WIDNR	NO	07/26/07
Cedar Lake	2615100	Polk	WIDNR	NO	07/27/07
Wapogasset Lake	2618000	Polk	WIDNR	NO	07/27/07
Deer Lake	2619400	Polk	WIDNR	NO	07/27/07

### Fall Boats Monitoring

Since the mid nineteen-nineties, boats that have been pulled out of the water and stored for the winter season at Riverway marinas have provided consistent insight into the range and relative severity of the zebra mussel infestation. Boats obviously move up and down St. Croix and into infested waters outside the river, yet the relative numbers of mussels attached to boats over the years appears to coincide with evidence discovered in the water. Thus, if dry-docked boats are a rough surrogate for zebra mussel densities, their use, especially for a long-term data set, have value.

Data from before the declared infestation in 2000 is useful, but detections of infested boats were rare and the yearly numbers of boats checked varied. Since 2000, a consistent effort has provided comparable figures. There appears to be exponential growth in the numbers of boats with attached zebra mussel, suggesting greater reproductive activity in the St. Croix River.

Figure 1. Total Boats Checked and Boats w/Zebra Mussels Attached – 2000 to 2007

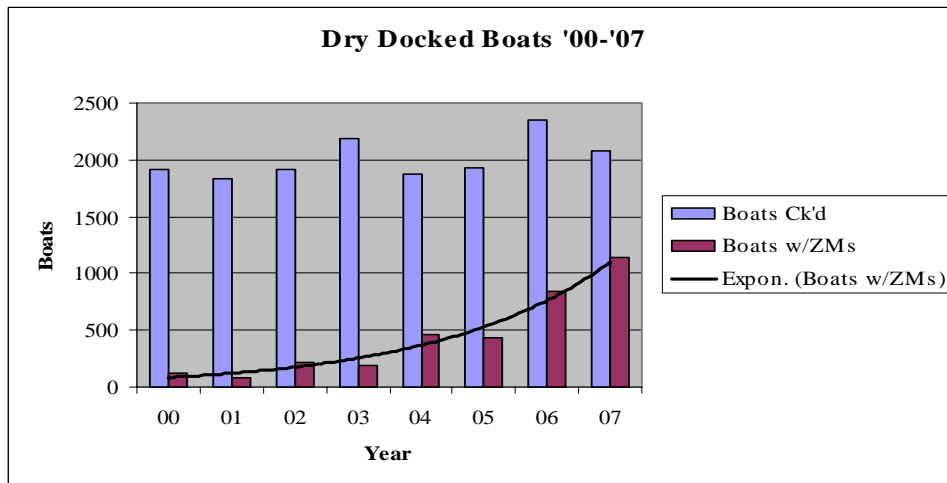




Table 7. Number of Boats at St. Croix River Marinas with Attached Zebra Mussels 2000 to 2007.

Marina	00 ZM	01 ZM	02 ZM	03 ZM	04 ZM	05 ZM	06 ZM	07 ZM	Slips
Wolf Marine	0	5	3	4	6	8	18	27	250
Stillwater Yacht Club	0	1	2	6	3	5	17	35	157
Sunnyside Marina	8	3	5	4	16	16	29	74	200+
Beach House Marina	0	0	0	1	43	2	4	2	180 on Land
River Park Marina	6	3	8	8	1	15	29	29	70+
Bayport Marina	10	8	7	10	19	47	100	145	80+30
St. Croix Marina	17	8	18	13	63	71	185	225	225
Afton Marina	32	33	57	26	100	86	158	174	300+?
Windmill Marina	39	16	48	40	92	83	158	185	184
Afton Boat Storage	3	3	15	6	8	16	24	24	180
Miss/Croix	--	--	59	61	92	82	105	93	0
King's Cove	--	--	--	10	24	3	20	131	?
<b>Total</b>	<b>116</b>	<b>80</b>	<b>222</b>	<b>189</b>	<b>467</b>	<b>434</b>	<b>848</b>	<b>1144</b>	<b>1888+</b>

First number is the total # of boats checked and the second the # of boats with zebes attached. I have info back to 1996 if you are interested. 2000 is first year we determined reproduction was occurring in the River.

During three days at the end of October, NPS employees conducted an examination of St. Croix boats dry docked for the season and stored at marinas from St. Croix Falls to Hastings (Table 5). Of the **2352** boats checked, **848** were found with attached zebra mussels on their sterns (outdrives, trim tabs, gauges, etc). Most of the finds were at marinas from Bayport south, but every marina within the infestation zone (Stillwater @ RM 25.4 south) had at least one boat with attached zebra mussels.

Figure 2. 2007 Zebra Mussel Attached Boats: By Marina, Percent Infested & Total Inspected Boats

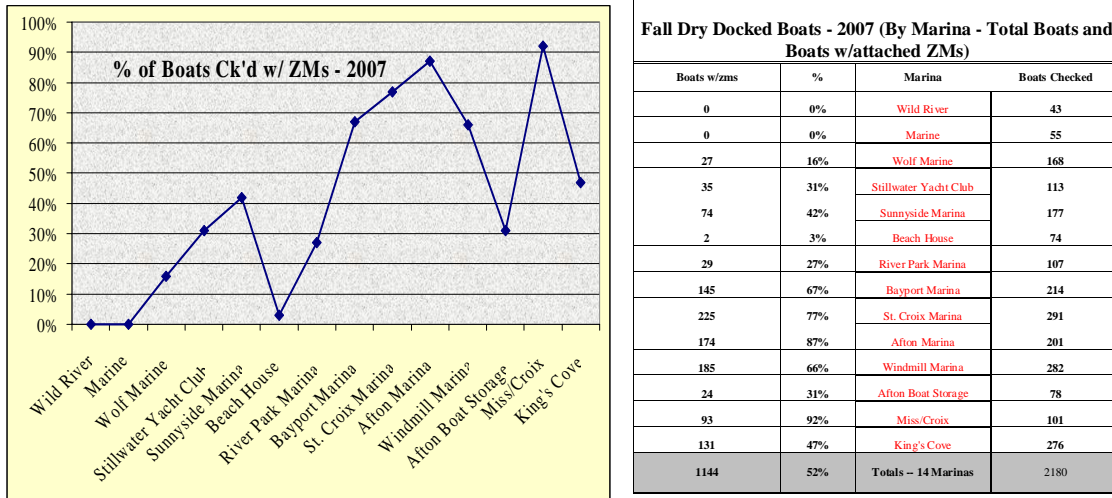
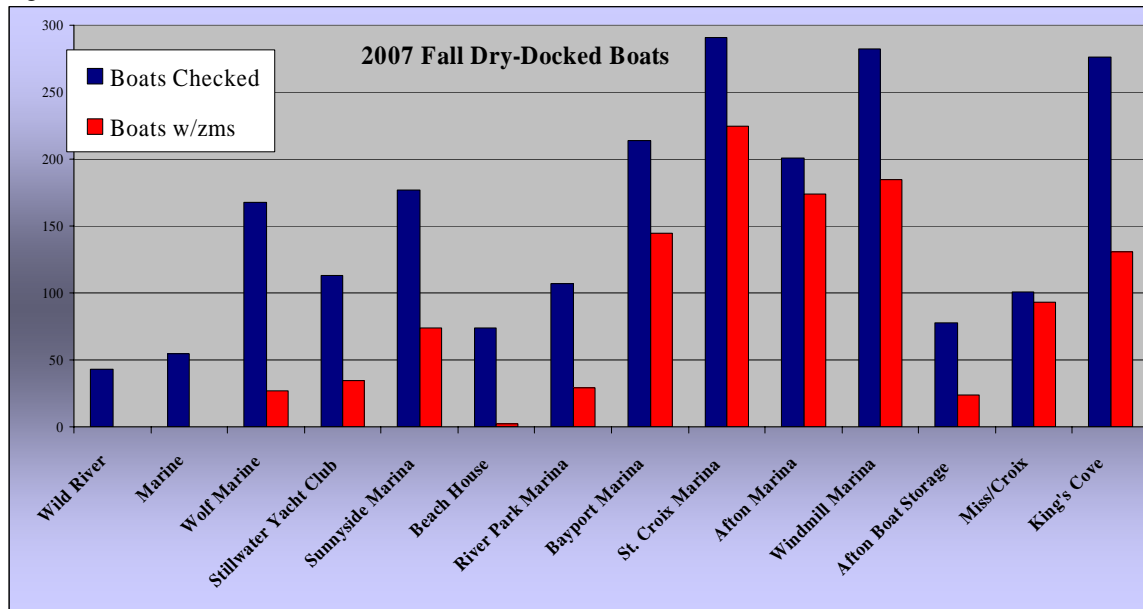


Figure 3. Boats Checked and Boats with Attached Zebra Mussels - 2007



*Remediation:*

No formal remediation planning or activities occurred during the 2007 field season, however, propagation efforts for the winged mapleleaf mussel and several MN state listed species will be moved to an upstream location with a relatively low zebra mussel density, yet still within Lake St. Croix. This is the first time (other than changing standard operating procedures) that natural resource related efforts have been modified by heavy zebra mussel numbers.

Future plans to clean native mussels beds of zebra mussels is still be considered, but no locations or time frame have been identified.

*Research:*

Zebra mussel research on the St. Croix for 2007, conducted by members of the task force includes:

An Upper Mississippi Risk Assessment Model, see – <http://www.mvp.usace.army.mil/navigation/default.asp?pageid=651>

Since 2004, zebra mussels have been quantitatively sampled at eight locations from Stillwater to Prescott. This work was performed again in 2007, see – <http://www.nps.gov/sacn/naturescience/zebra-mussels.htm>

In 2007, a new study was begun to assess the dynamics of the populations of zebra mussels living in the last 6 miles of river (the Prescott pool from the Kinnickinnic River downstream). The purpose was to determine how the age structure of these animals changes over time, and whether periodic large cohort die-offs would be discovered here, as they had been in other river systems of the Upper Mississippi River Basin, see – <http://www.nps.gov/sacn/naturescience/zebra-mussels.htm>

## Aquatic Nuisance Species Management Plan Annual Report

**Date:** January 11, 2008

**Report for St. Croix Interstate Aquatic Nuisance Species Management Plan**

**Grantee:** Minnesota Department of Natural Resources

**Section I.** List allocations, by Federal Fiscal Year(s), covered in this report<sup>1</sup>:

1. Federal Fiscal Year and allocation = FY2006, \$46,035.00

**Section II.** List all activities, which were supported at least in part with Federal funds and were submitted in the annual work plan to the U.S. Fish and Wildlife Service. For each activity, list planned accomplishments, products, and/or outcomes.

**1. Monitor ANS populations**

- a. Support monitoring dives to assess zebra mussel populations in the St. Croix River (Plan Action - IC1b).

2. **Continue public outreach** utilizing print media to increase awareness of ANS issues in Minnesota and Wisconsin near the St. Croix River (Plan Action ID1b).

**Section III.** List accomplishments, products, and/or outcomes, by work plan activity number in Section II. Please explain if no action was taken on a work plan activity.

1. **Support Monitoring Dives:** \$3,000 was granted to NPS dive team for dives to monitor zebra mussel populations (Plan Action - IC1b). The NPS dive team reports the following:
  - a. St. Croix dive team members participated in 2 interagency dive team searches for zebra mussels qualitatively on river substrate, marinas, boats, and other possible attachment sites at various locations throughout the St. Croix River system. Zebra mussels were found in increasing numbers as the dive team traveled downstream of the Stillwater lift bridge. No zebra mussels have been found on natural substrate upstream of the bridge. This interagency dive searches took place June 18 - 22.
  - b. Quantitative substrate samples were collected from numerous sites between the river stretch from Prescott, WI and Stillwater, MN. These samples were collected August 13-15. Results indicate a steady if increasing number of zebra mussels from Stillwater to the Kinnickinnic Narrows (significant numbers found within the Hudson Narrows, however). From the Kinnickinnic Narrows to the confluence with the Mississippi River, numbers increased significantly on 2007. One location, at river mile 4, samples collected indicated numbers over 10 thousand per meter squared.
2. **Continue public outreach:** \$43,035 of federal funds and additional state funds were used to purchase Radio, TV, newspaper and other ads that were placed statewide. A large portion of the DNR's statewide public awareness efforts on ANS were in the St. Croix River area of the state from Duluth to the Twin Cities.

---

<sup>1</sup> If more than 1 year is reported on, then list work plan activities in Section II and accomplishments in Section III by Federal Fiscal Year.

**Section IV.** List in-kind and cash match for your match to the Federal Share of the Plan.

1. **Public awareness** (contractual): \$10,000.00 – In addition to the federal grant funded public awareness listed above, the amount listed here reflects a portion of additional state funds spent on mass media to raise public awareness of ANS.
2. **Watercraft inspections** (salaries, travel): \$64,000.00 - 50 seasonal employees were used statewide to inspecting watercraft for ANS and inform boaters (Plan Action – IB2b). They also collect information on ANS presence and location, watercraft type and state of registration, number of people, last and next waterbody visited, and operator familiarity with Eurasian watermilfoil, zebra mussels, Asian carp, and Minnesota's aquatic invasive species laws. Boat accesses primarily on infested waters were targeted for watercraft inspections between May and October 2007. The seasonal employees working on the accesses to the St. Croix River conducted 223 hours of watercraft inspections reaching 467 boaters (Plan Action - ID1e).

ACCESS NAME	NO. OF INSPECT	HOURS
ST CROIX - WILD RIVER PWA	28	51.5
ST CROIX - (AFTON) BLUFFS PWA	233	42
ST CROIX - BAYPORT PWA	15	20.5
ST CROIX - LIONS MUNICIPAL PWA	32	27.5
ST CROIX - BOOMSITE PWA	147	40.75
ST CROIX - OSCEOLA PWA	11	24.75
ST CROIX - INTERSTATE PARK PWA	0	5.25
ST CROIX - OBRIEN STATE PK PWA	1	10.75
<b>TOTAL</b>	<b>467</b>	<b>223</b>

3. **Enforcement** of state ANS laws in St. Croix area of the state (salaries) = \$5,000 DNR Conservation Officers spent a portion of their statewide enforcement efforts in the area of the St. Croix River (Plan Action - IB3b).
4. **Total value of match** (in-kind and cash) = \$79,000.00