



Environment and Natural Resources Trust Fund (ENRTF) M.L. 2013 Work Plan

Date of Status Update Report: December 28, 2012

Date of Next Status Update Report: December 31, 2013

Date of Work Plan Approval:

Project Completion Date: June 30, 2015

Is this an amendment request? _____

PROJECT TITLE: Detection and Monitoring of Asian Carp Populations and Movements

Project Manager: Bradford G. Parsons

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Location: Mississippi, St. Croix, and Minnesota Rivers and their tributaries, other waterbodies if needed

Total ENRTF Project Budget:

ENRTF Appropriation: \$540,000

Amount Spent: \$0

Balance: \$540,000

Legal Citation: M.L. 2013, Chp. xx, Sec. xx, Subd. xx

Appropriation Language:

DRAFT

I. PROJECT TITLE: Detection and Monitoring of Asian Carp Populations and Movements

II. PROJECT STATEMENT: Asian carp are a real and serious threat to Minnesota's aquatic ecosystems. Recently, adult bighead carp were caught by commercial fisherman in April of 2011 at the mouth of the St. Croix River and in November of 2012 in Lake Pepin. On March 2, 2012 an adult bighead and an adult silver carp were captured in Pool 6 of the Mississippi River near Winona. Catches of these and previous large adult fish could indicate the front of the invasion wave of Asian carp or the individual wanderings of rogue fish. An aggressive search and monitoring program will provide vital information on the status of these species and allow development of potential strategies for control.

When Asian carp are present in low numbers, collection of live specimens is very difficult, especially in large river systems such as the Mississippi, Minnesota, and St. Croix Rivers. As such, a technique that identifies the presence of the DNA from Asian carp in the environment (eDNA) has been developed and used in other areas. Results of eDNA sampling conducted in 2011 were positive for silver carp in several locations in the three rivers, suggesting their presence. These locations included the Mississippi River above and below Coon Rapids Dam and below the Ford Dam, and in the St. Croix River below St. Croix Falls. However, follow up efforts with traditional fisheries sampling gears and contracting with a commercial fisherman failed to catch any Asian carp. This suggests that Asian carp are here in Minnesota waters, but at very low levels.

The eDNA technique, while useful for indicating presence of fish, does not provide further detailed information. To quickly and effectively respond to the threat posed by Asian carp, we need more detailed information regarding the actual fish themselves. Several important questions need to be answered. Which species, silver, bighead, or their hybrids are present? Are only adult fish present, or are juveniles also present? What specific rivers, reaches, and habitats are the Asian carp using at various times of the year? What other fish species are found in conjunction with Asian carp? What effects occur to native fish populations? In order to implement effective proactive measures to conserve our rivers and lakes from this threat, all these questions need to be addressed.

The Minnesota DNR Division of Fish and Wildlife, Section of Fisheries continues to do surveys and sampling of our major rivers. However, enhancing this effort to detect Asian carp is impossible at current staffing levels. Furthermore, scientific research indicates that Asian carp can be difficult to detect with standard fisheries assessments, particularly when they are in the early stages of invasion. Specialized sampling with targeted gears and varied habitats is more likely to find these fish if they are present. This project will determine the distribution and abundance of any Asian carp in Minnesota waters above Pool 4 of the Mississippi River and use this information to inform rapid response efforts. It will also delineate the leading edge of Asian carp reproductive success. Locating the areas and habitats these fish are using, when they appear to be in very low numbers and have not yet established spawning populations, is vital to targeting removal or other control efforts.

III. PROJECT STATUS UPDATES:

Project Status as of 12/31/2013:

Project Status as of 6/15/2014:

Project Status as of 12/31/2014:

IV. PROJECT ACTIVITIES AND OUTCOMES:

ACTIVITY 1: Enhanced eDNA sampling and verification

Description: The eDNA sampling conducted in 2011 suggested the presence of silver carp. The science behind eDNA indicates that repeated sampling over time clarifies and confirms results. The location of positive results from eDNA sampling is vital to inform areas where targeted traditional fisheries sampling and commercial fishing should be deployed in the most efficient manner. The analysis of the samples will be paid for through the Aquatic Invasive Species Research Center. However, the enhanced knowledge of large river habitats and sampling expertise that will be possessed by the positions in this proposal is vital for locating precise and accurate sampling sites. We expect to collect approximately 600 samples for eDNA sampling each year of the project. Sample sites will include the Mississippi, St. Croix, and Minnesota Rivers, and tributaries if necessary. Sampling sites may also include lakes and rivers in Southwestern Minnesota, if Asian carp advance from the Iowa great lakes area.

Summary Budget Information for Activity 1:

ENRTF Budget: \$ 33,000
Amount Spent: \$ 0
Balance: \$ 33,000

Activity Completion Date:

Outcome	Completion Date	Budget
1. Annually collect approximately 600 water samples for eDNA analysis –note estimated amount per outcome, amounts may vary per task, but total Activity budget will stay at \$33,000.	June 30, 2015	\$ 26,000
2. Coordinate sampling with State and Federal agencies	June 30, 2015	\$ 7,000

Activity Status as of 12/31/2013:

Activity Status as of 6/15/2014:

Activity Status as of 12/31/2014:

Final Report Summary:

ACTIVITY 2: Targeted commercial fishing

Description: All Asian carp caught to date in Minnesota waters have been collected in commercial fishing gear, especially seining. Commercial fishermen possess the necessary gear and have the local knowledge to deploy it in an effective manner. Contracting with commercial fishermen is a cost effective method of collecting adult Asian carp if they are present. An existing commercial fishing operation will be selected through a competitive bid process to provide approximately 40 days of gill net fishing and 10 days of seine fishing over the 2 year period. Seining is only feasible in certain locations within the rivers that are free of obstruction, while gill nets can be deployed in other locations. Commercial fishing is rare in the Minnesota River, thus it may prove difficult to spend much contracted effort there. Additionally, the personnel in this project will accompany and monitor the catch of other, non-contracted, commercial fishing operations to detect fishing patterns and catch that will greatly inform future Asian carp directed sampling efforts.

Summary Budget Information for Activity 2:

ENRTF Budget: \$ 168,000
Amount Spent: \$ 0
Balance: \$ 168,000

Activity Completion Date:

Outcome	Completion Date	Budget
1. Deploy and direct commercial fishermen in likely Asian carp habitats, approximately 40 gill net and 10 seining days–note estimated amount	June 30, 2015	\$ 115,000

<i>per outcome, amounts may vary per task, but total Activity budget will stay at \$168,000.</i>		
2. Deploy and direct commercial fishermen in response to positive eDNA results, approximately 10 gill net days.	June 30, 2015	\$ 28,000
3. Observe and monitor other commercial fishing operations, analyze and collate data on catch and sites sampled to inform future fishing efforts	June 30, 2015	\$ 25,000

Activity Status as of 12/31/2013:

Activity Status as of 6/15/2014:

Activity Status as of 12/31/2014:

Final Report Summary:

ACTIVITY 3: Accelerated sampling with traditional fisheries techniques.

Description: Experiences in Minnesota waters and other states indicate that commercial fishing gears are an effective means of capturing adult Asian carp. However, it is absolutely critical that we determine if, and if so, where, Asian carp are spawning in Minnesota waters. Research continues in other states as to what gears and habitats are most likely to confirm the presence of viable eggs or juveniles. These gears include electrofishing, trap nets, gill nets, trammel nets, trawls, drift nets, and hoop nets, all traditional fisheries sampling techniques. These methods can also capture Asian carp in habitats not accessible to commercial gears, which also requires non-prop motors. This effort would be above and beyond our normal fisheries management efforts. To effectively monitor Asian carp potential in the Minnesota River, a separate set of sampling gears is necessary and prudent. The Minnesota River is not infested with zebra mussels, and personnel time is more effective actively searching and sampling rather than drying and decontaminating nets. Our normal efforts are effective in monitoring population trends of our native sportfish and panfish species. However, detection of Asian carp requires specialized, targeted sampling gears deployed in different manners at intense levels in all habitat types. Reports will be prepared summarizing sampling sites, effort expended with various gears, relative catch and effort in various habitats, and native fish presence in gears and habitats relative to the presence or absence of Asian carp.

Summary Budget Information for Activity 3:

ENRTF Budget: \$ 339,000
Amount Spent: \$ 0
Balance: \$ 339,000

Activity Completion Date:

Outcome	Completion Date	Budget
1. Deploy gears in appropriate habitats to target juvenile Asian carp for approximately 180 field days each year—note estimated amount per outcome, amounts may vary per task, but total Activity budget will stay at \$339,000.	June 30, 2015	\$ 178,000
2. Incorporate new methods and techniques as appropriate, approximately 25 field days each year	June 30, 2015	\$ 86,000
3. Collate and analyze field data to determine most productive sampling methods and determine patterns in Asian carp distribution; prepare maps and reports and disseminate data for all three rivers	June 30, 2015	\$ 75,000

Activity Status as of 12/31/2013:

Activity Status as of 6/15/2014:

Activity Status as of 12/31/2014:

Final Report Summary:

V. DISSEMINATION:

Description: Information regarding sites sampled, Asian carp caught, and native species associated with sampling sites will be compiled. This information will also be shared with other state and federal agencies including the University of Minnesota, US Fish and Wildlife Service, National Park Service, US Geological Survey, US Army Corps of Engineers, Upper Mississippi River Conservation Committee, and others. Results will be presented at appropriate conferences, and, if appropriate, compiled and written for publication in peer reviewed journals.

Activity Status as of 12/31/2013:

Activity Status as of 6/15/2014:

Activity Status as of 12/31/2014:

Final Report Summary:

VI. PROJECT BUDGET SUMMARY:

A. ENRTF Budget:

Budget Category	\$ Amount	Explanation
Personnel:	\$ 319,000	Three (3) NR Specialist-Fisheries (new, unclassified, 24 months, 77% salary 23% fringe); student interns (2-4 positions for 3 months annually, 85% salary 15% fringe) to conduct at least 200 field sampling days annually, oversee commercial fishing operations, and compile, analyze, and report findings.
Professional/Technical/Service Contracts:	\$ 105,000	One or two commercial fishing operations to utilize seines and large mesh gill nets and trammel nets to follow up on eDNA results or sample likely backwater/oxbow or other likely habitats, approximately 40 days of gill net and 10 days of seine fishing over 2 years.
Professional/Technical/Service Contracts:	\$ 44,405	Amount for direct support services, which are DNR's direct and necessary business services required to support this proposal.
Equipment/Tools/Supplies:	\$ 47,595	Specialized nets including large mesh gill nets (20@\$300 = \$6,000), hoop nets (12@\$450 = \$5,400), trammel nets (12@\$400 = \$4,800), mini-fyke nets (12@\$600 = \$7,200), and larval drift nets (2@\$950 = 1,900) necessary to capture Asian carp at various life stages and in various habitats; associated supplies to deploy nets such as rope, anchors, floats (\$2,500); non-prop motors (2@\$6,000 = \$12,000); preservative and disinfecting chemicals (\$1,000); eDNA water sample bottles (\$2,200); miscellaneous supplies such as personal protective equipment, repairs, replacements, etc. (\$4,600). Separate sets of equipment are necessary for the Minnesota River as it is not currently infested with zebra mussels.
Travel Expenses in MN:	\$ 24,000	Fleet charges for approximately 18,000 miles per year and in-state travel expenses for crew lodging and meals for distant and overnight status, approximately 25 nights per year; base of operation will be Warner Road, St. Paul, fisheries office, for the Mississippi and St. Croix Rivers and Hutchinson for the Minnesota River and southwest Minnesota.
TOTAL ENRTF BUDGET:	\$ 540,000	

Explanation of Use of Classified Staff: No classified staff paid with this appropriation

Explanation of Capital Expenditures Greater Than \$3,500: Two (2) non-prop propulsion outboard motors, approximately 25 hp, \$6,000 each for a total of \$12,000. These motors propel the boat with a jet of water rather than a propeller, allowing access to very shallow backwater habitats and preventing damage and

improving safety in areas of all rivers that have obstructions and potential low water clarity, such as the Minnesota River.

Number of Full-time Equivalent (FTE) funded with this ENRTF appropriation: 3 for 2 years, 6 FTE

Number of Full-time Equivalent (FTE) estimated to be funded through contracts with this ENRTF appropriation: Approximately 1.2

B. Other Funds:

Source of Funds	\$ Amount Proposed	\$ Amount Spent	Use of Other Funds
Non-state	NA	NA	
State	\$50,000	\$	The Aquatic Invasive Species Research Center at the University of Minnesota is providing the funding to analyze the eDNA water samples collected in this project.
	\$120,000	\$	Additional DNR staff and equipment (including boats, motors, trucks, and monitoring equipment) will be used to support and assist implementing this Asian carp monitoring program, with resources provided by the Game and Fish Fund.
TOTAL OTHER FUNDS:	\$170,000	\$	

VII. PROJECT STRATEGY:

A. Project Partners: DNR Division of Fish and Wildlife Section of Fisheries – Program administration, Fisheries technical and field support, data management, and equipment. University of Minnesota and the Invasive Species Research Center will provide the analysis of eDNA water samples collected. Several federal agencies, including the National Park Service, US Fish and Wildlife Service, US Geological Survey, US Army Corps of Engineers will provide assistance including research findings, access to sampling areas, promotion and logistical support.

B. Project Impact and Long-term Strategy:

Asian carp are a real and serious threat to Minnesota’s aquatic ecosystems. There is a huge amount of time, money, and effort going into learning more about these fish in systems like the Illinois and Missouri Rivers. This project can take this knowledge and transfer the applicable lessons to Minnesota waters, especially the Mississippi, St. Croix, and Minnesota Rivers.

The Minnesota DNR Division of Fish and Wildlife, Section of Fisheries continues to do surveys and sampling of our major rivers. However, enhancing this effort to detect Asian carp is impossible at current staffing levels. Furthermore Asian carp appear to be surprisingly hard to catch when they are at low numbers, apparently caused by better gear avoidance than many of our native fishes. This means that our traditional fisheries management and research activities on the rivers, although they are many, varied, and very effective for monitoring our native fish populations, are likely insufficient to understand what stage in the invasion we are. This project will determine the distribution and abundance of any Asian carp in Minnesota waters and use this information to inform rapid response efforts. It will also delineate the leading edge of Asian carp reproductive success. Locating the areas and habitats these fish are using, when they appear to be in very low numbers and have not yet established spawning populations, is vital to targeting removal or other control efforts.

C. Spending History: NA

VIII. ACQUISITION/RESTORATION LIST: NA

IX. MAP(S): NA

X. RESEARCH ADDENDUM: NA

XI. REPORTING REQUIREMENTS: Periodic work plan status update reports will be submitted not later than 12/31/2013, 6/15/2014, and 12/31/2014. A final report and associated products will be submitted between June 30 and August 15, 2015 as requested by the LCCMR.

Attachment A: Budget Detail for M.L. 2013 Environment and Natural Resources Trust Fund Projects

Project Title: *Detection and Monitoring of Asian Carp Populations and Movements*

Legal Citation: *M.L. 2013, Chp. xx, Sec. xx, Subd. Xx*

Project Manager: *Bradford G. Parsons*

M.L. 2013 ENRTF Appropriation: \$ 540,000

Project Length and Completion Date: *2 years; June 30, 2015*

Date of Update: *December 28, 2012*

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET	Activity 1 Budget	Amount Spent	Balance	Activity 2 Budget	Amount Spent	Balance	Activity 3 Budget	Amount Spent	Balance	TOTAL BUDGET	TOTAL BALANCE
BUDGET ITEM	<i>Enhanced eDNA sampling and verification.</i>			<i>Targeted Commercial Fishing</i>			<i>Accelerated sampling with traditional</i>				
Personnel (Wages and Benefits) NR Specialist-Fisheries (3 positions, new, unclassified, 24 months, 77% salary 23% fringe); Student interns (2-4 positions for three months annually, 85% salary 15% fringe) to conduct at least 200 field sampling days annually, oversee commercial fishing operations, and compile, analyze, and report findings	25,000	0	25,000	49,000	0	49,000	245,000	0	245,000	319,000	
Professional/Technical/Service Contracts: Direct and Necessary Services for the Appropriation	2,405	0	2,405	10,000	0	10,000	32,000	0	32,000	44,405	
Professional/Technical/Service Contracts: One or two commercial fishing operation to utilize seines and large mesh gill nets and trammel nets to follow up on eDNA results or sample likely backwater/oxbow or other likely habitats, approximately 40 days of gill net fishing and 10 days of seine fishing over the 2 years. Two operations may be necessary if commercial proves viable in the Minnesota River				105,000	0	105,000				105,000	
Equipment/Tools/Supplies Specialized nets including large mesh gill nets (20@\$300 = \$6,000), hoop nets (12@\$450 = \$5,400), trammel nets (12@\$400 = \$4,800), mini-fyke nets (12@\$600 = \$7,200), and larval drift nets (2@\$950 = 1,900) necessary to capture Asian carp at various life stages and in various habitats; associated supplies to deploy nets such as rope, anchors, floats (\$2,500); non-prop motors (2@\$6,000 = \$12,000); preservative and disinfecting chemicals (\$1,000); eDNA water sample bottles (\$2,200); miscellaneous supplies such as personal protective equipment, repairs, replacements, etc. (\$4,600). Separate sets of equipment are necessary for the Minnesota River as it is not currently infested with zebra mussels.	2,595		2,595	1,000		1,000	44,000	0	44,000	47,595	
Travel expenses in Minnesota: Fleet transportation, mileage operation rate @ \$0.41/ mile x 18,000 mi/yr = \$7,500/yr; in-state travel expenses; crew lodging and meals for distant and overnight status, up to 25 nights per year; base of operation will be the Warner Road, St. Paul Fisheries office for the Mississippi and St. Croix Rivers, and Hutchinson for the Minnesota River and southwest Minnesota.	3,000	0	3,000	3,000	0	3,000	18,000	0	18,000	24,000	
COLUMN TOTAL	\$33,000	\$0	\$33,000	\$168,000	\$0	\$168,000	\$339,000	\$0	\$339,000	\$540,000	

