

Water Recreation Economy at Risk from the Potential Spread of Asian Carp in Minnesota:

Selected water resources connected to the Mississippi River north of the Twin Cities

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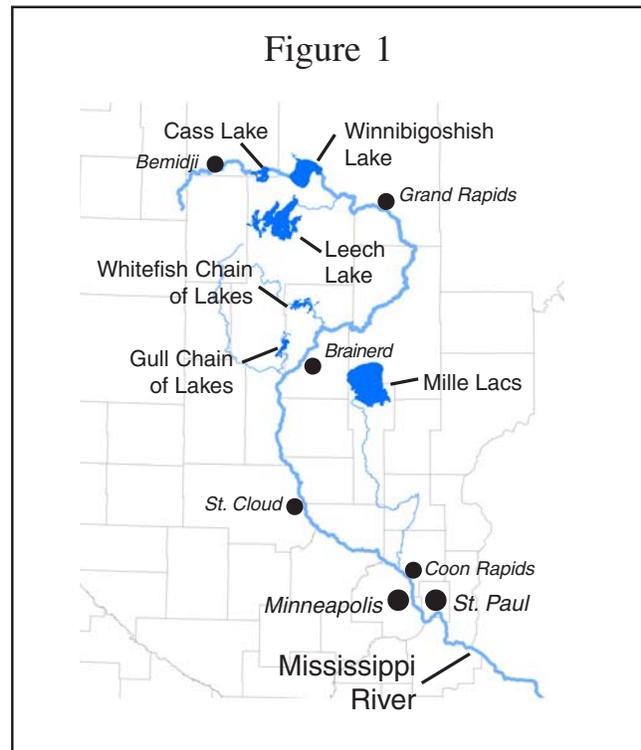
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Introduction

Invasive Asian carp (bighead and silver carp) are a threat to Minnesota's aquatic ecology and water-related outdoor recreation economy. Fishing and boating are big businesses in Minnesota, which has the highest fishing and boating participation of any state in the nation (Reference 1). Spending by anglers and boaters totals around \$4 billion each year in Minnesota (Reference 2).

Asian carp are being periodically captured in low numbers in the Mississippi River south of the Minneapolis-St. Paul metropolitan area (Figure 1). In states where they have become established, Asian carp make up as much as 90 percent of the biomass of the entire fish community. If they were to spread north of the Twin Cities, they could potentially impact some of Minnesota's premier fishing and boating resources, which are connected to the Mississippi River.



Limited estimates of economy at risk

This paper provides limited estimates — based on existing data and analyses — of the size of the fishing- and boating-related economies for selected water resources north of the Twin Cities that are connected to the Mississippi River. The estimates are for a limited group of water resources for a limited set of outdoor recreation activities. The intent is to begin to attach some dollar figures to specific economic concerns, defined here as the total size of the fishing-boating economy at risk for the selected water resources. It is uncertain how much of this at-risk economy would be impacted were Asian carp to arrive.

The estimates are done within four Mississippi River reaches, delineated by barriers (dams) to fish movement. River reaches include selected lakes connected to the River (Figure 1): Coon Rapids to St. Cloud (includes Mille Lacs), St. Cloud to Brainerd (includes the Gull Lake chain), Brainerd to Grand Rapids (includes Whitefish chain of lakes), and Grand Rapids to Bemidji (includes Leech, Cass, and Lake Winnibigoshish).

For each reach, estimates of annual fishing and boating trips (derived from Minnesota DNR creel and boating studies), are converted to annual angler and boater trip spending (e.g., on purchases of food, bait, gasoline) using typical trip spending amounts for Minnesota. Spending amounts are, in turn, converted into annual economic outcomes for Minnesotans (e.g., jobs supported, and earnings) using an economic model of the state of Minnesota. Data sources and computations are presented in Appendix A.

Overall, trip spending for the water resources in these four reaches totals \$44.3 million annually (Table 1). This spending generates \$74.6 million in business activity (output), \$21.3 million in earnings, and supports 686 jobs. The biggest reach is the most northern from Grand Rapids to Bemidji (includes Leech, Cass, and Lake Winnibigoshish), and it is followed by the reach from Coon Rapids to St. Cloud (includes Mille Lacs).

Table 1

Estimated annual trip-related spending and associated economic impacts for recreational fishing and boating

<u>Mississippi River Reach</u>	<u>Waterbodies in reach</u>	<u>Annual trip-related spending (in millions)</u>	<i>----- Economic impact of trip spending in MN -----</i>		
			<u>Business output (total multiplier or ripple effect) (in millions)</u>	<u>Earnings (salaries, wages, and business earnings) (in millions)</u>	<u>Jobs</u>
Coon Rapids to St. Cloud	Mille Lacs, and Mississippi River, Dayton to St. Cloud	\$13.5	\$22.7	\$6.5	209
St. Cloud to Brainerd	Gull Lake, and Mississippi River, Little Falls to Topeka Island (north)	\$2.6	\$4.3	\$1.2	40
Brainerd to Grand Rapids	Whitefish Chain of Lakes	\$7.1	\$12.0	\$3.4	110
Grand Rapids to Bemidji	Leech Lake, Cass Lake, and Winnibigoshish	<u>\$21.1</u>	<u>\$35.5</u>	<u>\$10.2</u>	<u>327</u>
Grand total		\$44.3	\$74.6	\$21.3	686

Looking forward

As noted above, fishing and boating are big businesses in Minnesota, totaling around \$4 billion in participant spending each year. Any threat to those businesses posed by Asian carp is a serious economic concern. This paper examined the economic concerns in a limited group of water resources for a limited set of outdoor recreation activities. The intent is to begin to attach some dollar figures to specific economic concerns, defined here as the total size of the fishing-boating economy at risk for the selected water resources.

The potential for economic harm, of course, can be seen as much greater. Many billions of dollars are tied to Minnesota water recreation, related tourism activity, and riparian properties, including home prices and property taxes. Diminishing the value of any of these can have sizable consequences. However, as the billions in at-risk dollars grows, so grows the uncertainty in realizing an actual impact.

To begin to deal with uncertainty, the Minnesota DNR is proposing a risk assessment (2012 proposal to the Legislative Citizen Commission on Minnesota Resources). A statewide risk assessment is needed to better understand potential impacts of Asian carp, to prioritize efforts to prevent or minimize their movements, and to control populations should they become established. This risk analysis would include evaluation of physical (stream length, flow, flood history, barriers), chemical (water hardness, temperature), and biological (native fish species, plankton abundance) conditions within major watersheds, rivers and lakes to determine which Minnesota areas are most at risk.

Looking forward, the ongoing assessment task is large. A good example is Minnesota's image as a destination for outdoor recreation tourists, including purchasers of vacation homes. The state's big tourist attraction is water resources in a forested setting. Underlying this attraction is the little-impacted, low-development landscape, especially the northwoods. Other states have comparable water resources (i.e., were recently glaciated), but none in the eastern two-thirds of the nation has real wilderness and large expanses of pristine-appearing forests. This is Minnesota's comparative advantage.

The question becomes then: Would the spread of Asian carp in Minnesota tarnish this image, diminish the state's comparative advantage, and lower the value of state as a tourist destination, including as a location for vacation homes? Although not an easy question to answer, this is the type of question the state must grapple with as it gauges the threat from the potential spread of Asian carp.

References and Sources

References

1. Minnesota rank among states based on:

State population participating annually in fishing. From: US Fish and Wildlife Service and Census Bureau, 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation.

State registered boats per capita. From: US Coast Guard, 2009, state boater registration data; and US Bureau of the Census for 2009 population estimates.

2. Estimate of “around \$4 billion” for recreational fishing and boating spending combined based on:

US Fish and Wildlife Service and Census Bureau 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation. Minnesota report. Recreational Marine Research Center at Michigan State University. 2008.

Economic Significance of Recreational Boating in Minnesota. Study done for National Marine Manufacturers Association.

Note: This estimate for recreational fishing and boating combined is based on a separate fishing spending estimate of \$2.7 billion and a separate boating spending estimate of \$2.1 billion. The two estimates overlap, because some boating is fishing from boat. Based on a 2004 participation survey of Minnesotans (MN DNR, 2005), 41 percent of boating is fishing from a boat. Thus, removing 41 percent of the \$2.1 billion for boating and adding the remainder to the \$2.7 billion for fishing yields \$3.9 billion for boating and fishing combined.

Sources

Minnesota Department of Natural Resources (MN DNR). Creel information on angling and boating trips. Creel data obtained in January 2012 from Keith Reeves, MN DNR, Division of Fish and Wildlife.

Minnesota Department of Natural Resources (MN DNR). 2005. 2004 Outdoor Recreation Participation Survey of Minnesotans. Minnesota Department of Natural Resources, Office of Management and Budget Services. (http://files.dnr.state.mn.us/aboutdnr/reports/orsurvey2004_report.pdf)

Minnesota Department of Natural Resources (MN DNR). 2007. Boating in Northern Minnesota: Summer 2006. Minnesota Department of Natural Resources, Office of Management and Budget Services. (http://files.dnr.state.mn.us/aboutdnr/reports/boating/boating_northern06.pdf)

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Southwick Associates. Sportfishing in America: An Economic Engine and Conservation Powerhouse. Produced for the American Sportfishing Association with funding from the Multistate Conservation Grant Program, January 2008.

US Bureau of the Census. Population estimates for states for 2009.

US Coast Guard, 2009, state boater registration data; and US Bureau of the Census.

US Fish and Wildlife Service and Census Bureau, 2006 National Survey of Fishing, Hunting and Wildlife-Associated Recreation. National and Minnesota reports.

Appendix A: Data sources and computations

Estimated annual trip-related spending and associated economic impacts for recreational fishing and boating*

Reach	Waterbodies in reach	Trips and trip spending			Economic impact of trip spending in MN		
		Annual fishing and boating trips	Trip-related spending per trip	Annual trip-related spending	Business output (total multiplier or ripple effect)	Earnings (salaries, wages, and business earnings)	Jobs
Coon Rapids to St. Cloud	Millie Lacs, and Mississippi River, Dayton to St. Cloud	383,212	\$35.26	\$13,511,222	\$22,726,831	\$6,493,803	209
St. Cloud to Brainerd	Gull Lake, and Mississippi River, Little Falls to Topeka Island (north)	73,284	\$35.26	\$2,583,847	\$4,346,213	\$1,241,856	40
Brainerd to Grand Rapids	Whitefish Chain of Lakes	201,646	\$35.26	\$7,109,597	\$11,958,845	\$3,417,035	110
Grand Rapids to Bemidji	Leech Lake, Cass Lake, and Winnibigoshish	599,043	\$35.26	\$21,120,970	\$35,526,964	\$10,151,222	327
Grand total		1,257,185		\$44,325,636	\$74,558,852	\$21,303,916	686

*Sources:

Fishing and boating trips: see next worksheet on "trip computations"

Trip-related spending per trip: U.S. Department of the Interior, Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau, 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation: Minnesota.

Economic impact of trip spending: Minnesota values of impacts per dollar of spending taken from: Southwick Associates, Sportfishing in America: An Economic Engine and Conservation Powerhouse. Produced for the American Sportfishing Association with funding from the Multistate Conservation Grant Program, January 2008.

Estimated annual recreation user trips

Reach	Waterbody	Type of recreation trip	Annual user trips	Source of trip information	
Coon Rapids to St. Cloud Mille Lacs	Open water fishing	Open water non-fishing boating	188,146	MN DNR creel 2011	
		Open water non-fishing boating	61,162	Boating to fishing ratio for Mille Lacs from 2008 MN DNR North Central Boating Study multiplied by 2011 creel fishing trips	
	Ice fishing	Total	115,700	MN DNR creel 2011	
		Total	365,008		
	Mississippi River, Dayton to St. Cloud	Open water fishing	Open water non-fishing boating	18,204	MN DNR creel 1992
			Open water non-fishing boating	---	no estimate
		Ice fishing	Total	18,204	no estimate
			Total	18,204	
	<i>Reach total</i>			383,212	
	<hr/>				
St. Cloud to Brainerd Gull Lake	Open water fishing	Open water non-fishing boating	21,539	MN DNR creel 1999	
		Open water non-fishing boating	44,919	MN DNR creel 1999 (non-fishing boater hours divided by fishing trip length)	
	Ice fishing	Total	5,573	MN DNR creel 1999	
		Total	72,031		
	Mississippi River, Little Falls to Topeka Island (north)	Open water fishing	Open water non-fishing boating	1,253	MN DNR creel 1993
			Open water non-fishing boating	---	no estimate
		Ice fishing	Total	1,253	no estimate
			Total	1,253	
	<i>Reach total</i>			73,284	

Estimated annual recreation user trips (continued)

Brainerd to Grand Rapids

Whitefish Chain of Lakes

Open water fishing	24,159	MN DNR creel 2005
Open water non-fishing boating	171,236	MN DNR creel 2005 (non-fishing boater hours divided by fishing trip length)
Ice fishing	<u>6,251</u>	MN DNR creel 2005
Total	201,646	

Reach total 201,646

Grand Rapids to Bemidji

Leech Lake

Open water fishing	169,590	MN DNR creel 2010
Open water non-fishing boating	71,305	Boating to fishing ratio for Leech, Cass and Winni combined from 2006 MN DNR Northern Boating Study multiplied by 2010 creel fishing trips
Ice fishing	<u>67,910</u>	MN DNR creel 2010
Total	308,805	

Cass Lake

Open water fishing	61,765	MN DNR creel 2008
Open water non-fishing boating	25,969	Boating to fishing ratio for Leech, Cass and Winni combined from 2006 MN DNR Northern Boating Study multiplied by 2010 creel fishing trips
Ice fishing	<u>2,264</u>	MN DNR creel 2008
Total	89,998	

Winnibigoshish

Open water fishing	113,888	MN DNR creel 2007
Open water non-fishing boating	47,885	Boating to fishing ratio for Leech, Cass and Winni combined from 2006 MN DNR Northern Boating Study multiplied by 2010 creel fishing trips
Ice fishing	<u>38,467</u>	MN DNR creel 2007
Total	200,240	

Reach total 599,043