ESTIMATED ECONOMIC IMPACT OF RECREATIONAL FISHING ON MINNESOTA WATERS OF LAKE SUPERIOR

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SUMMARY

The recreational fishing industry (including charter fishing) on the Minnesota waters of Lake Superior contributed approximately $9.74 million dollars in direct expenditures to the state in 1990. Based on the assumptions described below and using an economic multiplier range of 1.3 to 1.8, the state economic impact was estimated at $12.67 million to $17.54 million. Estimates of the state economic impact can go as high as $34.43 to $49.06 million, depending on the source of the information.

Lake Superior's charters fishing businesses contributed $6.47 million and noncharter recreational fishing contributed $3.27 million of the total $9.74 million in direct 1990 state expenditures. Using the economic multipliers listed above, charter fishing businesses generated $8.41 to $11.65 million in state economic impact while noncharter recreational fishing generated $4.25 to $5.89 million.

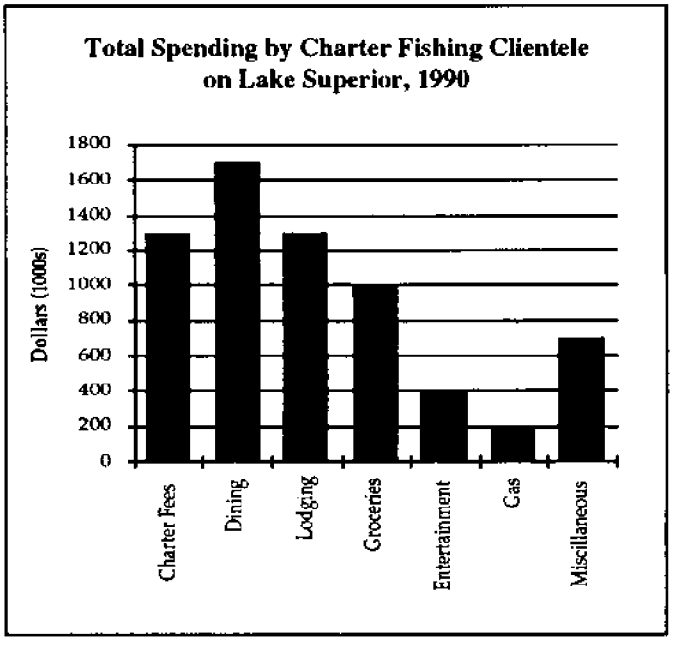
METHODS AND ASSUMPTIONS

Charter Fishing

The 1990 estimated economic impact of the charter fishing industry was based on a 1987 survey conducted by Gunderson and Mahoney (Gunderson, 1988). The economic information generated in that survey has been revised in this report to reflect the current number of charter captains and has been adjusted for inflation as reflected in the Consumer Price Index. The 1987 study found that each charter boat generated $56,350 in direct customer spending in the Duluth-Superior metropolitan area and throughout Minnesota (we did not include the spending at home and in transit for the 15 percent of the clients that came from out of state). This total includes spending for charter fees, licenses, food, lodging, travel, and entertainment.

If we adjust for inflation to estimate 1990 spending, then each charter boat generated approximately $64,730 in direct state spending. Therefore the 100 charter boats operating in 1990 generated a total of $6.47 million in direct state spending ($64,730 X 100 = $6.47 million). See Figure 1.

Figure 1



People who go charter fishing on Lake Superior also spend money on dining, lodging, and other vacation expenses. This totals $6.47 million in direct state spending and includes spending in the Duluth- Superior metropolitan area. Sixty-five percent of this money is spent within 10 miles of the charter boat.

Expenditures coming into a community from outside are subject to a multiplier effect which creates additional economic activity. For our region and this industry, it is reasonable to assume that a multiplier between 1.3 and 1.8 applies, depending on the local economy (personal communication, Dr. Wayne Jesswein, University of Minnesota-Duluth). Applying this multiplier range

results in a 1990 estimate of a state economic impact of $8.41 to $11.65 million due to the charter fishing industry. [1]

It was estimated in the 1987 study that each charter boat generated $37,000 in direct local spending. Adjusted for inflation and the increased number of charter boats, this translates to direct local expenditures of $4.25 million and a local economic impact of between $5.52 and $7.65 million. Local spending is spending that occurred within 10 miles of the charter boat. See Figure 2.

Noncharter Recreational Fishing

The estimated economic impact of the noncharter recreational fishery is based on information from the 1985 National Survey of Fishing, Hunting, and Wildlife Associated Recreation, which was conducted by the U.S. Fish and Wildlife Service (USFWS). The survey reports that on average, $34 was spent per day of Great Lakes fishing. Adjusting for inflation, the 1990 expenditures per day were estimated at $41.25. Angler days were estimated from Minnesota Department of Natural Resources (MN DNR) summer creel surveys that report the number of Lake Superior boat and shore angler trips. Minnesota DNR angler trips are essentially equivalent to the angler days of the USFWS survey. The term angler days will be used in the rest of this report.

Angler days over the last 10 years as estimated by the Minnesota Department of Natural Resources (Spurrier 1985 and Morse 1989), have ranged from a high of 130,000 days in 1983 to a low of 58,000 days in 1984. There were 88,300 noncharter angler days estimated in 1988 and 77,100 estimated in 1989 (no estimate was available for 1990). The 1988-89 average of 82,700 angler days was used since it is representative of recent levels of noncharter fishing activity.

Anglers were divided into state resident (91 percent) and nonresident (9 percent) categories (personal communication with Stephen Morse, MN DNR). Multiplying the 75,257 resident angler days times $41.25 per trip resulted in direct state expenditures of $3.10 million dollars. We estimated nonresident angler expenditures in Minnesota by interpreting USFWS survey data. We combined trip expenditures and license fees and omitted equipment expenditures to provide an estimate of nonresident expenditure within Minnesota of $22.03 per fishing day. Total nonresident expenditures were, therefore, estimated to be $3.27 million. Using the multiplier range of 1.3 to 1.8, the 1990 estimated state economic impact of the noncharter recreational fishery was $4.25 to $5.89 million.

Figure 2

LOCAL ECONOMIC IMPACT OF CHARTER FISHING ON LAKE SUPERIOR* (millions of dollars)

Direct Expenditures	Economic Impact 1.3 Multiplier	1.8 Multiplier
$4.25	$5.52	$7.65

*Includes spending in Duluth/Superior and Minnesota's North Shore.

Minnesota DNR 1990 Information (personal communication with Stephen Morse) shows that approximately 45 percent of anglers came from hometowns within 75 miles of where they fished Lake Superior, 47 percent came from 76 to 300 miles away. These data are inadequate to separate the state and local economic impacts on noncharter recreational fishing. We do, however, assume that the majority of the impact occurs locally.

[1] The Minnesota charter fishing economic impact includes some spending that occurred in Superior, Wisconsin. This is because local spending was defined in the 1987 survey as that spending which occurred within ten miles of the charter boat. We, therefore, cannot separate money spent in Duluth or Superior by Twin Ports charter clients.

Total

The combined 1990 charter and noncharter recreational fishing expenditures in Minnesota were estimated at $9.74 million, as described above. The state economic impact of those direct expenditures was then estimated at $12.67 to $17.54 million, based on the economic multiplier range of 1.3 to 1.8. See Figure 3.

Another estimate of the total economic impact of Lake Superior recreational fishing can be derived solely from the 1985 USFWS national survey. The survey reports that 610,000 resident days of fishing took place on Lake Superior and its tributaries in 1985 (Table 83 of that report). Multiplying the $41.25 expenditures per day (corrected for inflation) by 610,000 resident fishing days results in direct state expenditures of $25.16 million. Out-of-state anglers (95,000 angler days) contribute an additional $2.09 million in expenditures in Minnesota (based on $22.03 per angler day for nonresidents - our interpretation of USFWS survey data). The total 1990 state economic impact of recreational fishing on Minnesota waters of Lake Superior was then $35.43 to $49.06 million, using the multiplier range of 1.3 to 1.8. [2]

DISCUSSION

The estimated economic impact of the Minnesota Lake Superior recreational fishery was based on dated information and a number of assumptions. One assumption was that the 1987 charter fishing survey was still reflective of the industry as it has grown from 67 licenses in 1988 to over 100 licensees in 1990. The charter fishing estimates are conservative since only the 76 percent of charter clients who said they came only or primarily for charter fishing were included in the estimates. Nonresident charter client travel to the charter location was not included because we did not know there they spent their money even though a portion of it was surely spent in Minnesota.

We also assumed the Great Lakes-wide USFWS survey averaged expenditures by all types of Great Lakes anglers (perch, walleye, salmon, trout, smelt, etc.) from both boats and shore. The USFWS also included estimates for fishing in Great Lakes tributaries for smelt, steelhead, and salmon. We did not incorporate Lake Superior tributary fishing in our estimates of economic impact. Therefore, our estimates not only exclude some Lake Superior fishing expenditures, but underestimate the impact of boat anglers which, on average, spend more than stream anglers. As a result, our economic impacts estimates for noncharter recreational anglers are conservative.

In 1985, the MN DNR estimated 49,477 angler days on Minnesota waters of Lake Superior while the USFWS national survey estimated 705,000 angler days (610,000 resident days and 95,000 nonresident days) of fishing on those waters. A large discrepancy exists between MN DNR estimates of angler days on Lake Superior and those of the USFWS survey. One factor that lowers the MN DNR estimates is that winter and tributary fishing are not included in the summer creel survey that we used. This still does not explain the discrepancy. We do not support or defend either estimates.

Figure 3

STATEWIDE ECONOMIC IMPACT OF FISHING ON MINNESOTA WATERS OF LAKE SUPERIOR (in millions of dollars)

Type of Fishing	Direct Expenditures	Economic Impacts 1.3 Multiplier	1.8 Multiplier
Charter *	$6.47	$8.41	$11.65
Noncharter	$3.27	$4.25	$5.89
Total	$9.74	$12.67	$17.54

* Includes spending in Duluth-Superior metropolitan area.

[2]Multiplier Effect. Sport anglers spend money on fishing equipment, travel, lodging, and related supplies. These expenditures, in turn, can be viewed as sales, jobs, wages, and taxes generated. Regional economic impact analysis is an attempt to measure more than just the initial direct expenditures. Secondary impacts are also considered. The degree to which total economic impact exceeds direct expenditures is a measure called the regional economic impact multiplier.

The size of the multiplier depends on the size of the region under study. Since economic development is regionally oriented, impacts outside the region are not counted, and are referred to as leakages. If all the money spent in the region leaked out of the region, the multiplier would equal one (no change). If half the money spent within the region leaked out and half stayed, there would be an initial economic multiplier effect of wages, and taxes. If half of this second cycle leaked out and half remained, an additional .25 in economic impact factor would be added to the multiplier making the total economic impact 1.5 + .25 = 1.75. There would be another .25 of money to enter a third cycle of sales, jobs, wages, and taxes. If all of this leaked out of the region, there would be no additional impact and the total economic impact multiplier would be 1.75.

Economic impacts vary considerable depending on which estimate of angler effort is used. While the estimates presented here may not be as consistent or as precise as we'd like, they do provide a range of estimates based on the best information available. The direct expenditures of all recreational fishing on Lake Superior is likely larger than our estimate of $9.74 million derived from Gunderson's 1987 Charter Fishing Survey and MN DNR creel survey information, but smaller than the $27.25 million estimated solely from the 1985 USFWS National Survey.

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