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**OHIO'S LAKE ERIE PRIVATE BOAT SPORT
ANGLERS - A 1987 Resurvey**

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**OHIO'S LAKE ERIE PRIVATE BOAT SPORT ANGLERS
A 1987 Resurvey¹
by Leroy J. Hushak and Huei-Yann Jeng**

In fisheries management, it has become clear that the management of people is at least as important as the management of the fish community and all that is related to it. Who fishes our waters? How often do they come? For how long do they stay? From how far do they come? Why do they come? How do they view the resource they use? This paper presents characteristics and views of sport anglers who use Ohio's Lake Erie fishery, and compares anglers from 1987 and 1981/82 surveys.

Objectives

1. To present characteristics of Ohio's Lake Erie private-boat sport anglers from a 1987 survey and to compare these characteristics with 1981 and 1982 surveys.
2. To present estimates of the economic value of Ohio's Lake Erie fishery to private-boat sport anglers.

Sample Base

During the 1987 sport fishing season, a sample of 1,481 private-boat sport anglers were contacted at launch ramps and marinas along Ohio's North Coast. During February 1988, these anglers were mailed the questionnaire developed for the study. Each contacted angler received a second questionnaire about three weeks later. A total of 838 usable responses were received, for a response rate of 57 percent.

During May 1 to August 15 1981, called the walleye season, 648 private-boat sport anglers were contacted at launch ramps and marinas in Ottawa and Lucas Counties (the Western Basin area of Ohio's Lake Erie). These anglers were mailed questionnaires during September and October 1981 asking them to provide information about Lake Erie fishing activities during this period. A total of 350 usable responses were received, for a response rate of 54 percent. Similar procedures were repeated for the August 15 to November 30 period, called the yellow perch season, during which 550 private-boat anglers were contacted and

¹ The 1987 results are calculated from Tables 1 and 25 of Jeng, Huei-Yann, 1990, Endogenization of trip duration costs in recreation demand models, Ph.D. dissertation published by Ohio Sea Grant as OHSU-TD-026. The 1981 and 1982 results are from Table 4, Hushak, Leroy J., Jane M. Winslow, and Nilima Dutta, 1988, Economic value of Great Lakes sportfishing: The case of private-boat fishing in Ohio's Lake Erie, Transactions of the American Fisheries Society, made available by Ohio Sea Grant as OHSU-RS-104.

307 usable responses were received, for a response rate of 56 percent.

During 1982, 730 private-boat sport anglers were contacted at nine sites in Lorain, Cuyahoga, Lake and Ashtabula counties (the Central Basin). A questionnaire was mailed during December 1982 with a follow-up mailing during January 1983. A total of 443 usable responses were received, for a response rate of 61 percent.

In the 1987 survey, Ohio's North Coast was divided into six zones (Chart 1), each zone corresponding approximately to one of the six Ohio counties which border Lake Erie. For the 1981 and 1982 surveys, the Western Basin corresponds to zones 1 and 2, while the Central Basin corresponds to zones 3 to 6.

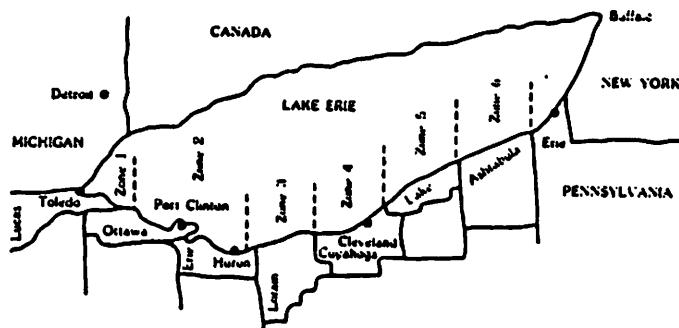


Chart 1. Map of Ohio's North Coast showing the six zones for reporting angling trips.

During 1987, private-boat anglers made an average of 20.7 trips to Ohio's Lake Erie for angling (Table 1). The numbers for each zone in 1987 are the mean numbers of total trips and of trips to each zone made by anglers who made at least one trip to the zone. The N is the number of respondents who made at least one trip to each zone. More trips are made to Central Basin sites (3-6) than to Western Basin sites (1-2).

Table 1. Mean trips by respondents, by zone in 1987 and for each sample for 1981 and 1982.

Zone	N	1987 Trips		1981/82	
		Zone	Total		
All Zones	838		20.7		
1	145	11.4	23.8	<u>walleye</u>	<u>perch</u>
2	578	10.7	18.1	7.9	6.1
3	127	7.8	25.0		
4	197	17.6	29.9		29.6
5	144	18.2	30.5		
6	141	17.2	26.3		

Respondents were asked to report detailed information about a maximum of three trips--their first, middle and last trips. Mean trip data for the three reported trips (or fewer if only one or two trips were made) was calculated for each respondent. In the results presented here, the means by zone are the means of the respondent means for respondents who reported one or more trips to a particular zone. However, it is not necessary that any of the trips on which the respondent reported was to the designated zone. Therefore, the reported numbers are valid only in relative terms, and cannot be interpreted as the means only for trips to a particular zone. The results presented in the tables which follow were also calculated for respondents who went only to a given zone and no other zones. While this tabulation excludes most of the respondents, i.e., most take trips to two or more zones, the results are not highly different from the results presented.

Fifty-nine percent of all 1987 respondents reported mean trip duration of 1.5 or fewer days, 23 percent of 1.6 to 2.5 days, 8 percent of 2.6 to 3.5 days, and 10 percent of 3.6 days or more. The percent of respondents taking longer trips is higher in the Western Basin (zones 1 and 2), and lower in the Central Basin (zones 3-6). While Central Basin anglers take more angling trips to Lake Erie, they take shorter trips (Table 2). The mean trip duration of 1.6 days for zone 3 is the mean of the respondent mean durations for the three reported trips of all respondents who reported one or more trips to zone 3. The time spent angling each day was similar in all zones during 1987, while it was shorter in the Central Basin in 1981/82.

Table 2. Mean trip duration and hours fishing per day for all respondents and by zone.

Zone	Trip Duration (Days)			Hours Fishing/Day		
	1987	1981/82		1987	1981/82	
All Zones	1.9			7.0		
1	1.9	<u>walleye</u>	<u>perch</u>	7.0	<u>walleye</u>	<u>perch</u>
2	2.1	1.8	1.7	7.0	7.4	6.6
3	1.6			7.4		
4	1.5	1.1		7.2	5.3	
5	1.4			7.4		
6	1.6			7.5		

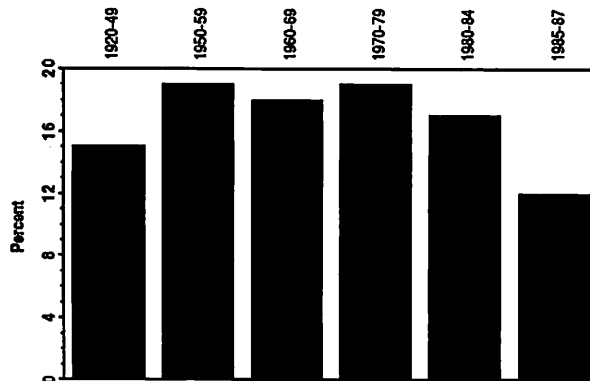
Anglers on average travel further to angle in the Western Basin (zones 1 and 2) than to the Central Basin (zones 3-6). However, between 1982 and 1987, the mean distance traveled to angle in the Central Basin increased. The quality of angling in the Central Basin improved significantly after 1984 when walleye populations in the Central Basin increased substantially.

Table 3. Mean distance traveled in kilometers, by zone in 1987 and for each sample for 1981 and 1982.

Zone	1987	1981/87	
All Zones	117		
1	140	<u>walleye</u>	<u>perch</u>
2	152	139	119
3	92		
4	33	27	
5	67		
6	69		

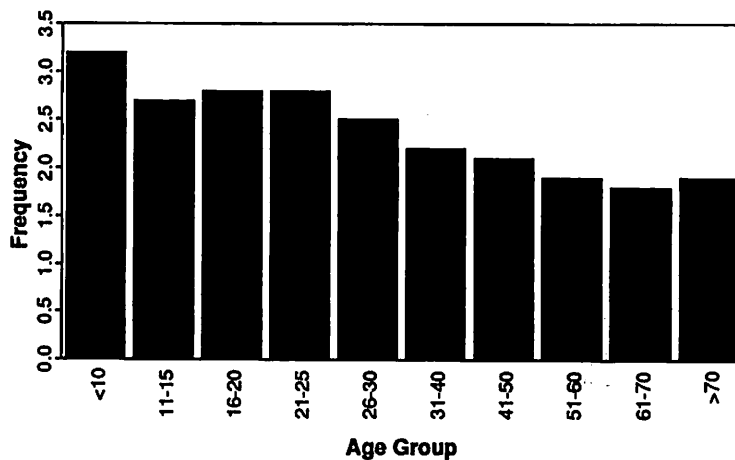
Year in which 1987 respondents first angled at Lake Erie is spread evenly over the past four decades, with one respondent beginning in 1920 (Chart 2). Once they began angling at Lake Erie, 62 percent of the respondents returned to angle in every year and another 22 percent came in most years since they first began angling at Lake Erie.

Chart 2. Year of first fishing trip to Lake Erie, 1987 respondents.



Respondents were asked to indicate how frequently they angled over their lifetimes. Frequency of angling increased from a mean response of several times per year at ages less than 25 to at least once per month for those over 30 years of age (Chart 3).

Chart 3. Frequency with which respondents angled, by age bracket, 1987 respondents.



Alternative responses were 1 = at least once per week, 2 = at least once per month, 3 = several times per year, 4 = once per year, 5 = did not fish.

Mean age of private-boat sport anglers is about one year higher in the 1987 sample at 46 years than it was in the 1981/82 data. Mean income at \$37,000 in 1987 is nearly 50 percent higher than the \$25,000 mean income in 1981/82. Inflation adjusted income is 20 percent higher in 1987 than in 1981/82. The size of the angling groups is about three in all samples, ranging from 2.7 to 3.2 in various samples and zones.

Nearly 74 percent of 1987 respondents owned the boat from which they fished as compared to 80 percent of the Western Basin 1981 sample and 93 percent of the 1982 sample. Nearly 80 percent of boat owners in 1987, compared to 53 percent in 1981, used their boat 50 percent or more for fishing at Lake Erie. The average boat was a 1976 model year purchased in 1983 for \$8,250.

Good angling quality and enjoying time with family and friends are the most important things which attract people to Lake Erie (Chart 4). More and/or better launch facilities, artificial reefs and better facilities such as toilets and drinking water were the most cited improvements needed for improved boating and angling quality (Chart 5).

Chart 4. Things which attract people to angle at Lake Erie (three most important), 1987 respondents.

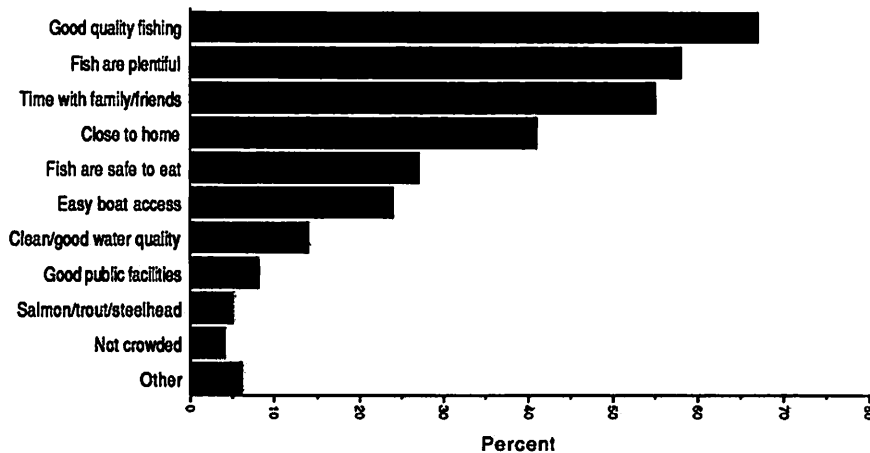
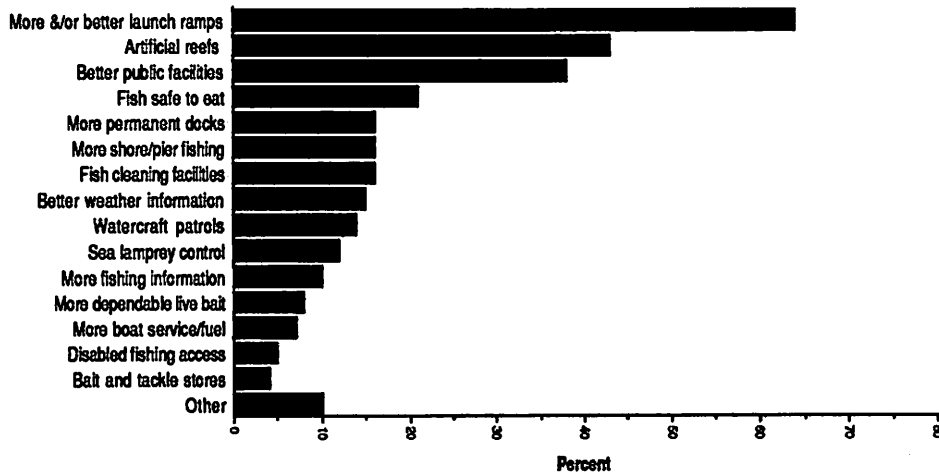


Chart 5. Most important needs for improved boating/fishing recreation at Lake Erie (three most important), 1987 respondents.



The mean expenditure per person per angling day was \$25.69 in 1987. The largest components of angling expenses were travel cost, food and beverages, and gas and oil for boat (Table 4). While total expenditures per group per trip are highest in zone 2, when these expenditures are converted to per person per angling day, zone 2 had the lowest rate because of longer trips and larger groups over which to spread the costs (Table 5). Central Basin trips were much more like Western Basin trips in 1987 as compared to 1981/82.

Table 4. Mean expenditures per person per day, all respondents, 1987.

<u>Item</u>	<u>Amount (\$)</u>
Travel cost to and from site	5.57
Fishing equipment	2.56
Bait	1.41
Gas and oil for boat	3.31
Boating supplies	1.31
Launching fees/docking supplies	1.22
Repairs of boat	2.37
Boat charters	.70
Food and beverages	4.39
Overnight lodging	2.25
Other	<u>.60</u>
Total	25.69

Table 5. Mean expenditures per person per day, by zone, 1987.

<u>Zone</u>	<u>Amount (\$)</u>
1987	
1	26.77
2	25.22
3	28.49
4	26.81
5	27.14
6	27.91
All Zones	25.69
1981 (walleye)	23.91
1981 (yellow perch)	20.78
1982	14.62

Mean harvest rates for walleye were similar in all zones during 1987. This is in marked contrast to 1981/82 when harvest rates in the Central Basin were much lower (Table 6). Western Basin harvest rates were higher in 1987 than 1981. Yellow perch harvest rates in the Western Basin apparently declined between 1987 and 1981. However, the data are not fully comparable. Yellow perch harvest rates in the Central Basin show substantial improvement in 1987 as compared to 1982.

Table 6. Mean harvest person per day, walleye and yellow perch, 1987, by zone.

<u>Zone</u>	<u>walleye</u>	<u>yellow perch</u>
1987		
All zones	3.5	5.9
1	3.3	5.1
2	3.6	4.5
3	3.8	8.9
4	3.3	11.3
5	3.5	9.3
6	3.2	8.1
1981 (walleye)	2.3	5.3
1981 (yellow perch)	0.9	21.1
1982	0.3	4.2

Willingness-to-pay is the total dollars sport anglers would spend in order to angle rather than go without. Travel costs, on-site costs and human time costs are the actual expenditures or outlays of sport anglers for angling. Consumer surplus is the dollars sport anglers would spend over and above actual outlays rather than forgo fishing in total.

Willingness-to-pay (WTP) was about \$75 per person per day for Lake Erie fishing during 1987 (Table 7). Mean travel and on-site costs in Table 7 are higher than those in Table 5 because they were calculated from mean expenditures per angler per trip, while those in Table 5 were calculated from mean expenditures per group per trip. Group size is not distributed randomly with respect to number of trips. Human time costs are slightly lower for 1987 because a different model was used to estimate the travel cost demand model; the mean estimated value of human time for 1987 (10 percent of the wage rate) was less than that imputed for 1981/82 (25 percent of the wage rate). Mean consumer surplus per person per day is higher for 1987 than for the 1981/82 samples.

Table 7. Mean willingness to pay per person per day, all respondents, 1987 and 1981/82.

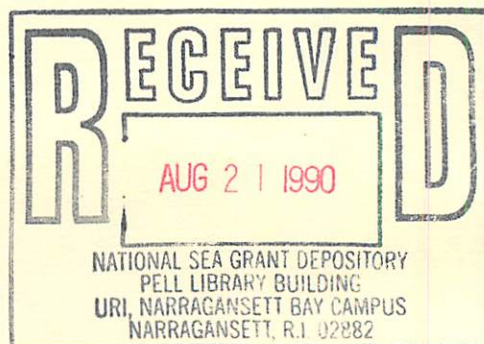
Measure	1987	1981 walleye	1981 perch	1982
Travel costs (\$)	10.40	8.22	9.24	3.01
On-site costs (\$)	31.50	37.46	32.64	13.33
Human time costs (\$)	26.60	29.04	28.69	27.18
Consumer surplus (\$)	7.20	3.70	3.04	0.40
Willingness-to-pay	75.70	78.42	73.61	43.92

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