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Attitudes and Attributes of Anglers Who Fish for Trout in Michigan

Janice Lee Fenske

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by

Janice Lee Fenske

A thesis submitted in partial fulfillment
of the requirements for the degree of
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TABLE OF CONTENTS

LIST OF TABLES iii

ACKNOWLEDGEMENTS vi

ABSTRACT vii

INTRODUCTION 1

METHODS 2

RESULTS 4

 Statistical Description of Sample 4

 Comparison of Fishing Types 10

 Specific Analysis of Stream Anglers 21

 Comparison of Regions 30

 Salmon Snagging 37

CONCLUSION 39

LITERATURE CITED 44

APPENDIX 46

LIST OF TABLES

Table	Page
1. Response by numbers of questionnaires returned and percent of total returned to each of the four mailings	5
2. Percentage of respondents who fished for trout in Michigan in the 1981 season by license type and total	6
3. Stratification of trout anglers into the three types of trout fishing and all combinations of the three by number and percent of the total respondents	8
4. Percentage of trout anglers who fished a specific area by type of license purchased .	9
5. Percentage of trout anglers who fished for other fish species by type of license purchased and total.	11
6. Percentage of trout anglers by their main motivation for fishing and by the type of trout fishing in which they participated . .	13
7. Percentage of trout anglers by their ranking of fishing quality and by the type of trout fishing in which they participated	14
8. Average number of days trout anglers spent fishing during the 1981 season, the average dollars spent per day, and the average miles traveled per trip stratified by the type of trout fishing in which they participated . .	16
9. Percentage of trout anglers in each age bracket by the type of trout fishing in which they participated, compared to the general population in Michigan	18
10. Percentage of trout anglers in each occupation by type of trout fishing in which they participated compared to the general United States population	19

11.	Percentage of trout anglers in each income bracket in 1981 by the type of trout fishing in which they participated, compared to the general United States population	20
12.	Percentage of trout anglers residing in each region by the type of trout fishing in which they participated	22
13.	Percentage of stream anglers who considered either size or number of trout caught most important. Size was defined in terms of length and weight separately	23
14.	Ranking by stream anglers of factors important to a fishing trip in order from most important to least important	25
15.	Percentage of stream anglers desiring the quantity of stream for each of three special regulations (artificial lures only, flies only, and slotted size limit) to be increased, decreased, stay the same, or having no opinion	26
16.	Percentage of stream anglers who have fished each of the three special regulations (artificial lures only, flies only, and slotted size limit) and the percentage of anglers who have not fished these sections but plan to do so in the future	28
17.	Percentage of stream anglers indicating often, sometimes, seldom, or never as the frequency in which they would participate in two proposed special regulations (catch-and-release and inverted size limit)	29
18.	Percentage of stream anglers in each occupation by region of residence	31
19.	Percentage of stream anglers in each income bracket by region of residence	32
20.	Percentage of stream anglers stratified by their main motivation for fishing and by region of residence	33
21.	Percentage of stream anglers indicating their favorite species of trout to catch by region of residence	35

22.	Percentage of stream anglers choosing a stream in a given region as their favorite stream to fish by region of residence	36
23.	Response of trout anglers (percent) to a question concerning their opinion on the amount of area where salmon snagging should be legal. Results are given by type of license purchased and for the entire sample .	38
24.	Stratification of trout anglers (percent) to a question concerning their opinion on the amount of area where salmon snagging should be legal by type of trout fishing in which they participated	40

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ABSTRACT

A questionnaire was used to determine the attitudes and attributes of anglers who fished for trout in Michigan. Information was collected for the 1981 fishing season on many aspects of trout fishing, with the main emphasis on anglers' opinions of various special trout stream regulations.

Of the three types of trout fishing -- Great Lakes, inland lakes, and streams -- available in Michigan, fishing for Great Lakes trout and salmon had the highest participation rate. These anglers were also the most satisfied, spent the most money, and traveled the farthest. Trout fishing in inland lakes had the lowest participation rate and the least satisfied anglers. Trout stream anglers fished an average of four different streams, and found numbers of trout caught and size of trout caught to be of equal importance. When ranking the variables important to fishing in order of decreasing importance, trout stream anglers placed numbers and size of fish caught fifth and sixth, respectively. At the top of the list were nearness to public facilities and ease of access to the stream.

The special trout stream regulations receiving the most support were artificial lures only and flies only. These also had the highest participation rate. The slotted size limit regulation, which was only in effect on a section of one stream, received less interest and participation. Of the two regulations which were not in effect at the time of the survey, only moderate support was shown for the catch-and-release fishery and even less for the inverted size limit regulation.

There was a wide distribution in response to a question concerning the amount of area which should be open to salmon snagging, ranging from no legal areas to legal everywhere. In general, the data indicated that the majority of salmonid anglers support having at least some areas open to snagging in Michigan.

INTRODUCTION

Fishery management practices have historically focused on increasing yield (Hampton and Lackey 1975, Ditton et al. 1978). However, as more information is gathered concerning the desires of sport anglers, it has become evident that many other factors are also important to angler satisfaction (Duttweiler 1976, Driver and Knopf 1976, Smith 1980). In many cases, managers of fishery resources have failed to recognize these other factors. In a nationwide survey designed to define both angler desires and managers' objectives, Hampton and Lackey (1975) found a definite difference between the two. In their study, 77% of the responding fisheries managers indicated increasing yield was their primary goal. Anglers on the other hand ranked factors other than yield as relatively more important to their satisfaction with a fishing experience.

It can be difficult to discover the recreational goals of the average sport angler, since often the only vocalized desires are those of organized, narrow-interest groups. Surveys are a useful tool in obtaining unbiased estimates of public opinion (McFadden et al. 1964, Duttweiler 1976, Carl 1982). The information learned can then be used by managers to incorporate angler desires into management practices.

Michigan has three types of trout fishing: (1) fishing for trout and salmon in the Great Lakes, including fishing rivers for anadromous species; (2) fishing for trout in inland lakes; and (3) fishing for trout in streams. The main objective of this study was to describe the attitudes and attributes of anglers who fish for trout in Michigan. The state of Michigan has a very popular sport trout fishery. The responsibility for managing this resource lies with the Fisheries Division of the Michigan Department of Natural Resources. Information concerning the population of trout anglers is needed in order to assist the Fisheries

Division in making management decisions that reflect the desires of trout anglers.

In particular, three specific areas were explored. The first was the opinions and attributes of anglers who participated in the three types of trout fishing. Angler motivation, satisfaction, participation, and experience were identified along with demographic data such as age, occupation, and income. Secondly, trout stream anglers were compared for differences in relation to their region of residence. And finally, trout anglers' opinions on the issue of salmon snagging in Michigan streams were determined.

METHODS

The target population for the survey was all anglers who had fished for trout in Michigan during the 1981 fishing season. In order to include a majority of trout anglers in the survey, three distinct license groups were sampled. These were as follows: (1) anglers who purchased a trout stamp; (2) anglers who purchased daily fishing permits; and (3) anglers 65 years and older who purchased senior resident annual fishing licenses. Three groups not required to have a license were missed. These were: (1) spouses of anglers with senior licenses; (2) anglers who fished for trout exclusively on private lakes; and (3) anglers 16 years of age and younger.

In order to increase precision (Shaeffer et al. 1979), the sample drawn was proportionally stratified according to the three license types. Sample size was determined by return rates of the Michigan Fisheries Division Annual Sport Fishing Survey (Jamsen 1971) and consideration of the cost of materials, postage, and personnel for processing data. A total sample size of 2,800 license holders was used, comprised of 2,000 anglers who purchased trout stamps, and

400 each of daily fishing permit and senior resident fishing license holders.

There are two types of survey questions, closed-ended questions where the answer choices are provided and open-ended questions where choices are not provided. The questionnaire used consisted mostly of close-ended questions since these are preferable when data are wanted on participation rates and intensity of feelings (Dillman 1978). A few open-ended questions were used when the specific information wanted was too long to list, for example the number of years fished. The questionnaire also ended with an open-ended question. This was to increase response rate by allowing anglers to express their specific concerns.

The survey was made with a mailed questionnaire. (See Appendix for a copy of the questionnaire used.) After development, the questionnaire was pretested on two groups. First, colleagues were asked to review the questions for clarity and accuracy. Then face-to-face interviews were conducted on a sample of anglers in order to identify possible areas of misunderstanding which might not be recognized in a mailed survey.

In Michigan, all three groups of license holders are listed in a computer file after purchase of their license. A stratified random sample of 2,800 names and addresses was taken from the file. Questions included in the survey pertained to the 1981 fishing season (1 April 1981 to 31 March 1982), and mailings took place in May through July 1982. To increase response rate (Dillman 1978), four repeat mailings were conducted: (1) the initial questionnaire; (2) a reminder post card; (3) another questionnaire; and (4) a final reminder post card. Each mailing, after the initial one, was sent only to non-respondents. Two other methods suggested by Dillman (1978) were also used to increase response rate. An introductory note was included on the questionnaire which identified the group conducting the

survey, stated the purpose of the survey, stressed the importance of returning an answered questionnaire, and thanked the respondents for their help. Also, a return envelope with postage guaranteed was included.

Except where specified in the discussion, statistical tests were only used to analyze the data in the comparison between regions of residence of trout stream anglers, since this is the only section where the factors were independent. The chi-square test for statistical independence (Everitt 1977) was used on all qualitative variables, and the one-way analysis of variance on all quantitative variables (Neter and Wasserman 1974). All multiple comparisons were made using the Scheffè method and the level of significance was set at 0.05.

RESULTS

Statistical Description of Sample

The rate of response to the survey was not uniform between each of the four mailings (Table 1); after the first reminder post card, response declined significantly. However, the last mailing still generated 10.5% of the total response, which indicated a fifth mailing might have been worthwhile. Of the 2,800 questionnaires mailed, only 119 (4%) were undeliverable. Overall, 1,687 anglers responded, accounting for 63% of the delivered questionnaires. The response rate varied according to the type of license. Sixty-seven percent of the trout stamp holders returned the survey, 64% of the seniors, but only 43% of the purchasers of daily fishing permits.

Not all the anglers sampled fished for trout or salmon in the 1981 fishing season. The percent who did participate in this sport differed for each of the three license types (Table 2). The majority of daily permit holders (71.2%) did fish for trout. However, 11% of those who purchased trout

Table 1. Response by numbers of questionnaires returned and percent of total returned to each of the four mailings.

	Date	Number	Percent
Initial mailing ^a	5-19-81	552	32.7
1st follow-up ^b	6- 7-81	583	34.6
2nd follow-up ^a	6-30-81	375	22.2
3rd follow-up ^b	7-30-81	177	10.5

^a Questionnaire.

^b Postcard.

Table 2. Percentage of respondents who fished for trout in Michigan in the 1981 fishing season by license type and total.

	License type			Total (n=1657)
	Trout stamps (n=1262)	Seniors (n=242)	Daily permits (n=153)	
Yes	89.3	37.2	71.2	80.0
No	10.7	62.8	28.8	20.0

stamps never made use of their license. In addition, a majority (63%) of the seniors were not trout anglers.

All further analysis and discussion refers only to the target population, that is, the responding anglers who fished for salmonids in Michigan in the 1981 fishing season (henceforth called trout anglers). The 1981 fishing season was 1 April 1981 to 31 March 1982 for Great Lakes trout and salmon fishing, and 25 April 1981 to 30 September 1981 for trout inland lakes and trout streams.

As mentioned earlier, there are three types of trout angling in Michigan, and an angler could have fished in any combination of the three during the fishing season. All possible combinations and the percentages of anglers that fished each combination (Table 3) show that Great Lakes fishing for trout and salmon was the most popular type, with a participation rate of 84.0% of all trout anglers. This was followed by trout stream fishing (52.6%) and finally fishing for trout in inland lakes (33.6%). The data also indicate that few anglers fish one type exclusively, especially inland lakes and streams. Only 3.7% and 8.5% of the trout anglers surveyed exclusively fished inland lakes or streams, respectively.

The percentage of anglers who fished each of the three types was different for the three kinds of licenses (Table 4). Since these anglers did not necessarily fish a given type exclusively, the percentages do not total 100. These data indicate that daily fishing permits were most often purchased for Great Lakes fishing, since only 12.8% and 22.0% of such license holders fished inland lakes and streams, respectively.

Information was also collected concerning anglers' participation in trout fishing outside of Michigan. Overall, 15.5% of the trout anglers also fished for trout in other states or provinces in the 1981 fishing season. If daily permit holders, who were most often from out of state, were excluded, this reduced to 13.1%. However, over half of

Table 3. Stratification of trout anglers into the three types of trout fishing and all combinations of the three by number and percent of the total respondents.

Area fished	Number	Percent
Great lakes	1114	84.0
Inland lakes	446	33.6
Trout streams	698	52.6
Great lakes and inland lakes	83	6.3
Great lakes and trout streams	261	19.7
Inland lakes and trout streams	52	3.9
All three	265	20.0
Great lakes only	490	37.0
Inland lakes only	42	3.7
Trout streams only	113	8.5

Table 4. Percentage of trout anglers who fished a specific area by type of license purchased.

Area fished	License type		
	Trout stamps (n=1127)	Seniors (n=90)	Daily permits (n=109)
Great lakes	84.6	74.4	85.3
Inland lakes	35.8	31.1	12.8
Trout streams	56.1	46.7	22.0

the daily permit holders (57.6%) fished for trout or salmon only in Michigan. For Michigan resident trout anglers, the five most common other states or provinces fished were Ontario (15.9%), Wisconsin (11.4%), Indiana (10.8%), Pennsylvania (9.1%), and Wyoming (6.8%). Many of these states or provinces border on Michigan.

Most of the trout anglers also fished for species other than salmonids. Only 14.3%, of the trout anglers sampled, fished for trout exclusively (Table 5). This figure varied by the license type purchased. The difference was greatest for daily permit holders, 57.0% of whom fish only for trout. Apparently, Michigan's salmonid program attracts large numbers of visiting anglers.

Comparison of Fishing Types

As previously mentioned, there are three types of trout angling available in Michigan. They differ in the physical characteristics of the environment as well as the type of equipment necessary to participate in each. They also differ to some extent in the salmonid species available. The first type is Great Lakes trout and salmon fishing (henceforth called Great Lakes anglers). This was defined to the respondent to include both open-water fishing in the Great Lakes and fishing in streams and river mouths for anadromous species during spawning runs. A second type is fishing for trout in inland lakes (henceforth called inland lake anglers). Finally, the third type is fishing for trout in trout streams (henceforth called stream anglers). In this section the results from anglers who participated in these three types of trout fishing are compared and contrasted. Again, it must be remembered that these three groups are not independent and therefore were not tested statistically.

Anglers were asked if their main reason for fishing was: (1) to catch fish to eat; (2) for relaxation; (3) for

Table 5. Percentage of trout anglers who fished for other fish species by type of license purchased and total.

Species	License type			Total
	Trout stamps	Seniors	Daily permits	
Perch	70.8	68.2	31.0	67.6
Bass	65.3	56.8	27.0	61.8
Bluegill, sunfish, rock bass, or crappie	65.3	54.5	29.0	61.8
Walleye	52.0	42.0	18.0	48.7
Pike or muskie	52.6	30.7	18.0	48.5
Smelt	27.3	19.3	5.0	25.0
Catfish or bullhead	16.9	11.4	9.0	15.9
Suckers	16.3	12.5	0.0	14.8
Carp	5.2	3.4	1.0	4.7
None	10.6	11.4	57.0	14.3

excitement and challenge; and (4) other. The number of anglers who choose "other" was so few that this was omitted as a response category (Table 6). More inland lake anglers caught fish to eat (39.8%) than the other two types. Great Lakes anglers were least likely to fish for relaxation (20.3%). Also, the largest percentage of those fishing for excitement and challenge (48.6%) were Great Lakes anglers, compared to 34.1% for inland lake anglers, and 37.0% for stream anglers.

In an attempt to measure angler satisfaction with the quality of fishing, respondents were asked to rate fishing as excellent, good, average, or very poor. Great Lakes anglers were the most satisfied with their sport with 58.9% indicating fishing was better than average (Table 7). Inland lake anglers were the least satisfied; 38.8% found fishing to be poor to very poor.

When comparing the favorite species of salmonid to catch, anglers had different choices depending on the type of trout fishing in which they participated. The two most favored species of Great Lakes salmonid were steelhead trout (Salmo gairdneri) (25.7%) and chinook salmon (Oncorhynchus tshawytscha) (25.0%), followed by brown trout (Salmo trutta), lake trout (Salvelinus namaycush), and coho salmon (Oncorhynchus kisutch) (12.4%, 11.4%, and 10.7%, respectively). Inland lake trout anglers preferred rainbow trout (39.7%) over brook trout (Salvelinus fontinalis) (16.7%), brown trout (15.1%), and lake trout (8.7%). Anglers who fished streams chose brown trout most often (40.4%), with similar numbers preferring rainbow trout (19.0%) and brook trout (17.1%). Many anglers had no species preference: 14.8% of the Great Lakes anglers, 19.8% of inland lake anglers, and 23.5% of stream anglers.

There was not a large difference in average number of years of experience in Michigan for anglers from each fishing type. Great Lakes anglers had fished an average of 12.6 years, while inland lake anglers had fished 16.7 years,

Table 6. Percentage of trout anglers by their main motivation for fishing and by the type of trout fishing in which they participated.

	Type of fishing		
	Great lakes (n=1010)	Inland lakes (n=399)	Trout streams (n=643)
To catch fish to eat	31.1	39.8	34.2
For relaxation	20.3	26.1	28.8
For excitement and challenge	48.6	34.1	37.0

Table 7. Percentage of trout anglers by their ranking of fishing quality and by the type of trout fishing in which they participated.

	Type of fishing		
	Great lakes (n=1074)	Inland lakes (n=434)	Trout streams (n=673)
Excellent	14.7	1.6	4.5
Good	44.2	18.4	29.0
Average	29.6	41.2	44.6
Poor	9.0	34.1	19.5
Very poor	2.5	4.7	2.4

and stream anglers 17.8 years. The somewhat lower figure for Great Lakes anglers most likely resulted from the limited opportunity to fish for salmon in Michigan prior to 1970 (Rybicki 1973). The percentage of anglers who fished for trout outside of Michigan during the 1981 fishing season also did not vary much between the three types of trout anglers (16.1%, 16.7%, and 15.0% for Great Lakes, inland lakes, and stream anglers, respectively).

Anglers were asked if they were currently a member of any organized fishing or sportsmen group. Again, there was little difference between the three fishing types in the percentage of anglers who belong to such groups. Membership was 21.7% for Great Lakes anglers, 21.2% for inland lakes anglers, and 22.7% for stream anglers.

Information was obtained concerning the activities and expenditures of the trout anglers. The average number of days the trout anglers spent fishing during the 1981 fishing season was calculated from these data. Also determined was the average number of dollars spent per day for food, lodging, bait, tackle, etc., excluding automobile gas (Table 8). All three types of trout anglers spend about the same number of days fishing for trout (from 20 to 24), even though Great Lakes anglers could have fished all 12 months of the year, whereas there was only a 5-month season for the other types of trout angling. This is most likely because the fishing is best for Great Lakes trout and salmon only during a part of the year. In the 1980 National Survey of Fishing, Hunting, and Wildlife - Associated Recreation (Anonymous 1982), it was estimated that the average number of days spent fishing per angler in Michigan for any species of fish was 19 days, in comparison to 21.8 days average in this survey.

The average amount of money spent per day per angler was higher for anglers fishing the Great Lakes (\$33.45) than those fishing inland lakes or streams (\$22.58 and \$23.47, respectively). The overall average was \$26.50 per day,

Table 8. Average number of days trout anglers spent fishing during the 1981 season, the average dollars spent per day, and the average miles traveled per trip stratified by the type of trout fishing in which they participated.

	Type of fishing		
	Great lakes	Inland lakes	Trout streams
Average total number of days per angler	20.4 (n=280)	21.4 (n=61)	23.6 (n=160)
Average dollars spent per day per angler	\$33.45 (n=926)	\$22.58 (n=309)	\$23.47 (n=550)
Average miles traveled per day per angler	257.2 (n=957)	197.6 (n=323)	201.9 (n=590)

while the National Survey (Anonymous 1982) found Michigan anglers (again, fishing for any species of fish) spent only an average of \$15.00 per day. Finally, when the average miles traveled per angler per trip was compared for the three types of trout fishing, the Great Lakes anglers traveled farther distances on the average (257.2 miles) than either inland lake anglers (197.6 miles) or stream anglers (201.9 miles). The age distribution of anglers who fished for trout during the 1981 fishing season did not differ much between the three types of trout fishing (Table 9). Also, these distributions deviated only slightly from the Michigan population as a whole (Verway 1981). The deviation occurred mostly in the number of trout anglers in the 17 to 24 age bracket. This group had poor representation among trout anglers.

The percentage of anglers in each occupation for the three trout fishing types were similar, but they differed from the percentage of the United States population in each occupation (Table 10). There was higher participation in trout fishing by professionals, sales workers, craft workers, and laborers than found in the general population. On the other hand, fewer clericals and service workers fished for trout. This was also indicated in the sex distribution of the trout anglers. Only 2.5% of the trout anglers were female, and clerical and service workers are most often women. A lower percent participation than the general population was also found for students and the unemployed. All three types of trout fishing have similar participation rates by retirees, 14.5%, 13.9%, and 12.4% for Great Lakes, inland lakes, and streams, respectively.

Income distributions for the three trout fishing types were very similar (Table 11). When income levels of the trout anglers were compared to the same levels of the United States population in 1980 (Anonymous 1981) income groups under \$10,000 were underrepresented. Also, the middle to

Table 9. Percentage of trout anglers in each age bracket by the type of trout fishing in which they participated, compared to the general population in Michigan.

Age in years	Type of fishing			Michigan population ^a
	Great lakes (n=1017)	Inland lakes (n=431)	Trout streams (n=673)	
17-24	10.3	12.3	12.4	25.5 ^b
25-34	25.7	29.2	29.3	21.5
35-44	24.1	21.3	21.4	14.6
45-54	14.7	13.2	14.0	13.2
55-64	14.9	14.8	14.4	12.3
65+	10.3	9.2	8.5	12.9

^a Michigan Statistical Abstract (Verway 1981).

^b Includes age 16.

Table 10. Percentage of trout anglers in each occupation by type of trout fishing in which they participated, compared to the general United States population.

Occupation	Type of fishing			U. S. population ^a
	Great lakes (n=892)	Inland lakes (n=360)	Trout streams (n=572)	
Professional and technical	19.2	18.9	20.5	13.7
Managers and administrators	9.1	8.3	9.1	9.6
Sales workers	9.4	9.7	9.4	5.4
Clerical	2.4	1.7	2.3	15.8
Craft	24.8	27.2	25.2	11.0
Operatives (except transport)	9.6	8.6	9.2	9.0
Transport operatives	4.5	3.1	3.1	3.0
Laborers (except farm)	7.2	8.3	7.5	3.9
Farmers, farm managers and laborers	2.4	1.2	1.9	2.4
Service workers	3.8	3.3	3.5	10.4
Private household workers	1.4	1.2	1.0	0.9
Students	2.6	3.3	3.7	6.5
Unemployed	2.5	4.4	2.6	6.5
Armed forces	1.1	0.8	1.0	1.9

^a Statistical Abstract of the United States (Anonymous 1980).

Table 11. Percentage of trout anglers in each income bracket in 1981 by the type of trout fishing in which they participated, compared to the general United States population.

Income	Type of fishing			U. S. population ^a
	Great lakes (n=942)	Inland lakes (n=372)	Trout streams (n=584)	
0-4,999	5.0	6.7	5.3	12.4
5,000-9,999	6.4	7.0	7.7	11.5
10,000-14,999	11.5	11.3	12.5	10.1
15,000-19,999	11.4	16.4	15.4	11.7
20,000-29,999	27.6	23.9	24.7	24.8
30,000-39,999	18.8	18.0	17.1	15.8
40,000-49,999	10.0	7.5	8.7	8.6
50,000-74,999	6.2	5.4	5.5	4.2
75,000+	3.1	3.8	3.1	0.9

^a Statistical Abstract of the United States (Anonymous 1980).

upper income groups had a slightly higher representation than found in the United States population.

An additional comparison was made between regions of residence. Region I refers to the Upper Peninsula of Michigan, Regions II and III are the northern 33 counties and southern 35 counties of the Lower Peninsula, respectively. Categorization of trout anglers into each fishing type by region and out-of-state indicates that inland lake and stream anglers (35.3% and 37.1%, respectively) were the most common types in Regions I and II (Table 12). More out-of-state anglers fished the Great Lakes (17.5%) than inland lakes (10.6%) or streams (8.6%).

Specific Analysis of Stream Anglers

Stream anglers were asked additional questions concerning their activities and attitudes. During the 1981 fishing season stream anglers fished an average of four (± 0.5) different trout streams. The most popular trout stream was the Au Sable River, with 11.5% of the anglers choosing this as their favorite stream to fish. Jansen (1981) also found the Au Sable River attracts the most anglers. The second in popularity was the Manistee River (5.7%), followed by Pere Marquette (4.6%), and the Little Manistee (4.2%). The fact that all of these percentages are fairly low indicates there is a wide distribution of favored streams among anglers. This should be kept in mind by fisheries managers so that certain streams do not receive unwarranted attention in management practices.

Questions were asked to determine whether stream anglers would prefer to catch one large trout or more small trout (Table 13). Size was described both by length and weight of the fish; a large trout was defined as 12 inches or 0.75 pound and small trout were defined as five trout, 8 inches long, or 0.25 pound each. There was no difference in the response between the length and weight questions. A

Table 12. Percentage of trout anglers residing in each region by the type of trout fishing in which they participated.

	Type of fishing		
	Great lakes (n=1110)	Inland lakes (n=444)	Trout streams (n=695)
Region I	7.9	13.7	14.1
Region II	17.1	21.6	23.0
Region III	57.5	54.1	54.2
Out-of-state	17.5	10.6	8.7

Table 13. Percentage of stream anglers who considered either size or number of trout caught most important. Size was defined in terms of length and weight separately.

	Length (n=675)	Weight (n=675)
Many small trout	45.0	43.3
One large trout	38.5	39.8
No opinion	16.5	16.9

somewhat larger percentage of stream anglers would rather catch many small trout (45.0%) than one large trout (38.5%). A number of anglers (16.4%) had no preference between the two choices.

Many variables are involved in the determination of a satisfying fishing trip. Stream anglers were given a list of possible variables important to fishing and asked to respond to each on a scale of one to five, from most important to not at all important (Table 14). Both the Kruskal-Wallis and Median statistical tests (Siegel 1956) found the order of the results to be significantly different from random ($P < 0.001$). Notable are the positions of the two variables, number and size of fish caught (ranks five and six, respectively). Although these are the two main objectives of most fisheries managers (Hampton and Lackey 1975), anglers did not rank these as the most important factors to a fishing trip. These results also indicate that trout stream anglers were not looking so much for natural beauty and solitude as they were for conveniences such as easy access to the stream and close food and lodging.

Another objective of this survey was to determine stream anglers' opinions of five special trout regulations. Three of these regulations were in existence at the time of the survey, two concerning fishing tackle restrictions and one dealing with legal length. These were as follows: artificial lures only, flies only, and slotted size limit (anglers could keep only the fish between 8 to 12 inches and over 16 inches in length). To measure the amount of support for these three regulations, anglers was asked whether the number of areas having each of these regulations should be increased, decreased, or stay the same (Table 15). For all three types of regulations there were a large number of stream anglers with no opinion. This was especially true for the slotted size limit regulation, which was in effect for the first time in 1981 and only on one section of one river. Some support for all three types of special

Table 14. Ranking by stream anglers of factors important to a fishing trip in order from most important to least important.

Rank	Factor
1.	Nearness to public facilities - food, lodging, <u>etc.</u>
2.	Nearness to home.
3.	Ease of access to stream.
4.	Competition with canoes and other recreational activity present.
5.	Number of fish caught.
6.	Size of fish caught.
7.	Crowding from other anglers.
8.	Natural beauty of the area.

Table 15. Percentage of stream anglers desiring the quantity of stream for each of three special regulations (artificial lures only, flies only, and slotted size limit) to be increased, decreased, stay the same, or having no opinion.

Quantity	Regulation		
	Artificial lures only (n=684)	Flies only (n=688)	Slotted size limit (n=668)
Increased	14.5	14.4	21.4
Decreased	21.8	24.6	20.7
Stay the same	42.4	41.0	29.1
No opinion	21.3	20.0	28.8

regulations was expressed by stream anglers, over half of whom wanted the areas to stay the same or increase. Stream anglers were also asked if they had fished areas with these regulations and, if not, did they plan to in the future (Table 16). If participation can be used as a measure of support for these regulations, the results in Table 16 again indicated stream anglers are in favor of having such regulations. The percent of all stream anglers who fished these special regulation waters was 39.9% for artificial lures only, 34.4% for flies only, and 21.2% for slotted size limit. Another 18.4%, 17.3%, and 20.8% (respectively) of the anglers had not fished these sections but intend to in the future.

Angler opinion was sought on two additional special regulations which were not in effect in 1981. The first of these was a catch-and-release fishery where all fish must be returned to the water. The second was an inverted (maximum) size limit. An example of such a regulation would be a requirement that all trout over 12 inches in length must be returned to the water. Stream anglers were asked the frequency with which they would participate in each of these two special regulations (Table 17). In general, there appeared to be only moderate support for these two regulations. For the catch-and-release regulation, only 36.9% would fish such a regulation often or sometimes. The inverted size limit had somewhat less support with only 31.3% responding often or sometimes. Since a random sample was taken of all stream anglers, including those who only rarely fish, these responses may not only indicate attitudes toward a special regulation, but also reflect the frequency with which respondents fish.

Finally, stream anglers were asked if they felt three of these special regulations, slotted size limit, catch-and-release, and inverted size limit, would increase the number of large trout they catch. The percent of anglers who responded yes was greatest for a catch-and-release fishery

Table 16. Percentage of stream anglers who have fished each of the three special regulations (artificial lures only, flies only, and slotted size limit) and the percentage of anglers who have not fished these sections but plan to do so in the future.

	Regulation		
	Artificial lures only (n=674)	Flies only (n=649)	Slotted size limit (n=664)
Have fished these sections	39.9	34.4	21.2
Have not fished these sections but plan to in future	18.4	17.3	20.8

Table 17. Percentage of stream anglers indicating often, sometimes, seldom, or never as the frequency in which they would participate in two proposed special regulations (catch-and-release and inverted size limit).

Would fish these sections	Regulation	
	Catch-and- release (n=675)	Inverted size limit (n=674)
Often	9.2	5.8
Sometimes	27.7	25.5
Seldom	25.8	28.0
Never	37.3	40.7

(48.6%) and nearly equal for slotted and inverted size limits (38.5% and 36.4%, respectively). Many anglers responding negatively indicated that hooking mortality would be too great.

Comparison of Regions

The 1980 census (Verway 1981) showed 3.5%, 8.8%, and 87.8% of Michigan's population lived in Regions I, II, and III, respectively. The residence of the 1981 stream anglers reflected the residence of Michigan's population to some extent. However, Regions I and II get a somewhat higher participation rate than their populations would suggest (15.4% and 25.2%, respectively).

A number of factors were independent of the region of residence. Included in these were age of the anglers, membership in sportsmen's groups, average number of days fished per angler, and satisfaction with the fishing (i.e., rating on scale from excellent to very poor -- Table 7). Also showing no difference between Regions I, II, and III, and out-of-state was angler response to all five special regulations.

However, many of the factors examined relating to trout stream anglers were not independent of the region of residence. Two of these were occupation and income level (Tables 18 and 19, respectively). Occupations differed most radically in the number of professionals from each area. Out-of-state anglers were composed of 28.6% professionals and technicals. This percentage was less the farther north the region in Michigan, being only 13.7% in Region I, the Upper Peninsula. Other differences existed in the percent of laborers and service workers. These two occupations had the poorest representation among Region III and out-of-state anglers. The highest percent of retirees were from Region II (21.6%). Income levels (Table 20) reflected these differences found in occupations among the regions of

Table 18. Percentage of stream anglers in each occupation by region of residence.

Occupation	Region of residence			
	I (n=95)	II (n=148)	III (n=352)	Out-of- state (n=56)
Professional and technical	13.7	14.2	18.5	28.6
Managers and administrators	7.4	6.1	9.4	5.4
Sales workers	9.5	7.4	7.7	12.5
Clerical	0.0	0.7	3.4	0.0
Craft	18.9	20.3	23.6	23.2
Operatives (except transport)	7.4	5.4	9.9	3.6
Transport operatives	4.2	2.7	2.8	0.0
Laborers (except farm)	9.5	8.1	5.4	5.4
Farmers, farm managers and laborers	0.0	3.4	1.7	0.0
Service workers	6.3	4.1	1.7	3.6
Private household workers	1.1	0.7	0.9	1.8
Retired	15.8	21.6	8.0	10.7
Students	4.2	0.7	4.0	3.5
Unemployed	1.0	2.6	2.8	0.0
Armed forces	1.0	2.0	0.2	1.7

Table 19. Percentage of stream anglers in each income bracket by region of residence.

Income	Region of residence			
	I (n=83)	II (n=127)	III (n=318)	Out-of- state (n=54)
0-4,999	6.0	6.3	5.0	3.7
5,000-9,999	15.7	11.8	5.3	0.0
10,000-14,999	13.3	17.4	10.7	11.1
15,000-19,999	20.5	17.4	13.5	14.8
20,000-29,999	24.1	28.3	24.5	16.7
30,000-39,999	13.3	9.4	20.4	22.2
40,000-49,999	7.1	3.9	10.4	13.0
50,000+	0.0	5.5	10.2	18.5

Table 20. Percentage of stream anglers stratified by their main motivation for fishing and by region of residence.

	Region of residence			
	I (n=93)	II (n=148)	III (n=343)	Out-of- state (n=57)
To catch fish to eat	40.9	45.3	30.6	15.8
For relaxation	26.9	25.7	29.2	36.8
For excitement and challenge	32.2	29.0	40.2	47.4

residence. Income was lowest for respondents from Region I and increased progressively in Regions II and III. Out-of-state stream anglers had higher percents in the higher income brackets.

There was a difference among the four residence areas in the average number of years anglers fished for trout in Michigan. Stream anglers from Region I had fished longer than any of the others with an average of 25.3 years. Region II stream anglers had fished an average of 20.3 years, while Region III and out-of-state had the lowest averages with 16.0 and 10.6 years, respectively. All of these figures were significantly different from each other ($P < 0.05$).

The reason indicated for fishing trout in streams and the favorite species of trout to catch also differed significantly between the areas of residence ($P < 0.05$). Anglers from Regions I and II tended to catch fish to eat (40.9% and 45.3%), whereas more anglers from Region III and out-of-state fished for the excitement and challenge (40.2% and 47.4%) (Table 20). Brown trout were the favorite species to catch in each area (Table 21). Both brook trout and rainbow trout became more popular as one moved south in Michigan: 9.3%, 13.9%, and 20.1% of the stream anglers from Regions I, II, and III, respectively, chose brook trout and 8.2%, 22.8%, and 20.9% chose rainbow trout.

Anglers from Regions I and II generally chose their favorite trout stream from within their own region (Table 22). The majority of Region III anglers preferred streams in Region II, the closest region with good trout streams. Finally, out-of-state anglers most often favored trout streams most often located in both Regions I and II.

Comparison of the average amount of money spent per stream angler per day among the areas of residence revealed differences. No significant difference was found between the dollars spent by stream anglers from Regions I and II (\$15.24 and \$18.12, respectively), nor for Region III and

Table 21. Percentage of stream anglers indicating their favorite species of trout to catch by region of residence.

Species	Region of residence			
	I (n=97)	II (n=158)	III (n=363)	Out-of- state (n=57)
Rainbow trout	8.2	22.8	20.9	15.8
Brook trout	9.3	13.9	20.1	19.3
Brown trout	75.3	43.7	31.1	29.8
No preference	7.2	19.6	27.9	35.1

Table 22. Percentage of stream anglers choosing a stream in a given region as their favorite stream to fish by region of residence.

Region of stream	Region of residence			
	I (n=92)	II (n=146)	III (n=297)	Out-of-state (n=37)
I	97.8	2.7	10.8	35.1
II	2.2	95.2	64.3	37.8
III	0.0	2.1	24.9	27.1

out-of-state (\$26.48 and \$28.34, respectively). However, Region III and out-of-state anglers spent significantly more money than anglers from Regions I and II ($P < 0.05$).

The average round trip miles traveled per angler per trip differed among the areas of residence (Table 9). Once again stream anglers from Regions I and II (60 and 95 miles, respectively) traveled significantly fewer miles than those from Regions III and out-of-state (266 and 310, respectively). Out-of-state anglers traveled an average of 310 miles per trip which implied that out-of-state anglers came from areas bordering Michigan.

A number of the variables important to fishing (Table 14) had significantly different responses between the areas of residence. Stream anglers from Region I rated competition with canoes and other recreation present higher than did those from Regions II and III. Stream anglers from Region I also indicated that nearness of public facilities and ease of access to the stream were more important than did those from Region III and out-of-state. Finally, anglers from Region III and out-of-state ranked nearness of stream to home as a more important variable than both anglers from Regions I and II. This last response is probably because anglers from Regions I and II had to travel the least distance to find an area in which to participate in their sport.

Salmon Snagging

On the issue of snagging salmon in Michigan streams, trout anglers were asked if the amount of legal snagging area should remain the same, be increased, be legal everywhere, be decreased, or be illegal everywhere. Responses did not differ much for the various types of licenses purchased (Table 23). Only daily permit holders deviated somewhat from the total sample. This deviation was due to a slightly greater percentage wanting the amount of

Table 23. Response of trout anglers (percent) to a question concerning their opinion on the amount of area where salmon snagging should be legal. Results are given by type of license purchased and for the entire sample.

Amount of area	License type			Total (n=1299)
	Trout stamps (n=1109)	Seniors (n=83)	Daily permits (n=107)	
Remain as is	24.3	21.7	17.8	23.6
Increase	22.0	18.1	29.0	22.3
Legal everywhere	8.2	10.8	3.7	8.0
Decrease	5.5	8.4	0.9	5.3
Illegal everywhere	29.1	27.7	26.2	28.8
No opinion	10.9	13.3	22.4	12.0

area increased and a somewhat lower percentage wishing either snagging to be legal everywhere or to decrease in area.

A comparison was also made of the response on snagging by the three fishing types: Great Lakes, inland lakes, and streams (Table 24). These groups are not mutually exclusive. One might expect Great Lakes anglers, which included those fishing for anadromous species for which snagging occurred, to favor an increase in legal areas. However, this was not the case. There was little difference among the three types of trout anglers in their response to the various categories.

CONCLUSION

Most individuals who purchased daily fishing permits were salmonid anglers, and in particular fished the Great Lakes which indicates Michigan's salmonid program attracts many visiting anglers. On the other hand, most senior resident license holders did not often fish for trout. Another group which had a poor trout fishing participation rate was the anglers 17 to 24 years of age.

Anglers who participated in the three types of trout fishing could not be distinguished by age, occupation, or income, because few anglers participated exclusively in one of the three types of fishing. Since few anglers fished only one type, management should not concentrate on one at the expense of the other two. In addition, the average number of years an angler fished was high for all three types, indicating managers are working with an experienced group. Finally, angler membership in sportsmen's clubs was low for all three types of fishing, which suggests managers must be careful not to assume sportsmen's clubs represent the views of all the angling public.

Fishing for Great Lakes trout and salmon had the highest rate of participation of the three types of trout

Table 24. Stratification of trout anglers (percent) to a question concerning their opinion on the amount of area where salmon snagging should be legal by type of trout fishing in which they participated.

Amount of area	Type of fishing		
	Great lakes (n=1099)	Inland lakes (n=438)	Trout streams (n=686)
Remain as is	23.0	23.5	24.5
Increase	23.4	20.8	20.8
Legal everywhere	8.5	9.8	8.2
Decrease	5.3	5.7	6.3
Illegal everywhere	29.5	29.2	30.3
No opinion	10.3	11.0	9.9

angling. These anglers were also the most satisfied with their sport, indicating anglers consider Michigan's Great Lakes program a real success. In addition, these anglers spent the most money and traveled the farthest distance to pursue their sport. Great Lakes trout and salmon anglers' main reason for fishing was for excitement and challenge and they preferred chinook and steelhead over all other salmonids. Managers should keep these species preferences in mind when they determine quotas for stocking fish in the Great Lakes.

The fewest number of trout anglers fish inland trout lakes, and these anglers are the least satisfied with the quality of fishing. This suggests the inland trout lake program needs to be examined. These anglers did choose rainbow trout as the most preferred species, indicating managers might consider the use of more rainbow trout in the inland trout lake program.

The average stream angler fished a number of different streams during the year. In addition, the list of most favored streams was lengthy with a wide distribution. Both of these findings point out that management should not concentrate its efforts on just a few streams.

Stream anglers' response to the inquiry as to their main reason for fishing was fairly equally divided among the three choices: to catch fish to eat, for relaxation, and for excitement and challenge. Also, response was equally divided between anglers who thought size of fish caught was most important and those who thought number caught was most important. The implication of both of these points is that management should not place too much effort on developing trophy fishing, but rather maintain a well-rounded program.

A ranking of the variables important to fishing by trout stream anglers revealed number and size of fish caught were placed fifth and sixth, respectively. Topping the list was nearness to public facilities and ease of access to the stream. This does not necessarily mean that size and number

of fish caught are not important to anglers. Rather, it indicates that anglers are fairly satisfied with the fish, but find other factors such as public facilities and stream access to be insufficient. Fisheries managers need to realize that a successful fishing experience involves many factors in addition to the fish. In order to increase the satisfaction of trout anglers, these other factors must be addressed.

Artificial lures only and flies only were the two special trout regulations which had the highest acceptability to anglers. However, there was no evidence of a demand for an increase in the amount of area with these regulations. There was not much support for the slotted size limit. Although this regulation was in effect in only a small section of stream, few anglers wanted to see an increase in area. Surprisingly, 21.2% of stream anglers indicated they had fished in the area with slotted-size limits. This either indicates tremendous pressure in the area, or a misunderstanding of the question. There was also only moderate support for a catch and release fishery and even fewer anglers were interested in an inverted size limit. The overall implications of these findings are that if fisheries managers feel such regulations would benefit a certain stream, these benefits will need to be clearly explained to the anglers in order to gain their support and cooperation.

Many differences in trout stream anglers did occur between regions. Occupations and incomes differed as did the average number of years fished. Also, the preferred species of trout was not the same and anglers had different reasons for fishing. Finally, anglers from the various regions did not rank the variables important to fishing in the same order. However, all these differences between regions does not indicate managers should develop programs specific to a given region. Evidence suggests that anglers, especially from Region III and out-of-state, travel to the

other regions to fish trout streams. Rather, such differences and information are important for managers to know so that they can more effectively communicate with the local anglers, thereby gaining support for management practices and resulting in a more satisfied angling public.

Anglers who purchased the three types of fishing licenses showed little difference in the amount of area they wanted open to snagging. This was also the case when the opinions of anglers who participated in the three types of trout fishing were compared. There was a wide distribution in the responses, varying from no legal areas for snagging to legal everywhere. This distribution implies that any change in the snagging areas will result in a large number of anglers who disagree with the change. Therefore, any changes in the snagging area must be accompanied with a large scale effort on the part of managers to educate the anglers with the rationale for such changes. Only when anglers are convinced of the benefits, will the changes receive their support.

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APPENDIX

TROUT FISHING SURVEY

Dear Angler,

The Department of Natural Resources is trying to discover the wants and opinions of people who fish for trout and salmon in Michigan. You have been chosen as part of a carefully selected sample to give us an idea what anglers' think. Your answers are very important to us. Results of this survey will aid managers in decision making. Please help make this survey a success by answering and returning the enclosed questionnaire as soon as possible. We need your questionnaire back even if you do not fish for trout and salmon in Michigan. Thank you, your help is greatly appreciated.

Sincerely,

John A. Scott
Chief, Fisheries Division

1. Did you fish for trout and/or salmon in Michigan in the 1981 fishing season (4/1/81-3/31/82)? (1) YES (2) NO 1:5
- a) If yes, how many years have you fished for trout and/or salmon in Michigan? _____ 1:6-7
2. Did you fish for trout outside Michigan in the last fishing season (4/1/81-3/31/82)? (1) YES (2) NO 1:8
- a) If yes, name of state(s) or province(s) _____ 1:9-10
3. What kind(s) of fish other than trout or salmon did you fish for in Michigan in the 1981 fishing season (4/1/81-3/31/82)? (Circle as many as apply) 1:11-21
- (1) perch (2) bluegill, sunfish, rock bass, or crappie
(3) bass (4) pike or muskie
(5) walleye (6) catfish or bullhead
(7) suckers (8) smelt
(9) carp (10) none
4. Did you fish for Great Lakes trout or salmon in Michigan in the 1981 fishing season (4/1/81-3/31/82)? By this we mean both open water fishing in the Great Lakes and fishing in streams and river mouths during spawning runs. (1) YES (2) NO 1:22
- If you answered yes above, please answer the following questions.
If you answered no, please go on to question 5.
- a) What is your favorite species of Great Lakes trout or salmon to catch? (Circle one) 1:23
- (1) coho salmon (4) chinook salmon (8) other _____
(2) lake trout (5) steelhead trout (9) no preference
(3) brown trout
- b) What is the main reason you fish for Great Lakes trout and salmon? (Circle one) 1:24
- (1) to catch fish to eat
(2) for relaxation
(3) for excitement and challenge
(0) other _____
- c) In general, fishing for Great Lakes trout and salmon is: (Circle one) 1:25
- (1) excellent (2) good (3) average (4) poor (5) very poor

5. Please circle the one statement below which best represents your thoughts about salmon snagging. 1:26
- (1) Salmon snagging should remain as it is, legal only in a small number of areas.
 - (2) Salmon snagging should be legal in more areas than at present, but not in all.
 - (3) Salmon snagging should be legal everywhere in Michigan.
 - (4) Salmon snagging should be legal in fewer areas than at present, but not completely banned.
 - (5) Salmon snagging should be illegal in Michigan.
 - (9) No opinion.
6. Did you fish for trout in inland lakes in Michigan in the 1981 fishing season (4/25/81-9/30/81)? (1) YES (2) NO 1:27
- If you answered yes above, please answer the following questions.
If you answered no, please go on to question 7.
- a) Which kind of trout do you most enjoy catching in inland lakes? (Circle one) 1:28
- (2) lake (3) brown (6) rainbow (7) brook (9) no preference
- b) What is the main reason you fish for trout in inland lakes? (Circle one) 1:29
- (1) to catch fish to eat
 - (2) for relaxation
 - (3) for the excitement and challenge
 - (0) other _____
- c) In general, fishing for trout in inland lakes is: (Circle one) 1:30
- (1) excellent (2) good (3) average (4) poor (5) very poor
7. Did you fish for trout in Michigan trout streams in the 1981 fishing season (4/25/81-9/30/81)? (Do not include salmon and steelhead fishing.) (1) YES (2) NO 1:31
- If you answered yes above, please answer the following questions.
If you answered no, please go on to question 8.
- a) Which kind of trout do you most enjoy catching in trout streams? (Circle one) 1:32
- (6) rainbow (7) brook (3) brown (9) no preference
- b) What is the main reason you fish for trout in trout streams? (Circle one) 1:33
- (1) to catch fish to eat
 - (2) for relaxation
 - (3) for excitement and challenge
 - (0) other _____
- c) How many different trout streams do you fish in Michigan? _____ 1:34-35
- d) What is your favorite Michigan trout stream?
- Name of stream: _____ 1:36-37
- County in which stream is located: _____ 1:38-39
- e) In general, fishing for trout in Michigan trout streams is: (Circle one) 1:40
- (1) excellent (2) good (3) average (4) poor (5) very poor

8. We need information about the fishing trips you took last year. Please fill out the following table for the type of trout fishing trips you took.

ONE DAY TRIPS

	GREAT LAKES TROUT & SALMON 4/1/81-3/31/82	TROUT IN INLAND LAKES 4/25/81-9/30/81	TROUT IN TROUT STREAMS 4/25/81-9/30/81	
Total number of trips				1:41-49
Average round trip distance traveled in miles				1:50-58
Average amount of money spent per day for food, bait, tackle, <u>etc.</u> , (exclude auto gas)				1:59-67

TRIPS LASTING LONGER THAN ONE DAY

Total number of trips				1:68-73
Average number of days per trip				1:74-79
Average round trip distance traveled in miles				2:5-16
Average amount of money spent per day for food, lodging, bait, tackle, <u>etc.</u> , (exclude auto gas)				2:17-25

9. We would like to know what things are important to you when you go fishing. Please rate each of the following items by putting a check in the box.

	MOST IMPORTANT (1)	VERY IMPORTANT (2)	SLIGHTLY IMPORTANT (3)	NOT VERY IMPORTANT (4)	NOT AT ALL IMPORTANT (5)	
Number of fish caught						2:26
Size of fish caught						2:27
Crowding from other anglers						2:28
Competition with canoes & other recreational activity present						2:29
Natural beauty of the area						2:30
Nearness to public facilities - food, lodging, etc.						2:31
Ease of access to stream						2:32
Nearness to home						2:33
Other _____						2:34

10. If two people went trout fishing and the first caught 5 trout that were each 8 inches long, while the second person caught 1 trout that was 12 inches long, which person do you think was more successful? 2:35
- (1) the first person (2) the second person (9) no opinion
11. If you went trout fishing for a weekend and caught one 3/4 pound trout on the first day and five 1/4 pound trout on the second day, which day would you consider more successful? 2:36
- (2) the first day (1) the second day (9) no opinion
12. On some sections of Michigan trout streams, fishing tackle is restricted to the use of artificial lures only (for example, spinners, spoons, or flies) and the use of natural bait is prohibited.
- a) Do you think the number of areas with these regulations should be: 2:37
- (1) increased (3) stay the same
(2) decreased (9) no opinion
- b) Do you ever fish these sections? (1) YES (2) NO 2:38
- c) If no, do you plan to fish these sections in the future? (1) YES (2) NO 2:39

13. On some sections of Michigan trout streams, fishing tackle is restricted to the use of flies only, and the use of other types of artificial lures and natural baits is prohibited.
- a) Do you think the number of areas with these regulations should be: 2:40
 (1) increased (3) stay the same
 (2) decreased (9) no opinion
- b) Do you ever fish these sections? (1) YES (2) NO 2:41
- c) If no, do you plan to fish these sections in the future? (1) YES (2) NO 2:42
14. On one Michigan trout stream, there is a special regulation requiring you to throw back the medium size trout. That is, you can keep only the trout between 8 and 12 inches and over 16 inches.
- a) Do you feel this regulation increases the number of large trout you catch? 2:43
 (1) YES (2) NO (9) NO OPINION
- b) Do you think the number of areas with this regulation should be: 2:44
 (1) increased (3) stay the same
 (2) decreased (9) no opinion
- c) Do you ever fish in this area? (1) YES (2) NO 2:45
- d) If no, do you plan to fish in this section in the future? (1) YES (2) NO 2:46
15. Suppose certain sections of some Michigan trout streams had special regulations of 'catch-and-release'. In these areas you would be required to throw back all of the trout you caught.
- a) How often would fish these sections? 2:47
 (1) often (2) sometimes (3) seldom (4) never
- b) Do you feel this regulation would increase the number of large trout you catch in these sections? (1) YES (2) NO (9) NO OPINION 2:48
16. Suppose certain sections of some trout streams had special regulations requiring you to throw back all of the largest trout you caught (for example, trout over 12 inches) but keep the smaller trout.
- a) How often would fish these sections? 2:49
 (1) often (2) sometimes (3) seldom (4) never
- b) Do you feel this regulation would increase the number of large trout you catch in these sections? (1) YES (2) N (9) NO OPINION 2:50
17. Are you currently a member of any organized fishing or sportsmen group? 2:51
 (1) YES (2) NO
- a) If yes, which one(s)? _____ 2:52-53

18. What is your occupation? _____ 2:54-55

19. About what is your yearly household income - your income from all sources before taxes and other deductions are made? 2:56-57

- | | |
|-------------------------|-------------------------|
| (1) 0 - \$4,999 | (6) \$30,000 - \$39,999 |
| (2) \$5,000 - \$9,999 | (7) \$40,000 - \$49,999 |
| (3) \$10,000 - \$14,999 | (8) \$50,000 - \$74,999 |
| (4) \$15,000 - \$19,999 | (9) \$75,000 - \$99,999 |
| (5) \$20,000 - \$29,999 | (10) Over \$100,000 |

20. In what county is your permanent address? 2:58-59

County _____

State _____

21. What would you like to see done to improve fishing in Michigan waters?
