

Original: Fish Division
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INSTITUTE FOR FISHERIES RESEARCH

DIVISION OF FISHERIES
MICHIGAN DEPARTMENT OF CONSERVATION
COOPERATING WITH THE
UNIVERSITY OF MICHIGAN

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July 31, 1936

ADDRESS
UNIVERSITY MUSEUMS
ANN ARBOR, MICHIGAN

REPORT NO. 371 B

REPORT ON GENERAL CENSUS, 1935

PART II

SUPPLEMENT TO REPORT NO. 371

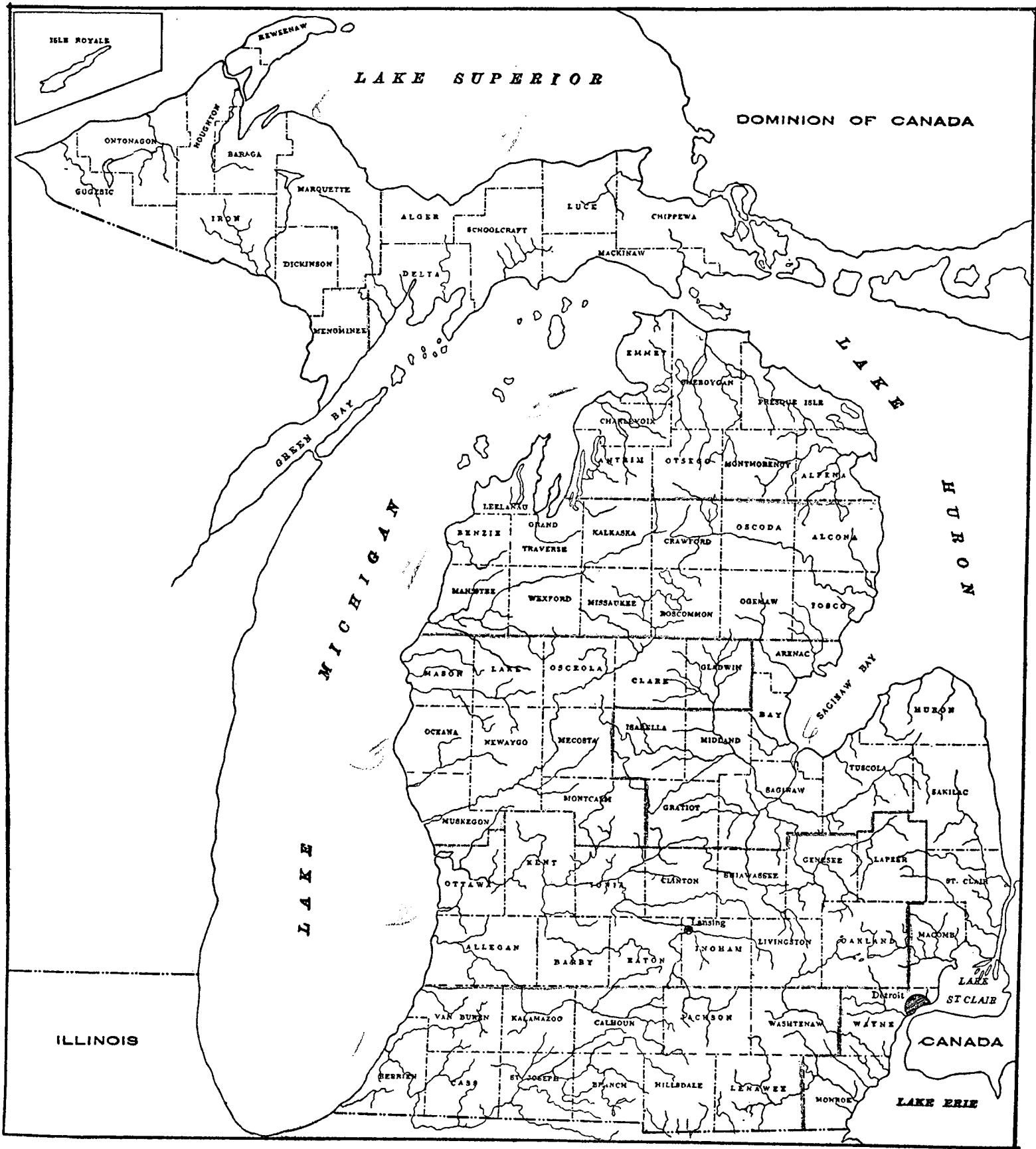
Introduction

This section of the report on the 1935 general census deals primarily with the size distribution of the fish of each species in each district and the relative abundance of each species in the catch in each district. The study is approached from two angles: with reference to districts and with reference to fish. More sections of the report will be forthcoming.

It will be noted in the tables that the larger fish tend to be caught in even inches, also that 13 inch fish are relatively hard to catch. The only conclusion which can be drawn in regard to this unusual size distribution is that the sizes of the fish are estimated and that the officers are relatively poor "guessers" of length. Closer estimates or better still actual measurements would add to the accuracy and value of the work.

Size Distribution and Relative Abundance
of Each Species by Districts

District 1. Size of fish—. The fish in this district had an average size of 7.8 inches. Brook Trout were, on the average, almost 9 inches long; the few Brown Trout taken averaged 12.4 inches long. Large-mouthed Bass averaged almost 2 inches longer than Small-mouthed Bass (14.1 and 12.3 inches respectively). Bluegills, Sunfish and Rock Bass all averaged between 7 and 8 inches in length. Perch had an average



size of 8.3 inches. No Walleyes were recorded for this district. Average lengths of other fish include: Northern Pike 22.5 inches, Bullheads 9.7 inches, Suckers 14.7 inches and Crappies 8.1 inches.

Distribution of species— Bluegills decidedly dominated the catch; 84.3% of all fish recorded were of this species. Perch, the next most prominent species constituted almost 5% of the catch. Large-mouthed Bass comprised 3.3% of the total catch, Crappies 2.5% and Bullheads 1.2%. Each of the other species taken represented less than one percent of the catch. The 4 most prominent fish include (in order of prominence) Bluegills, Perch, Large-mouthed Bass and Crappies.

The percentage of Brook Trout is undoubtedly too high. In one of the counties the records were primarily for trout fishing and as a result the average for the district was increased. Trout fishing probably constitutes only a very small portion of one percent of the total fishing, probably less than .1% rather than the .8% here recorded. Data for each species are shown in Table 1.

(See Table 1)

District 2. Size of fish— The average size of all fish taken in this district was somewhat higher than the average size for fish in District 1 (8.5 inches and 7.8 inches respectively). Brook Trout had an average size of 8.5 inches. Large-mouthed Bass were only slightly larger than Small-mouthed Bass (13.3 inches and 12.7 inches respectively). Bluegills, Perch and Rock Bass all averaged between 7 and 8 inches long. Sunfish were, on the average, the smallest fish taken (6.6 inches). Average sizes for other fish were: Walleye 21.5 inches, Northern Pike 23.6 inches, Bullheads 10.7 inches, Suckers 13.4 inches and Crappies 8.3 inches.

Distribution of species: Bluegills were decidedly the most prominent fish; they constituted 61.3% of the total catch. Crappies were more abundantly taken, in proportion, than in District 1. They constituted 13.1% of the catch. Perch ranked third in abundance (8.4%), Suckers were fourth (3.8%) and Large-mouthed Bass fifth (3.6%). Other species representing over one percent of the total catch include Sunfish (2.8%), Northern Pike (2.4%), and Rock Bass (1.6%). Relative abundance of each species is shown in Table 2.

(See Table 2)

(1) Most lengths were recorded in even inches. Fractions are included in the even inch below the fraction; for example, a 6½" fish is included in the 6" group. The number of lengths given in fractions was too small to materially affect the total figures.

(2) Includes 10 dogfish, 12 minnows, 15 gar, 2 Warmouth bass, 1 cisco, 38 carp, and 9 fish with species not designated.

TABLE 1

District 1
Size Distribution of Fish

	Ave. Size	Size in In																		
		6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Brook Trout	8.8		9	21	24	20														
Rainbow Trout	8.0			1																
Brown Trout	12.4						7		1	6										
Large-Mouthed Bass	14.1					11	31	70	34	52	23	40	2		45					
Small-Mouthed Bass	12.3					3	11	9	3	2		1		1		1				
Bluegills	7.2	603	5403	1576	349	4	4													
Sunfish	7.3	12	36	31	1															
Perch	8.3	11	121	101	142	20	12	7		1										
Walleye	---																			
Northern Pike	22.5										1	6		6	2	18	1	10	1	8
Rock Bass	7.7		26	20	5		1													
Hullhead	9.7		2	3	4	12	1	4												
Sucker	14.7							12		2	9	6	2	6						
Crappie ²	8.1		84	93	27	30	6													
All Others ¹²	20.0	13	2			9					7			11		2		1		18
Total	7.8	639	5683	1846	552	109	73	102	38	63	40	53	4	24	47	21	1	11	1	26

(CONTINUED)

(1) Most lengths were recorded in even inches. Fractions are included in the even inch below the fraction; for example, a 6½" fish is included in the 6" group. The number of lengths given in fractions was too small to materially affect the total figures.

(2) Includes 10 dogfish, 12 minnows, 15 gar, 2 Warmouth bass, 1 cisco, 38 carp, and 9 fish with species not designated.

CONTINUATION
OF TABLE 1

District 1
Size Distribution of Fish
Caught, by Species
SIZE IN INCHES

	25	26	27	28	29	30	31	32	33	34	35	36	37	38	Size not given	Total	% of Total Catch
Brook Trout															--	74	0.8
Rainbow Trout															--	1	Trace
Brown Trout															--	14	0.1
Large-Mouthed Bass															4	312	3.3
Small-Mouthed Bass															--	31	0.3
Bluegills															100	8039	84.3
Sunfish															8	88	0.9
Perch															43	458	4.8
Walleye															--	--	--
Northern Pike	1	1	3	10		1	1		1					1	--	72	0.8
Rock Bass															1	53	0.6
Bullhead															--	26	1.2
Sucker															--	37	0.4
Crappie ²															2	242	2.5
All Others ²		1	2	5			1				15				--	87	0.9
Total	1	2	5	15		1	1	1		1	15			1	158	9534	100.1

(1) Most lengths were recorded in even inches. Fractions are included in the even inch below the fraction; for example, a 6½" fish is included in the 6" group. The number of lengths given in fractions was too small to materially affect the total figures.

CONTINUATION
OF TABLE 2

(2) Includes 28 dogfish, 1 sheepshead, 1 muskellunge, 10 gar, 21 mullet and 56 carp.

District 2
Size Distribution of F

	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	45	48	53	Size not given	Total	% of Total Catch	
Brook Trout																			--	48	0.4	
Rainbow Trout																				--	3	Trace
Brown Trout																				--	4	Trace
Large-mouthed																				1	397	3.6
Small-mouthed																				--	46	0.4
Bluegills																				91	6764	61.3
Sunfish																				40	304	2.8
Perch																				5	930	8.4
Walleye			1							1										--	25	0.2
Northern Pike	34	14	28	18	12	5	9		7	2	3	1	1		1		1			1	262	2.4
Rock Bass																				--	179	1.6
Bullhead																				9	93	0.8
Sucker																				18	418	3.8
Crappie																				1	1446	13.1
All Others (2)	1		1		1				1							1		1		9	117	1.1
Total	35	14	30	18	13	5	9		8	3	3	1	1		1	1	1	1	175	11036	99.9	

District 3. Size of fish. The fish in this district had an average size of 8.2 inches, larger than the average size in District 1 but smaller than the average size in District 2. Of the three species of trout, Brown Trout were the largest (9.4 inches), Brook Trout were smallest (8.3 inches) and Rainbow Trout were of intermediate size (8.6 inches). The Rainbow Trout included the largest fish (trout) but the catch was apparently comprised primarily of small trout which had not yet migrated into Lake Michigan. Small-mouthed Bass were larger than Large-mouthed Bass (13.2 inches and 12.9 inches respectively). Sunfish and Rock Bass averaged less than 7 inches; Bluegills and Perch averaged between 7 and 8 inches. Average sizes of other fish include: Walleyes 18.0 inches, Northern Pike 23.1 inches, Bullheads 8.4 inches, Suckers 15.5 inches and Crappie 8.2 inches.

Distribution of species—. In this district trout constitute a significant proportion of the total catch; the 3 species combined represent 13.8% of the total catch. About half of the trout were Brook Trout, the other two species were about equally abundant, each representing one-fourth of the entire trout catch. The two species of bass represent 4.5% of the total catch, with Large-mouthed Bass the more commonly caught species. Bluegills, though still the dominant species, are much less common than in the two more southern districts. They represent 36.3% of the total catch. Perch increased very decidedly in this district over the relative Perch catch in Districts 1 and 2. They constitute a fourth of the fish taken. Rock Bass comprised 6.4% of the catch; other fish and their abundance in the catch include: Sunfish 2.9%, Walleyes 1.2%, Northern Pike 0.9%, Bullheads 0.8%, Suckers 0.9% and Crappies 7.4%.

District 3 is different in type from Districts 1 and 2. Where the latter are primarily agricultural land, much of the area comprising this district is sandy and uncultivated. The difference in soil conditions, percentage of forest cover and, to some degree, in latitude is reflected in changes in the catch: trout become prominent, Perch and Rock Bass increase in number and Bluegills, characteristic of rich,

TABLE 3

(1) Most lengths were reported in even inches. Fractions are included in the even inch below the fraction; for example, a 6½" fish is included in the 6" group. The number of lengths given in fractions was too small to materially affect the total figures.

(2) Includes 3 dogfish, 22 minnows, 1 sheephead, 2 muskellunge, 5 gar, 26 millet, 25 cisco, 7 carp, and 1 white bass.

	Ave. Size	Size in INCHES																
		6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
Brook Trout	8.7		556	1466	647	201	108	18	7	1	4		1					
Rainbow Trout	8.6		228	702	303	158	41	16	8	4	2	1	3	2	2		5	
Brown Trout	9.4		120	452	363	256	137	124	25	20	6	7	3	7	1	2		
Large-Mouthed Bass	12.9					142	179	412	140	243	140	57	32	19	8	12	1	
Small-Mouthed Bass	13.2					30	102	96	39	82	88	28	8	19	1		1	
Bluegills	7.4	1661	6725	5870	1030	214		12										
Sunfish	6.9	314	779	95	41	1												
Perch	7.5	853	4217	3864	273	166	6	23	1	2				4	3			
Walleye	18.0									30	51	91	28	144	57	66	22	
Northern Pike	23.1									14	6	17	6	36	6	48	7	
Rock Bass	6.8	892	1019	220	57	13												
Billhead	8.4	4	20	142	24	13		3					1			1		
Sucker	15.5					8	59		8	24	38	93	19	56	28	3	6	
Crappie	8.2	108	513	1072	1032	109	1											
All Others (2)	15.6		7				1	27	6	2		16				2		
Total	8.2	3832	14184	13883	3766	131	636	731	234	427	335	310	101	287	106	134	42	

TABLE 3

District 3

Size Distribution of Fish Caught, by Species

1

CONTINUED

CONTINUATION OF
TABLE 3

District 3

Size Distribution of Fish Caught, by Species ¹

(1) Most lengths were reported in even inches. Fractions are included in the even inch below the fraction; for example, a 6 $\frac{1}{2}$ " fish is included in the 6" group. The number of lengths given in fractions was too small to materially affect the total figures.

(2) Includes 3 dogfish, 22 minnows, 1 sheephead, 2 muskellunge, 5 gar, 26 mullet, 28 cisco, 7 carp, and 1 white bass.

	Size in Inches																			Size not given	Total	% of Total Catch	
	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40				
Brook Trout																					4	3009	6.9
Rainbow Trout	2		2	1			1														3	1484	3.4
Brown Trout	1																				20	1544	3.5
Large-Mouthed Bass	1																				59	1450	3.3
Small-Mouthed Bass																					19	513	1.2
Bluegills																					273	15785	36.3
Sunfish																					53	1283	2.9
Perch																					1270	10684	24.6
Walleye	22	6	1	6	7		1		1											3	536	1.2	
Northern Pike	42	9	33	24	15	23	26	1	24	2	3	2	10	1					1	43	399	0.9	
Rock Bass																					565	2766	6.4
Bullhead							1														133	342	0.8
Sucker	2																				53	397	0.9
Crappie																					392	3227	7.4
All Others ⁽²⁾			2	1			1		6					1				1			25	98	0.2
Total	70	15	38	32	22	23	30	1	31	2	3	2	11	1			1	1		2915	43517	99.9	

warm-water lakes, decline. Cisco also increase while Dogfish decline. The area has more diversified fishing than is found further south; it represents, more or less, the transition zone between the southern Michigan and northern Michigan types of waters.

(See Table 3)

District 4. Size of fish—. The fish in this district had an average size of 9.4 inches, considerably larger than fish in the 3 districts to the south. Of the three species of trout, Brown Trout were the largest, Brook Trout the smallest. The average size was identical for the two species of bass. Bluegills, Sunfish, Perch and Rock Bass all averaged between 7 and 8 inches in length. Average sizes of other species include: Walleyes 17.6 inches, Northern Pike 20.6 inches, Bullheads 9.0 inches, Suckers 14.8 inches and Crappies 8.5 inches.

Distribution of species—. Trout represented about 5% of the total catch, Brook Trout were more prominent in the catch than were the other two species combined. Small-mouthed Bass were more common than Large-mouthed Bass; the two species combined represented 3.5% of the total catch. The constant decline in Bluegills with each district northward has reached the point, in this district, where Bluegills no longer dominate the catch; Perch are almost twice as abundant as Bluegills; Rock Bass are almost as common as Bluegills. Sunfish were relatively abundant; they constituted 11.1% of the catch. None of the 11 lake species constituted less than one percent of the total catch. The relative abundance in the catch of the several species is indicated in Table 4. The district had considerable smelt fishing but this fishing was probably concentrated in a very small percentage of the waters.

(See Table 4)

District 5. Size of fish—. The fish in this district had an average size of 10.8 inches, larger than for any of the more southern districts, in fact, larger than for any of the other districts in the state. Unlike trout, figures for Districts 3 and 4, the Rainbow Trout were much larger than the Brown Trout in this area. Brook Trout were the smallest of the trout species. Both species of bass were relatively large. Bluegills and Sunfish had an average size of between 7 and 8 inches. Perch

(1) Most lengths were reported in even inches. Fractions are included in the even inch below the fraction; for example, a 6½" fish is included in the 6" group. The number of lengths given in fractions was too small to materially affect the total figures.

(2) Includes 1 dogfish, 570 smelt, 1 warmouth bass, 6 mullet, and 73. cisco.

TABLE 4
District 4
Size Distribution of Fish
Caught, by Species

	Ave. Size	Size in INCHES																		
		6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21			
Brook Trout	8.2		109	225	96	17	2	11			1	2								
Rainbow Trout	8.9		25	53	43	10	3	4		5		3	1							
Brown Trout	11.3		4	25	13	16	2	9	1	15	9	6								
Large-Mouthed Bass	13.6					5	28	72	13	35	28	21	16	7		2	1			
Small-Mouthed Bass	13.6					19	26	100	18	33	38	36	3	5	1	4				
Bluegills	7.2	268	1327	695	57	4														
Sunfish	7.1	109	1239	263	12	10														
Perch	7.6	67	2227	1863	318	60	36	9												
Walleye	17.6									4	7	49	302	187	22	31	10			
Northern Pike	20.6									2	12	25	47	131	19	422	9			
Rock Bass	7.9	37	721	858	446	43														
Bullhead	9.0		5	69	34	7	1	24	1											
Sucker	14.8						1			93	59	17	2	11						
Crappie	8.5		11	79	57	15					1									
All Others ⁽²⁾	10.2		1	49	124	302	117	23		9	20			3						
Total	9.4	481	5669	4179	1200	508	216	252	33	196	175	159	371	344	42	459	20			

CONTINUED

OF TABLE 4

District 4

Size Distribution of Fish Caught, by Species

(1) Most lengths were reported in even inches. Fractions are included in the even inch below the fraction; for example, a 6½" fish is included in the 6" group. The number of lengths given in fractions was too small to materially affect the total figures.

(2) Includes 1 dogfish, 570 smelt, 1 Warmouth bass, 6 mullet, and 73. cisco.

	Size in Inches																			Size not given	Total	% of Total Catch
	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40			
Brook Trout																				3	466	3.1
Rainbow Trout																				8	155	1.1
Brown Trout	4																				104	0.7
Large-Mouthed Bass																					228	1.5
Small-Mouthed Bass			1																	6	290	2.0
Bluegills																				113	2464	16.6
Sunfish																				15	1648	11.1
Perch																				17	4597	30.9
Walleye	8	4	5																		629	4.2
Northern Pike	221	17	62	11	21	5	7	2	15			1	1	1	1					1	1033	6.9
Rock Bass																				6	2111	14.2
Bullhead																				5	146	1.0
Sucker																				2	185	1.2
Crappie																					163	1.1
All Others ⁽²⁾																				3	651	4.4
Total	233	21	68	11	21	5	7	2	15			1	1	1	1					179	14,670	100.0

and Rock Bass averaged between 8 and 9 inches. Average sizes for other species include: Walleyes 18.5 inches, Northern Pike 21.6 inches, Bullheads 10.0 inches and Suckers 16.5 inches.

Distribution of species—. Almost a fourth of the fish recorded were trout with Brook Trout decidedly more abundant than the other two species. Bluegills represented only 5% of the total catch. Small-mouthed Bass were twice as common as Large-mouthed Bass but both species combined represented only 2.5% of the total catch. Perch represented almost a third of the take. Rock Bass, Walleyes, Northern Pike and Sunfish were all fairly well represented (4.2% - 8.0%). Bullheads and Suckers were not common and Crappies were entirely absent in the catches recorded. Smelt were fairly abundant but were probably caught only in a few waters. It will be noted by comparison with District 1 that fishing differs decidedly in the two extremes of the Lower Peninsula.

(See Table 5)

District 6. Size of fish—. District 6 has relatively few lakes, and fishing in the district is probably limited largely to stream fishing and fishing in the Great Lakes (Huron and Erie) and connecting waters. The District extends from the Ohio border to trout stream areas north of Saginaw Bay. Size of fish as well as distribution probably varies considerably between the upper and lower extremities of the district.

The average size of all fish taken was 9.0 inches. Trout ranged from an average of 8.8 inches for Brook Trout to an average of 12.1 for Brown Trout. Large-mouthed Bass had an average length of 14.8 inches, Small-mouthed Bass averaged 12.1 inches. Sunfish averaged almost 7 inches; Bluegills and Rock Bass averaged slightly over 7 inches; and Bullheads, Crappies and Perch averaged a little over 8 inches. Walleyes averaged slightly larger than Northern Pike (18.7 and 18.0 inches respectively). Suckers had an average length of 12.8 inches.

Distribution of species. District 6 is unique in the prominence of carp in the catch. Because of the similarity in the appearance of the two species some of the "carp" may

(1) Most lengths were reported in even inches. Fractions are included in the even inch below the fraction; for example, a 6½" fish is included in the 6" group. The number of lengths given in fractions was too small to materially affect the total figures.

(2) Includes 3 dogfish, 3 muskellunge, 6 lake trout, 266 smelt and 5 cisco.

TABLE 5
District 5

Size Distribution of
Fish Caught, by Species
Size in inches

	Ave. Size	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Brook Trout	8.5	107	268	146	45	2	11			1	7			2		1			
Rainbow Trout	14.4		9	44	40	36	11	10	2	8	5	25	5	39	9	24	27	19	4
Brown Trout	10.5		1	9	22	5		5	5		4	2							1
Large-Mouthed Bass	15.3							2	1	5	6	7		3		1			
Small-Mouthed Bass	14.4					1		9	8	14	18	3	3	6					
Bluegills	7.9	1	30	122	18														
Sunfish	7.5	8	74	81	3														
Perch	8.6		91	633	300	79	30	73	5										
Walleye	16.5									16	5	30	31	94	5	26	1	45	3
Northern Pike	21.6									2	5	17	1	30	5	35	6	38	11
Rock Bass	8.6	12	83	71	9	93	25												
Bullhead	10.0					2													
Sucker	16.5									2		17		5		2			
Crappie	None																		
All Others (2)	11.4			60					3									2	3
Total	10.8	21	391	1288	538	261	68	113	21	48	50	101	40	179	19	89	36	105	19

Continued

Size Distribution of

(1) Most lengths were reported in even inches. Fractions are included in the even inch below the fraction; for example, a 6 1/2" fish is included in the 6" group. The number of lengths given in fractions was too small to materially affect the total figures.

(2) Includes 3 dogfish, 3 muskellunge, 6 lake trout, 266 smelt and 5 cisco.

	Size ⁿ Inches																	Size not given	Total	% of Total Catch
	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	44			
Brook Trout																		4	590	14.9
Rainbow Trout	1	4	1															12	335	8.5
Brown Trout																			54	1.4
Large-Mouthed Bass																		5	30	0.8
Small-Mouthed Bass																		6	68	1.7
Bluegills																		27	198	5.0
Sunfish																			166	4.2
Perch																		85	1296	32.8
Walleye	1	5		1														25	288	7.3
Northern Pike	14	2	9	3	25		2			1		1					22	229	5.8	
Rock Bass																		62	355	8.0
Bullhead																		30	32	0.8
Sucker																			26	0.7
Crappie																				
All Others (2)	1		2			3	3						1				1	207	283	7.2
Total	17	11	12	4	25	3	2			1		1	1				1	485	3950	99.1

have been Goldfish. Trout constituted ^{about} and 7% of the catch. They were probably most caught in the northern counties of the area. A fourth of the fish were Bluegills. Large-mouthed Bass were much more common than Small-mouthed Bass. Bullheads were more prominent than in other districts. Crappies represented a tenth of the catch. The relative abundance of the various species is shown in Table 6.

(See Table 6)

District 7. Size of fish—. Data for this district were so few that the tabulations are probably not reliable. Brook Trout averaged 9.1 inches long, Large-mouthed Bass 14.4 inches and Small-mouthed Bass 13.7 inches. Perch had an average length of 8.4 inches, Walleyes 16.8 inches and Northern Pike 21.8 inches. The fish, as a whole, had an average size of 10.5 inches.

Distribution of species—. In contrast with the more southern areas, trout dominated the catch. Over half of the fish recorded were Brook Trout. A fifth of the fish were Perch. Small-mouthed Bass represented 15.7% of the catch and were decidedly more abundant than Large-mouthed Bass. Walleyes were more common than Northern Pike; the two species comprised about 7% of the fish caught. Bluegills, Sunfish, Rock Bass, Bullheads, Suckers and Crappies were not represented.

(See Table 7)

District 8. Size of Fish—. The fish in this district had an average size of 10.2 inches. Brook Trout were, on the average, almost 9 inches long; Brown Trout averaged 10 inches, and Rainbows almost 10 1/2 inches; Large-mouthed Bass had an average size of 13.4 inches; Small-mouthed Bass had an average size of 12.4 inches. Bluegills, Sunfish and Rock Bass all averaged between 7 and 8 inches; Perch and Bullheads averaged between 8 and 9 inches. Averages for other species include: Walleyes 17.8 inches, Northern Pike 19.9 inches, Suckers 12.4 inches and Lake Trout 15.1 inches.

Distribution of species—. Trout again comprised over half of the catch. Most of the trout taken were Brook Trout. Lake Trout comprised a significant percentage

(1) Most lengths were reported in even inches. Fractions are included in the even inch below the fraction; for example, a 6½" fish is included in the 6" group. The number of lengths given in fractions was too small to materially affect the total figures.

(2) 30 of the 51 were 5" long.

(3) Includes 8 mullet, 711 carp, 15 sheephead and 10 goldfish.

TABLE 6
District 6
Size Distribution of (1)
Fish Caught, by Species

	S i z e . i n .														Size not given	Total	% of Total Catch	
	24	25	26	27	28	29	30	31	32	33	34	35	36	37				38
Brook Trout																	301	6.3
Rainbow Trout																	19	0.4
Brown Trout																	11	0.2
Large-Mouthed Bass																	216	4.5
Small-Mouthed Bass																1	55	1.2
Bluegills																12	1157	24.2
Sunfish																8	117	2.5
Perch																35	468	9.8
Walleye																	3	0.1
Northern Pike		1			4					1	1					1	122	2.6
Rock Bass																12	275	5.8
Bullhead (2)																71	708	14.8
Sucker																8	82	1.7
Crappie																4	494	10.4
All Others (3)		2			3											128	744	15.6
Total		3			7					1	1					280	4772	100.1

(CONTINUED)

(1) Most lengths were reported in even inches. Fractions are included in the even inch below the fraction; for example, a 6½" fish is included in the 6" group. The number of lengths given in fractions was too small to materially affect the total figures.

CONTINUATION
OF TABLE 6
District 6
Size Distribution of

(2) 30 of the 51 were 5" long.

(3) Includes 8 mullet, 711 carp, 15 sheephead and 10 goldfish.

Fish Caught, by Species
Size in

	Ave. Size	Inches																	
		6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Brook Trout	8.8		8	117	114	57	5												
Rainbow Trout	10.7		1	1	7	2	2	1	2	1		2							
Brown Trout	12.1				4		2	3					1					1	
Large-Mouthed Bass	14.8					1	7	25	11	32	36	54	26	21		2	1		
Small-Mouthed Bass	12.1					3	18	21	7	1	2		1						1
Bluegills	7.2	209	525	346	65														
Sunfish	6.9	18	79	12															
Perch	8.3	23	77	178	74	81													
Walleye	18.7													2		1			
Northern Pike	18.0									5	9	31	22	16	16	8	1	6	
Rock Bass	7.2	26	168	57	12														
Bullhead (2)	8.2	51	118	222	157	82		1		1	4			1					
Sucker	12.8			3		8	9	11	16	10	14			3					
Crappie	8.1	30	155	138	110	44	1	12											
All Others (3)	10.9	28	128	122	66	30	29	14	31	17	50	18	12	22	12	22		7	3
Total	9.0	385	1259	1196	609	308	73	88	67	67	115	105	62	65	28	33	2	14	4

TABLE 7

District 7

Size Distribution of
BY SPECIES

Fish Caught

Size in
Inches

	Ave. Size	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Brook Trout	9.1		21	145	71	100	31		3	9	1											
Rainbow Trout																						
Brown Trout	11.0						1															
Large-Mouthed Bass	14.4					1				3	10											
Small-Mouthed Bass	13.7							25	10	61	5	9										
Bluegills																						
Sunfish																						
Perch	8.4		8	45	54																	
Walleye	16.8											13	19	7								
Northern Pike	21.8											1	3							5		
Rock Bass																						
Bullhead																						
Sucker																						
Crappie																						
All Others																						
Total	10.5		29	193	124	101	32	25	13	73	16	23	18	10							5	

CONTINUED

CONTINUATION

OF TABLE 7

District 7

Size Distribution of
By SPECIES

Fish Caught

Size in Inches

	27	28	29	30	31	32	33	34	35	36	37	38		Size not given	Total	% of Total Catch
Brook Trout														9	390	55.6
Rainbow Trout														1	1	0.1
Brown Trout															1	0.1
Large-Mouthed Bass															14	2.0
Small-Mouthed Bass															110	15.7
Bluegills																
Sunfish																
Perch														25	135	19.3
Walleye															39	5.6
Northern Pike	1														9	1.3
Rock Bass																
Bullhead																
Sucker																
Crappie																
All Others																
Total														35	699	99.9

(2.6%) of the total catch. The catch of other species ranged from 0.7% Bullheads to 9.3% Perch. No catches of Crappies were recorded. Data for each species are given in Table 8.

(See Table 8)

Summary

Size of fish. Average size of all fish taken and the size distribution irrespective of species are shown in table 9. If the data are representative the average-size of fish caught in Michigan was 8.7 inches. The most common size group was the 7 inch group, followed (in order of abundance) by the 8 inch, 9 inch and 6 inch groups. If the data are representative, 83.5% of the fish caught are under 10 inches long, 12.7% were over a foot long.

In general, the average size tended to increase with each district northward. The fish caught in the Upper Peninsula were, in general, larger than the fish caught in the Lower Peninsula.

A fair estimate of the relative fishing would involve a consideration of the average size, the catch per hour and the species caught. Figures on the weight of fish in each size class are not available but data on average length and catch per hour were determined. Data tabulated on the basis of number of inches per hour, irrespective of species caught, indicate that fishing was best in District 7 when only length and catch per hour are considered.

The data are:

<u>District</u>	<u>Catch per Hour</u>	<u>Ave. Size of Fish Caught</u>	<u>Inches of Fish per Hour</u>
1	2.3	7.8	17.9
2	1.6	8.5	13.6
3	1.7	8.2	13.9
4	1.3	9.4	12.2
5	1.5	10.8	16.2
6	1.3	9.0	11.7
7	1.8	10.5	18.9
8	1.1	10.2	11.2

(1) Most lengths were reported in even inches. Fractions are included in the even inch below the fraction; for example, a 6½" fish is included in the 6" group. The number of lengths given in fractions was too small to materially affect the total figures.

TABLE 8
District 8

(2) Includes 3 mullet, 1 cisco and 19 whitefish.

Size Distribution of Fish Caught, by Species

	Ave. Size	Size in Inches																
		6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
Brook Trout	8.9		176	1027	945	377	133	75	19	7	2	1		1	15	5		
Rainbow Trout	10.4		10	50	5	10	2	18		9	3	9	2	1		2		
Brown Trout	10.0					6												
Large-Mouthed Bass	13.4					5	32	39	23	63	20	28	2	1				
Small-Mouthed Bass	12.4					29	76	170	57	24	32	16	3	3		2		
Bluegills	7.5		168	97	5	10												
Sunfish	7.2	15	22	26														
Perch	8.4	10	135	112	131	92		6										
Walleye	17.8									1	41	37	54	39	47	29	8	
Northern Pike	19.9									1	3	27	26	23	9	26	1	
Rock Bass	7.5		43	23	5	8												
Bullhead	8.1		14	16		9												
Sucker	12.4						11	35		9		3		1				
Lake Trout	15.1				2		2	1	10	4	7		1	3	4			
All Others	13.7			1				6	5		6	5						
Total	10.2	25	566	1352	1093	540	256	350	114	118	114	126	88	72	75	64	11	

(1) Most lengths were reported in even inches. Fractions are included in the even inch below the fraction; for example, a 6 $\frac{1}{2}$ " fish is included in the 6" group. The number of lengths given in fractions was too small to materially affect the total figures.

(2) Includes 3 mullet, 1 cisco and 19 whitefish.

(CONTINUATION)

OF TABLE 8

District 8

Size Distribution
Fish Caught, by Species (1)

Size in inches

	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	Size not given	Total	% of Tot. Catch	
Brook Trout																		32	2815	53.6	
Rainbow Trout																			121	2.3	
Brown Trout																			6	0.1	
Large-Mouthed Bass																		5	218	4.2	
Small-Mouthed Bass																		2	414	7.8	
Bluegills																			278	5.3	
Sunfish																			63	1.2	
Perch																		2	488	9.3	
Walleye	5	6	2			1												2	272	5.2	
Northern Pike		3	5	2	5		3	4	10		1								151	2.9	
Rock Bass																			73	1.4	
Bullhead																			39	0.7	
Sucker																		95	154	2.9	
Lake Trout	1		2																100	137	2.6
All Others (2)																			23	0.4	
Total	6	9	9	2	5	1	3	4	10		1							238	5252	99.9	

Data for District 7 were too few to be reliable. Exclusive of District 7, fishing was best in District 1 on the basis of length and probably best in District 5 on the basis of weight, i. e., the most "inches" per hour were taken in District 1, the most pounds per hour in District 5.

(See Table 9)

Distribution of species. The distribution of species is summarized below under each species.

Size Distribution and Relative Abundance of each Species,
by Species.

In this section data from the previous tables were compiled for each of the more common species reported for each district. It should be understood, of course, that for some of the fish several species are included: Crappies include both the White Crappie and the Calico Bass (Black Crappie), Bullheads include all or any of the Black, Brown and Yellow Bullheads, Sunfish probably include only Common Sunfish (pumpkinseed sunfish) since the Green and Long-eared Sunfish seldom reach legal size in Michigan. Suckers, perhaps several species are included.

The average size given for each species for the state as a whole is the un-weighted average, i. e., the total for the average size of the species for each district divided by the number of districts in which the species occurs.

A discussion of each species follows:

Brook Trout. Brook Trout had a relatively uniform average size in each district varying from 8.2 inches in District 4 to 9.1 inches in District 7. If a small average size is an indication of the need of stocking, it might be concluded that Districts 3 and 4 were most in need of stocking. It is realized of course that many factors including food, water temperature and abundance of fish enter into the problem and that a small size alone is not sufficient to indicate stocking needs, in fact, a small size might indicate an over-abundance of fish, in which event stocking would tend only to cause a further decrease in the average size of the fish. The 8 inch group was decidedly the most prominent.

TABLE 9

Summary of Average Size of Fish
Caught in Each District, and in the Entire *State*
Irrespective of Species

District	Ave. Size (inches)	S i z e i n															I n c h	
		6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	7.8	639	5683	1846	552	109	73	102	38	63	40	53	4	24	47	21	1	11
2	8.5	1157	3936	3254	1098	130	64	285	63	339	87	28	42	60	11	99	14	37
3	8.2	3832	14184	13883	3766	1311	636	731	234	427	335	310	101	287	106	134	42	70
4	9.4	481	5669	4179	1200	508	216	252	33	196	175	159	371	344	42	459	20	233
5	10.8	21	391	1288	538	261	68	113	21	48	50	101	40	179	19	89	36	105
6	9.0	385	1259	1196	609	308	73	88	67	67	115	105	62	65	28	33	2	14
7	10.5		29	193	125	101	32	25	13	73	16	22	19	10				
8	10.2	25	566	1352	1093	540	256	350	114	118	114	126	88	72	75	64	11	6
total or e.	8.7	6540	31717	27191	8981	3268	1418	1946	583	1331	932	904	727	1041	328	899	126	476
of total (1)	--	7.3	35.6	30.5	10.1	3.7	1.6	2.2	0.7	1.5	1.0	1.0	0.8	1.2	0.4	1.0	0.1	0.5

(1) Not including fish for which size was not given.

(2) Weighted average; average size (unweighted) for the 8 districts, 9.3 inches.

TABLE 9 - CONTINUED

Summary of Average Size⁰
 Caught in Each District, and in the *Entire State*
Irrespective of Species

District	Ave. Size (inches)	Size in I																				Size not given	Total N ^o of Fish		
		23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	44	45			48	53
1	7.8	1	26	1	2	5	15		1	1	1		1	15			1							158	9534
2	8.5	13	35	14	30	18	13	5	9		8	3	3	1	1		1				1	1	1	175	11036
3	8.2	15	38	32	22	23	30	1	31		2		3	2	11	1		1	1					2915	43517
4	9.4	21	68	11	21	5	7	2	15			1	1	1	1									179	14870
5	10.8	19	17	11	12	4	25	3	2			1		1	1					1				485	3950
6	9.0	4		3			7					1	1											280	4772
7	10.5	5				1																		35	699
8	10.2	9	9	2	5	1	3	4	10		1													238	5252
Total or Ave.	8.7	87	193	74	92	57	100	15	68	1	12	6	9	20	14	1	2	1	1	1	1	1	1	4465	93630
% of Total (1)	--	0.1	0.2	0.1	0.1	0.1	0.1	tr	0.1	tr	tr	tr	tr	tr	tr	tr	tr	tr	tr	tr	tr	tr	tr		

(1) Not includ

(2) Weighted a

Brook Trout varied from 0.4% of the total catch in District 2 (actually perhaps even less in District 1) to over half of the total catch in the Upper Peninsula. Except for a decline in District 4 over District 3, Brook Trout became relatively more abundant in the catch in each district northward. The Brook Trout is decidedly the most important fish in the Upper Peninsula.

A few of the Brook Trout recorded reached a size of 20 inches but only a very small percentage were over a foot long.

The unweighted average indicates that 17.7% of the fish taken are Brook Trout. Since fishing is much more intensive in southern waters where trout are few, the actual percentage is, of course, much less. If the data were representative, 8% of all fish taken in Michigan (weighted average) were Brook Trout. Brook Trout constituted 78.8% of all trout (excluding Lake Trout) caught. The percentage varied from half (49.5%) in District 3 to almost all Brook Trout (99.5%) in District 7.

(See Table 10)

Rainbow Trout. Rainbow Trout varied in size from an average of 14.4 inches in District 5 to 8.6 inches in District 3 (data for District 1 and 2 are too meager to permit use of figures). The average size, unweighted, for all districts except 1, 2 and 7 was 10.6 inches. They varied from a trace of the total catch in District 5 to 8.5% (unweighted average) of the fish caught in Michigan were Rainbow Trout; by weighted average, 2.3% of the total catch were Rainbow Trout, provided the data were representative. They varied from a small fraction of one per cent of the total trout catch in District 7 to over a third of the total trout catch in District 5. It appears that District 5 is the best "Rainbow Trout" district, followed by Districts 3 and 4. The data indicate that the Rainbow Trout is not prominent in the Upper Peninsula.

Only 17% of the trout were over 10 inches long, indicating that most of the fish caught were trout which had not yet migrated into the Great Lakes.

It is generally conceded that this species and the next (Brown Trout) are more tolerant of warm water than are Brook Trout. It might be expected, therefore,

that these two species would be more prominent in the more southern districts. Data for Districts 1 and 2, however, indicate that Rainbow Trout and Brown Trout are much less prominent than Brook Trout in these districts; in fact, over four-fifths of the trout recorded from the two areas were Brook Trout. Streams in the two areas which are cold enough to support trout are probably quite small, perhaps too small to support trout other than Brook Trout.

(See Table 11)

Brown Trout. Brown Trout were the least prominent of the three trout species. They constituted less than one percent of the total catch (unweighted average) 1.9% weighted average); and constituted 9% of the total trout catch. They were most prominent in District 3 where they represented 3.5% of the total catch and 25.6% of the total trout catch. They were rarely taken in the Upper Peninsula.

Brown Trout had an average size of 10.8 inches (unweighted average). The largest were taken in Districts 1 and 6, District 3 produced, by a small margin, the smallest fish.

(See Table 12)

Trout - summary. Trout constituted 20.5% of all fish caught (unweighted average); about 4 of each 5 trout caught were Brook Trout. Despite the large size of spawning or recently spent Rainbow Trout, the Brown Trout caught were of a slightly larger average size. Brook Trout were, of course, smaller than either of the other two. It will be of interest to compare the relative abundance of trout taken from each area with the relative numbers of trout stocked in each area.

Large-mouthed Bass. Large-mouthed Bass varied in abundance from 4.5% of the total catch in District 6 to 0.8% of the total catch in District 5. They represented only 2.9% of the total catch (3.2% weighted average) in Michigan. They had an average length of 14.0 inches. District 6 produced bass of the largest average size, District 3 the smallest. About 16% of the bass were over 15 inches long. If the size limit were raised to 11 inches, 6% of the bass would have been under-sized, if 12 inches, 18% of the bass would have been undersized.

The data verify the common opinion that the Large-mouthed Bass thrive better

TABLE 10

Size and Distribution of Brook Trout, by Districts

Dist.	Av. Size (inches)	Size in Inches														Size not given	Tot.No. of fish	% of Tot. Catch	% of Tot. Trout Catch
		7	8	9	10	11	12	13	14	15	16	17	18	19	20				
1	8.8	9	21	24	20											---	74	0.8	83.0
2	8.5	8	23	13	1	1				2						---	48	0.4	87.3
3	8.3	556	1466	643	201	108	18	7	1	4		1				4	3009	6.9	49.8
4	8.2	109	225	96	17	2	11			1	2					3	466	3.1	64.3
5	8.5	103	268	146	45	2	11		1	7			2		1	4	590	14.9	60.3
6	8.8	8	117	114	57	5										---	301	6.3	90.9
7	9.1	21	145	71	100	31		3	9	1						9	390	55.8	99.5
8	8.9	176	1027	945	377	133	75	19	7	2	1		1	15	5	32	2815	53.6	95.7
Tot. or Ave.	8.6*	990	3292	2052	818	282	115	29	18	17	3	1	3	15	6	52	7693	17.7*	78.8*

* Unweighted averages

TABLE 11

Size and Distribution of Rainbow Trout, by Districts

Dist.	Av. Size (inches)	S i z e i n I n c h e s																				Size not given	Tot. No. of fish	% of Tot. Catch	% of Tot. Trout Catch	
		7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26					28
1	8.0		1																			---	1	Trace	1.1	
2	8.3	1		2																		---	3	Trace	5.5	
3	8.6	228	702	303	158	41	16	8	4	2	1	3	2	2		5	2		2	1		1	3	1484	3.4	24.6
4	8.9	25	53	43	10	3	4		5		3	1											8	155	1.1	21.4
5	14.4	9	44	40	36	11	10	2	8	5	25	5	39	9	24	27	19	4	1	4	1		12	335	8.5	34.2
6	10.7	1	1	7	2	2	1	2	1		2												---	19	0.4	5.7
7																							1	1	0.1	0.2
8	10.4	10	50	5	10	2	18		9	3	9	2	1		2								---	121	2.3	4.1
Tot. or Ave.	10.2*	274	851	400	216	59	49	12	27	10	40	11	42	11	26	32	21	4	3	5	1	1	24	2119	2.0*	12.1*

* Unweighted. Districts 1 and 2 not considered in determining average size.

TABLE 12

Size and Distribution of Brown Trout, by Districts

S i z e i n I n c h e s

Dist.	Av. Size (inches)	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Size not given	Tot.No of fish	% of Tot. Catch	% of Tot. Trout Catch
1	12.4					7		1	6										--	14	0.1	15.7
2	9.5		1	2			1												--	4	Trace	7.3
3	9.4	120	452	363	256	137	124	25	20	6	7	3	7	1	2		1		20	1544	3.5	25.6
4	11.3	4	25	13	16	2	9	1	15	9	6						4		--	104	0.7	14.3
5	10.5	1	9	22	5		5	5		4	2							1	--	54	1.4	5.5
6	12.1			4		2	3					1					1		--	11	0.2	3.3
7	11.0					1													--	1	0.1	0.2
8	10.0				6														--	6	0.1	0.2
Tot. or Ave.	10.8*	125	487	404	283	149	142	32	41	19	15	4	7	1	2		6	1	20	1738	0.8*	9.0*

* Unweighted average.

in warmer water than does the Small-mouthed, and that it is more or less closely associated with the Bluegill. In District 1, 91% of the bass were Large-mouthed Bass. In District 5 only 31% were Large-mouthed. The Small-mouthed Bass gradually replaces the Large-mouthed Bass as a lake species from southern Michigan to the north. In the Upper Peninsula Small-mouthed Bass are decidedly the dominant species of the two. For the state as a whole, Large-mouthed Bass are, according to the figures (weighted average) about twice as abundant as Small-mouthed Bass. The two species constitute 5% (weighted average) of the total fish catch.

(See Table 13)

Small-mouthed Bass. Small-mouthed Bass represented 1.7% of the total catch, weighted average; 3.8% unweighted average. They had an average length of 13.0 inches, an inch shorter than Large-mouthed Bass. The species was quite significant in the total fish catch in the Upper Peninsula. As the Large-mouthed Bass is associated primarily with the Bluegill, so the Small-mouthed Bass is associated primarily with the Yellow Perch.

(See Table 14)

Bluegill. The Bluegill is undoubtedly the most important fish in Michigan; over a third of all fish caught in the state (37%, weighted average) were of this species. It varied from 84.3% of the total catch in District 1 to 5% of the total catch in District 5 (none reported for District 7). It represented 91% of the pan-fish catch in District 1, 10% of the pan-fish in District 5. It became increasingly less abundant northward, in the Lower Peninsula until it was almost entirely replaced by Perch in the upper several tiers of counties (District 5). Bluegills averaged between 7 and 8 inches long in each district; 7.4 inches was average length for the state.

(See Table 15)

Sunfish. It is quite possible that some of the fish listed as Sunfish were actually Bluegills. The Sunfish was the smallest fish caught (ave. length 7.1 inches). It represented 5% of the total pan-fish catch, 3.2% of the total fish catch (both unweighted averages). Sunfish were most prominent in District 4.

(See Table 16)

TABLE 13

Size and Distribution of Large-Mouthed Bass, by Districts

S i z e i n I n c h e s

Dist.	Av. Size (inches)	10	11	12	13	14	15	16	17	18	19	20	21	22	Size not given	Tot.No of fish	% of Tot. Catch	% of Tot. Bass Catch
1	14.1	11	31	70	34	52	23	40	2		45				4	312	3.3	91
2	13.3	11	52	109	33	113	30	15	18	7	1	3	4		1	397	3.6	90
3	12.9	142	179	412	140	248	140	57	32	19	8	12	1	1	59	1450	3.3	74
4	13.6	5	28	72	13	35	28	21	16	7		2	1		---	228	1.5	44
5	15.3			2	1	5	6	7		3		1			5	30	0.8	31
6	14.8	1	7	25	11	32	36	54	26	21		2	1		---	216	4.5	80
7	14.4	1				3	10								---	14	2.0	11
8	13.4	5	32	39	23	63	20	28	2	1					5	218	4.2	34
Total	14.0*	176	329	729	255	551	293	222	96	58	54	20	7	1	74	2865	2.9*	57*

* Unweighted average.

TABLE 14

Size and Distribution of Small-Mouthed Bass, by Districts

Dist.	Av. size (inches)	S i z e i n I n c h e s																Size not given	Tot. no of fish	% of Tot. Catch	% of Tot. Bass Catch
		10	11	12	13	14	15	16	17	18	19	20	21	22	23	24					
1	12.3	3	11	9	3	2		1		1		1					--	31	0.3	9	
2	12.7	2	5	21	9	1	5		2	1							--	46	0.4	10	
3	13.2	30	102	96	39	82	88	28	8	19	1		1				19	513	1.2	26	
4	13.6	19	26	100	18	33	38	36	3	5	1	4				1	6	290	2.0	56	
5	14.4	1		9	8	14	18	3	3	6							6	68	1.7	69	
6	12.1	3	18	21	7	1	2		1							1	1	55	1.2	20	
7	13.7			25	10	61	5	9									--	110	15.7	89	
8	12.4	29	76	170	57	24	32	16	3	3		2					2	414	7.8	66	
Total	13.0 [*]	87	238	451	151	218	188	93	20	35	2	7	1			1	1	34	1527	3.8 [*]	43 [*]

* Unweighted average

1.7 weighted ave.

TABLE 15

Size and Distribution of Bluegills, by Districts

Dist.	Av. size (inches)	S i z e i n I n c h e s									Size not given	Tot. No. of fish	% of Tot. Catch	% of Tot. Panfish Catch *
		6	7	8	9	10	11	12	13					
1	7.2	603	5403	1576	349	4	4				100	8039	84.3	91
2.	7.3	851	3281	2248	291				2		91	6764	61.3	70
3	7.4	1661	6725	5870	1030	214			12		273	15785	36.3	47
4	7.2	268	1327	695	57	4					113	2464	16.6	22
5	7.9	1	30	122	18						27	198	5.0	10
6	7.2	209	525	346	65						12	1157	24.2	46
7	None													
8	7.5		166	97	5	10					--	278	5.3	31
Total	7.4 **	3593	17457	10954	1815	232	4	12	2		616	34685	29.1 **	40 **

* Bluegill, Perch, Rock Bass, Sunfish & Crappie

** Unweighted average.

TABLE 16

Size and Distribution of Sunfish, by Districts

Dist.	Av. size (inches)	S i z e i n I n c h e s							Size not given	Total no. of fish	% of Total Catch	% of Tot. Panfish Catch *
		6	7	8	9	10						
1	7.3	12	36	31	1			8	88	0.9	1	
2	6.6	147	96	12	4	5		40	304	2.8	3	
3	6.9	314	779	95	41	1		53	1283	2.9	4	
4	7.1	109	1239	263	12	10		15	1648	11.1	15	
5	7.5	8	74	81	3			--	166	4.2	8	
6	6.9	18	79	12				8	117	2.5	5	
7	None											
8	7.2	15	22	26				--	63	1.2	7*	
Total	7.1**	623	2325	520	61	16		124	3669	3.2**	5**	

* Bluegills, Perch, Rock Bass, Sunfish and Crappie

** Unweighted average.

Perch. The Perch is the second most prominent lake fish in Michigan, being exceeded only by the Bluegill. One fifth of all fish taken were Perch. The species is undoubtedly the most important lake fish in northern Michigan, replacing the Bluegill more and more with increase in latitude. Average size ranged from 7.5 inches in District 3 to 8.6 inches in District 5. It represented 4.8% of the total catch in District 1 and 32.8% of the total catch in District 5.

(See Table 17)

Rock Bass. Rock Bass became increasingly abundant in the Lower Peninsula with increasing latitude (except in District 5). The species is apparently rather closely associated with the Perch. Rock Bass varied from 14.2% of the total catch in District 4 to less than one percent in District 1. The average length varied from 6.8 inches in District 3 to 8.6 inches in District 5.

(See Table 18)

Crappies. Crappies were prominent in the catch in the lower 4 districts only (1, 2, 3 and 6). The average size was almost identical in each district (8.1 inches to 8.5 inches).

(See Table 19)

Pan-fish. The five above mentioned species of pan-fish represent 73% of all fish recorded. Despite the prominent position given to ~~game~~, ~~(the)~~ fish by fishermen and others, pan-fish are apparently the most important group of fish in Michigan.

Walleyes. This species becomes increasingly more abundant in the Lower Peninsula with increase in latitude. It represents between 5% and 6% of the total catch in the Upper Peninsula. Average size of Walleyes varied from 16.8 inches in District 7 to 21.5 inches in District 2. Walleyes represent almost 2% of the total catch.

(See Table 20)

Northern Pike. This species was best represented in the upper part of the Lower Peninsula (Districts 4 and 5). They varied in average size from 18 inches in District 6 to 23.6 inches in District 2. About 2% were over 30 inches long. The 20-inch group was best represented. The pike represented between 2 and 3% of the total catch in Michigan (weighted average). For the state as a whole Northern Pike were taken a little more often than Walleyes (2277 Northern Pike, 1,792 Walleyes).

TABLE 17

Size and Distribution of Perch, by Districts

S i z e i n I n c h e s

Dist.	Av. size (inches)	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Size not given	Tot.No. of fish	% of Total Catch	% of Tot. Panfish Catch ^(*)
1	8.3	11	221	101	142	20	12	7		1						43	458	4.8	5
2	7.8	86	261	378	155	27	3	15								5	930	8.4	10
3	7.5	853	4217	3864	273	166	8	23	1	2				4	3	1270	10684	24.6	32
4	7.6	67	2227	1863	318	60	36	9								17	4597	30.9	42
5	8.6		91	633	300	79	30	73	5							85	1296	32.8	65
6	8.3	23	77	178	74	81										35	468	9.8	19
7	8.4		8	48	54											25	135	19.3	100
8	8.4	10	135	112	131	92		6								2	488	9.3	54
Total	8.1 ^{**}	1050	7137	7177	1447	525	89	133	6	3				4	3	1482	19056	17.5 ^{**}	41 ^{**}

^{*} Bluegills, Perch, Rock Bass, Sunfish and Crappies

^{**} Unweighted average.

TABLE 18

Size and Distribution of Rock Bass, by Districts

S i z e i n I n c h e s

Dist.	Av. size (inches)	6	7	8	9	10	11		Size not given	Tot. No. of fish	% of Total Catch	% of Tot. Panfish Catch *
1	7.7		26	20	5		1		1	53	0.6	1
2	7.8	41	35	34	51	16	2		--	179	1.6	2
3	6.8	892	1019	220	57	13			565	2766	6.4	8
4	7.9	37	721	858	446	43			6	2111	14.2	19
5	8.6	12	83	71	9	93	25		62	355	8.0	18
6	7.2	26	168	57	12				12	275	5.8	11
7	None											
8	7.5		43	23	5	2			--	73	1.4	8
Total	7.6 **	1008	2095	1283	585	167	28		646	5812	4.7 **	8 **

* Bluegills, Perch, Rock Bass, Sunfish and Crappies

** Unweighted average

TABLE 19

Size and Distribution of Crappies, by Districts

S i z e i n I n c h e s

Dist.	Av. Size (inches)	6	7	8	9	10	11	12	13	15	Size not given	Tot. No. of fish	% of Total Catch	% of Tot. Panfish Catch *
1	8.1		84	93	27	30	6				2	242	2.5	3
2	8.3	7	246	550	578	57	1	5	1		1	1446	13.1	15
3	8.2	108	513	1072	1032	109	1				392	3227	7.4	10
4	8.5		11	79	57	15				1	--	163	1.1	2
5	None													
6	8.1	30	155	138	110	44	1	12			4	494	10.4	20
7	None													
8	None													
Total	8.2 **	145	1009	1932	1804	255	9	17	1	1	399	5572	4.3 **	6 **

* Bluegills, Perch, Rock Bass, Sunfish and Crappies

** Unweighted average

TABLE 20

Size and Distribution of Walleyes, by Districts

Dist.	Av. Size (inches)	S i z e i n I n c h e s																				Size not givn	Tot.No of fish	% of Tot. Ctch	% of total Pike Cth
		14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33				
1		None																							
2	21.5				1			11		11				1							1	--	25	0.2	9
3	18.0	30	51	91	28	144	57	66	22	22	6	1	6	7		1		1				3	536	1.2	57
4	17.6	4	7	49	302	187	22	31	10	8	4	5										--	629	4.2	38
5	18.5	16	5	30	31	94	5	26	1	45	3	1	5		1							25	288	7.3	56
6	18.7					2		1														--	3	0.1	2
7	16.8			13	19	7																--	39	5.6	81
8	17.8	1	41	37	54	39	4	7	29	8	5	6	2		1							2	272	5.2	1
Tot.	18.4 ^{**}	51	104	220	435	473	131	164	41	91	19	9	11	8	2	1		1			1	30	1792	3.0 ^{**}	30.0 ^{**}

* Walleyes and Northern Pike only

** Unweighted average

In 5 of the 8 districts Northern Pike were more common than Walleyes; in Districts 3, 5 and 7 the Walleyes predominated.

Suckers. A little more than 1% of the records were for suckers. The fish varied in average length from 12.4 inches in District 8 to 15.5 inches in District 3.

They were most commonly taken in District 2.

(See Table 21)

Bullheads. The table for Bullheads (Table 22) includes also data for the few catfish which may have been caught. The large size of some of the fish indicates that they were actually catfish rather than Bullheads. The fish were prominent in the catch in District 6 but were relatively uncommonly taken elsewhere.

(See Table 22)

taken but none were especially common. These

Other Species. A number of other species were included: 10 Dogfish, 12 minnows, 15 Gar, 2 Warmouth Bass, 1 Cisco and 38 Carp in District 1; 28 Dogfish, 1 Sheepshead, 1 Muskellunge, 10 Gar, 21 Mullet and 56 Carp in District 2; 3 Dogfish, 22 minnows, 1 Sheepshead, 2 Muskellunge, 8 Gar, 26 Mullet, 28 Cisco, 7 Carp and 1 White Bass in District 3; 1 Dogfish, 570 Smelt, 1 Warmouth Bass (?), 6 Mullet and 73 Cisco in District 4; 3 Dogfish, 3 Muskellunge, 6 Lake Trout, 266 Smelt and 5 Cisco in District 5; 8 Mullet, 711 Carp, 15 Sheepshead and 10 Goldfish in District 6; and 137 Lake Trout, 3 Mullet, 1 Cisco and 19 Whitefish in District 8.

General Discussion. It will be noted that, in general, southern Michigan lakes and northern Michigan lakes differ decidedly in the species of fish present. Some southern lakes are "northern" in character and some northern lakes are relatively "southern" in character but, in general, southern Michigan lakes have Bluegills, Large-mouthed Bass, Calico Bass and Bullheads as characteristic fish, while northern Michigan lakes have Perch, Small-mouthed Bass, Pike and Rock Bass as the characteristic fish. As a fish becomes less abundant (with changes in latitude) another competing species replaces it. This is strikingly illustrated in the data for Bluegills and Perch and for the two black basses. Whether it is desirable to stock Perch in the southern "Bluegill" lakes or Bluegills in the northern "Perch" lakes is highly problematical; whether such stocking will noticeably alter the relative abundance

CONTINUATION

OF TABLE 21

Size and Distribution of Northern Pike, by Districts

Dist.	Av. Size (inches)	Size in Inches									Size not given	Tot. No. of fish	% of Total Catch	% of Tot. Pike Catch ✓
		32	33	34	35	36	37	38	40	48				
1	22.5	41		1				1			--	72	0.8	100
2	23.6	7	2	3	1	1		1		1	1	262	2.4	91
3	23.1	2		3	2	10	1		1		43	399	0.9	43
4	20.6		1	1	1	1					1	1033	6.9	62
5	21.6		1		1						22	229	5.8	44
6	18.0		1	1							1	122	2.6	98
7	21.8										--	9	1.3	19
8	19.9	1									--	151	2.9	99
Tot.	21.4 **	11	5	9	5	12	1	2	1	1	68	2277	3.0 **	70 **

* Walleyes and Northern Pike only

** Unweighted average.

TABLE 21

Size and Distribution of Suckers, by Districts

S i z e i n I n c h e s

Dist.	Av. Size (inches)	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	Size not given	Tot. No. of fish	% of Total Catch
1	14.7					12		2	9	6	2	6					--	37	0.4
2	13.4					126	18	223	27	4		2					18	418	3.8
3	15.5			8	59		8	24	38	93	19	56	28	3	6	2	53	397	0.9
4	14.8				1			93	59	17	2	11					2	185	1.2
5	16.5							2		17		5		2			--	26	0.7
6	12.8	3		8	9	11	16	10	14			3					8	82	1.7
7	None																		
8	12.4				11	35		9		3		1					95	154	2.9
Total	14.3*	3		16	80	184	42	363	147	140	23	84	28	5	6	2	176	1299	1.4*

* Unweighted average

TABLE 22

Size and Distribution of Bullheads, by Districts

S i z e i n I n c h e s

Dist.	Av. Size (inches)	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	28	Size not given	Tot. No. of fish	% of Total Catch
1	9.7		2	3	4	12	1	4											--	26	1.2
2	10.7	25	8	8	2	11		4		2	2	2		19			1		9	93	0.8
3	8.4	4	20	142	24	13		3					1			1		1	133	342	0.8
4	9.0		5	69	34	7	1	24	1										5	146	1.0
5	10.0					2													30	32	0.8
6	8.2	51	118	222	157	82		1		1	4			1					71	708	14.8
7	None																				
8	8.1		14	16		9													--	39	0.7
Total	9.2*	80	167	460	221	136	2	36	1	3	6	2	1	20		1	1	1	248	1386	2.9*

* Unweighted average.

of the species is even more questionable. A species cannot be expected to do well near the edge of its natural range. Natural habitats and natural ranges for the species should be considered in stocking programs. Planting Perch in southern Bluegill lakes and Bluegills in northern Perch lakes is possibly roughly equivalent to stocking snow-shoe hares in the southern part of the state and pheasants in the northern part. With fish there is one difference, the species might survive but fail to attain any reasonable length, or it might grow very slowly. Therefore, where the game would probably merely die out the fish might become a definite nuisance.

Part III. Part III of this report, dealing primarily with changes in the catch from month to month, with relation to species and catch per hour, will follow in the near future.

INSTITUTE FOR FISHERIES RESEARCH

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