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Part 4

REPORT ON GENERAL CENSUS, 1935

MONTHLY VARIATIONS IN THE CATCH, NON-TROUT WATERS

This section of the report is primarily an analysis of fishing, in non-trout waters, by months. It is rather well known that a species is more readily caught at some periods than at others but an analysis of fishing at various months has not heretofore been available except on a few individual waters.

A knowledge of the catch at various seasons is not only of interest to fishermen but is essential in determining the most desirable period for a closed season. There is reason to believe that as one species increases in number, another competing species decreases in number. It is perhaps possible by a regulation of the open season and by establishment of suitable bag limits, as well as by intelligent methods of lake improvement, to favor the more desired of several competing species by encouraging the removal of the less desirable one. For example, Small-mouthed Bass would probably be favored by lessening the restrictions on winter fishing (increasing the removal of Northern Pike); Pike would probably be favored by lessening the restrictions on summer fishing and increasing restrictions on winter fishing, since the one competitor (bass) is taken in summer, the other (pike) constitutes a considerable percentage of the winter catch.

For this report only the fish taken in non-trout waters were considered; the limited data for some months were not included, and the records on which the month was not listed were naturally excluded. The catch per hour and per cent of the total catch as summarized for each district here may vary slightly from figures given for these data in earlier sections of the report, because of this difference in the use of the material.

Winter fishing covered by the census should probably be considered as the exceptional fishing and as representative of relatively few waters rather than on non-trout waters as a whole. Winter fishing is concentrated on certain waters and officers are naturally attracted to these lakes. It is obviously impossible to obtain winter fishing records on lakes where there is no winter fishing. It should be remembered that these data are of significance qualitatively but not quantitatively; a good per hour catch in winter for a district does not necessarily indicate that the lakes are heavily fished at that season, nor does a large total catch of one species in any month indicate fishing is best then for that species. However, the relative proportion of bluegills to bass in the catch each month has significance. For a more thorough consideration of winter fishing as compared with summer fishing, Report No. 379 should be consulted.

Data by Districts

The hours of fishing recorded, the number of fish caught in these hours and the catch per hour for all fish, and the number and per cent of the total catch for each species are listed by months and by districts in Table 1. A map indicating the location of each district is included in Part 1 of the report. Data, by districts, are discussed briefly below:

District 1. In terms of catch per hour fishing was best in February and poorest in March.

Large-mouthed Bass were best represented in the catch in June, Small-mouthed Bass in August. These species are not legally taken in winter, so the few bass listed for winter were obviously returned to the lakes. There seems to be a natural protection, as well as a legal one, for these fish in winter. It appears that relatively few are caught at that season. The limited data for this and other districts suggest that of the few bass caught in winter a majority are Large-mouthed Bass. It is possible that the large percentage of Large-mouthed Bass in the June catch is due, in part, to their spawning soon before the opening of the season. Perhaps after having guarded the nests the males feed more actively for a period.

Bluegills invariably dominated the catch (except in May when they were protected and when records were very few). The percentage of this species in the catch was higher in winter than in summer. The best Bluegill fishing in summer was in July when this species constituted 81% of the total catch and when the catch per hour (2.2) for summer fishing was highest.

Sunfish were seldom taken in winter and were a relatively insignificant part of the summer catch. If, in time, the rather intensive Bluegill fishing on some of these waters should decidedly reduce the relative abundance of Bluegills, it might be expected that the (competing) Sunfish would increase in the population and in the catch.

Perch were most readily taken in February in winter and in June in summer. At the height of the summer fishing they were poorly represented in the catch.

Walleyes were not represented. Few Northern Pike were reported; they were best taken in January and in August. Rock Bass were best taken in March and June (data for May excluded), but were never well represented in the catch. Suckers were best taken in March, but the data were probably not representative with regard to this species - in proportion the most Suckers were probably taken in April. Crappies were best caught in July and in January.

District 2. Fishing in terms of catch per hour was best in February, June, and July, but was relatively uniform from month to month.

Neither species of bass was reported caught in winter. In summer the Large-mouthed Bass were decidedly more abundant in the June catch than in later months, perhaps for reasons suggested in the discussion under District 1 above. Few Small-mouthed Bass were reported; they were taken a little more readily in June and August than in July.

The Bluegills increased in the winter catch each month, in this respect, differing decidedly from the Crappies which decreased as the Bluegills increased. In summer the Bluegill catch again increased each month, while, except for the June data, the Crappies again tended to decrease in the catch each month. Since this relationship is not found in some of the other districts, it is probably not significant.

Sunfish were best taken in June and July. Perch were most readily taken in

January. They were least represented in the summer catch in the hot months (July and August) when fishing intensity was probably greatest.

The Walleyes taken were too few to indicate monthly trends. Northern Pike were best caught in January and May; they were poorly represented in the summer catch. Rock Bass were best represented in May and June. Suckers were best taken in April; they constituted about three-fourths of the catch for that month. This is the only district in which Crappies were taken in relative abundance. Their trend has already been noted.

District 3. Rather extensive data were obtained for this district and it is probable, therefore, that the figures in Table 1 for this area are more representative than data for some other areas. The catch per hour varied from 0.9 in April to 3.7 in March.

Perch decidedly dominated the winter catch. In February they represented 92% of the entire catch. In mid-summer they included a relatively small percentage of the total catch (10% in July and 6% in August).

Both species of bass were best taken in July. Bluegills dominated the summer catch, increasing each month. Sunfish were best taken in July. Walleyes comprised 17% of the April catch; they were poorly represented at all other months. Northern Pike were best taken in January; they were more abundant in the catch in winter than in the summer. May and June were the months when Rock Bass were most represented.

Almost half of the fish recorded in April were Suckers. At other months few were taken. Crappies increased decidedly in February and again in March. They were best taken in May.

District 4. Fishing was more or less uniform from month to month except in September, when it was quite poor. Large-mouthed Bass declined in the catch each month after June, while Small-mouthed Bass were more or less evenly represented for each of the summer months. Bluegills and Sunfish were both primarily summer-caught fish and were best represented in August.

Perch and Northern Pike were best taken in winter or spring; Walleyes were most represented in March, May, and June. Rock Bass included half of the catch in May and

declined each month thereafter. Suckers were taken primarily in winter; Crappies in summer.

District 5. The catch per hour varied from 1.0 fish per hour in January to 2.5 fish per hour in February. The data are based on only 1,473 hours of fishing. The trend was roughly similar to the trend in District 4 except that Walleyes and Northern Pike were much better represented in the summer catch in this area.

District 6. Information on winter fishing was too meager to be of value. The spring catch consisted primarily of Carp, Bullheads and Perch. Bass and Bluegills were best represented in August. This is the only district in which Carp and Bullheads (included in "all others") were abundant in the catch. They dropped decidedly in the summer catch.

District 7. Data for this area were too few to be of value.

District 8. Data for winter fishing were available only for March. Both species of bass were more or less uniformly represented in the catch in summer. Bluegills were best taken in August and September. It cannot be determined whether or not Perch and Pike were best represented in winter, although the limited data for March suggest it. The May catch consisted almost entirely of Walleyes and Northern Pike.

(See Table 1)

Data by Months

A brief summary of the data, by months rather than by districts, is given below. The catch per hour for each month, in each district, has been assembled in Table 2. If the data were representative, the best fishing, in terms of catch per hour, was in February. There was little difference in the average catch for the state as a whole for the three summer months. It should be noted, however, that the data for any month varied decidedly and that during the period when fishing was best in one area it may have been poor in another. It is repeated that the winter fishing indicated on the records was probably the exceptional fishing and that it probably does not give a true picture of winter fishing.

TABLE 1. CATCH PER HOUR OF ALL FISH AND RELATIVE ABUNDANCE OF FISH OF EACH SPECIES, EACH MONTH BY DISTRICTS[1]

Month	Hrs. of fishing recorded	No. of fish caught	Catch per hour	Large-mouthed Bass		Small-mouthed Bass		Bluegills		Sunfish		Perch		Walleye		Northern Pike		Rock Bass		Sucker		Crappie		All Others	
				No.	% of total catch	No.	% of total catch	No.	% of total catch	No.	% of total catch	No.	% of total catch	No.	% of total catch	No.	% of total catch	No.	% of total catch	No.	% of total catch	No.	% of total catch	No.	% of total catch
District 1																									
January	1,315.0	4,100	3.1	6	tr.[2]	...	...	3,837	94	9	tr.	75	2	...	...	41	1	3	tr.	12	tr.	108	3	9	tr.
February	441.6	1,444	3.3	2	tr.	...	...	1,230	85	2	tr.	182	11	...	...	8	1	...	...	8	1	11	1	1	tr.
March	292.7	350	1.2	...	...	...	...	283	81	...	...	22	6	...	...	4	1	9	3	15	4	...	...	17	5
April	57.7	171	3.0	...	...	...	...	171	100	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
May	16.0	42	2.6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	7	...	...	...	...	39	93
June[3]	589.0	906	1.5	134	15	3	tr.	604	67	24	3	93	10	...	...	...	...	22	2	...	...	17	2	9	1
July	818.4	1,801	2.2	80	4	10	1	1,466	81	40	2	71	4	...	...	5	tr.	14	1	...	...	102	6	13	1
August	317.0	555	1.8	54	10	18	3	426	77	13	2	14	3	...	...	7	1	2	tr.	...	...	4	1	17	3
Total	3,847.4	9,369	2.4	276	3	31	tr.	8,017	86	88	1	457	5	...	...	65	1	53	1	35	tr.	242	3	105	1
District 2																									
January	979.9	1,493	1.5	...	...	...	...	492	33	...	...	318	21	7	tr.	115	8	38	3	27	2	478	32	18	1
February	1,018.0	1,747	1.7	...	...	...	...	1,179	67	15	1	177	10	6	tr.	63	4	...	...	9	1	289	17	9	1
March	101.5	158	1.6	...	...	...	...	117	74	...	...	1	tr.	2	1	4	3	...	...	27	17	7	5	...	...
April	386.0	407	1.1	...	...	...	...	...	...	...	...	...	...	...	...	20	5	...	...	302	74	...	...	85	21
May	192.0	155	0.8	...	...	...	...	1	tr.	3	2	2	1	...	...	16	10	29	19	13	8	89	57	2	1
June	989.1	1,559	1.7	239	15	11	1	842	54	96	6	172	11	3	tr.	23	1	48	3	8	1	88	6	29	2
July	1,903.1	3,296	1.7	122	4	14	tr.	2,408	73	157	5	149	5	11	tr.	8	tr.	46	1	...	...	350	11	31	1
August	1,171.6	1,820	1.6	18	1	17	1	1,479	81	40	2	75	4	...	...	8	tr.	11	1	...	...	143	8	29	1
September	102.1	157	1.5	1	tr.	...	...	131	83	2	1	12	8	...	...	...	...	...	...	1	tr.	1	tr.	9	6
Total	6,843.3	10,792	1.6	380	4	42	tr.	6,649	62	313	3	906	8	29	tr.	257	2	172	2	387	4	1,445	13	212	2
District 3																									
January	940.9	1,417	1.5	5	tr.	1	tr.	154	11	...	...	1,075	76	...	...	118	8	...	...	46	3	14	1	4	tr.
February	1,891.5	5,151	2.7	...	...	...	...	10	tr.	1	tr.	4,737	92	11	tr.	86	2	2	tr.	41	1	249	5	14	tr.
March	436.9	1,599	3.7	...	...	...	...	112	7	...	...	1,185	74	...	...	11	1	...	...	18	1	237	15	36	2
April	517.9	478	0.9	5	1	6	1	148	31	...	...	6	1	83	17	11	2	...	...	214	45	...	...	5	1
May	1,066.1	1,725	1.6	16	1	...	...	...	...	...	...	260	15	23	1	14	1	637	37	26	2	665	39	84	5
June	3,941.8	9,721	2.5	448	5	119	1	4,004	41	255	3	1,906	20	136	1	55	1	1,556	16	...	...	1,068	11	174	2
July	4,702.0	10,163	2.2	782	8	275	3	6,188	61	702	7	1,066	10	237	2	35	tr.	444	4	2	tr.	360	4	72	1
August	1,983.2	4,626	2.3	164	4	79	2	3,169	69	168	4	294	6	11	tr.	40	1	70	2	...	...	588	13	43	1
September	959.1	2,025	2.1	25	1	30	1	1,685	83	111	5	121	6	2	tr.	23	1	2	tr.	4	tr.	7	tr.	15	1
Total	16,439.4	36,905	2.2	1,445	4	510	1	15,470	42	1,237	3	10,650	29	503	1	393	1	2,711	7	351	1	3,188	9	447	1
District 4																									
January	914.3	1,266	1.4	...	...	...	...	...	...	...	...	973	77	22	2	167	13	...	...	5	tr.	...	...	99	8
February	1,250.8	2,317	1.8	3	tr.	...	...	...	...	...	...	1,519	66	58	3	156	7	2	tr.	147	6	...	...	432	19
March	759.5	1,141	1.5	...	...	...	...	150	13	40	4	595	52	89	8	167	15	...	...	...	...	...	...	100	9
May	784.7	996	1.3	...	...	...	...	...	...	1	tr.	83	8	155	16	208	21	520	52	7	1	4	tr.	18	2
June	1,413.4	2,107	1.5	122	6	85	4	495	23	292	14	221	10	161	8	173	8	481	23	...	...	19	1	58	3
July	1,908.0	3,035	1.6	61	2	121	4	659	22	564	17	653	21	110	4	69	2	645	21	...	...	130	4	23	1
August	1,692.5	2,510	1.5	36	1	80	3	838	33	651	26	384	15	48	2	20	1	407	16	...	...	8	tr.	38	2
September	489.0	187	0.4	...	...	7	4	23	12	32	17	85	45	7	4	4	2	28	15	...	...	...	...	1	1
Total	9,212.2	13,559	1.5	222	2	293	2	2,165	16	1,580	12	4,513	33	650	5	964	7	2,083	15	159	1	161	1	769	7
District 5																									
January	168.5	174	1.0	...	...	...	...	...	...	...	...	117	67	8	5	46	26	...	...	3	2	...	...	...	...
February	373.7	932	2.5	...	...	...	...	...	...	3	tr.	636	68	...	...	7	1	...	...	5	1	...	...	281	30
March	183.8	338	1.8	...	...	...	...	...	...	...	...	331	98	1	tr.	4	1	...	...	1	tr.	...	...	1	tr.
June	426.5	585	1.4	17	3	30	5	63	11	57	10	62	11	84	14	102	17	135	23	...	...	...	...	35	6
July	151.3	298	2.0	4	1	21	7	49	16	68	23	53	18	59	20	16	5	26	9	...	...	...	...	2	1
August	152.2	333	2.2	1	tr.	12	4	51	15	37	11	62	19	63	19	36	11	45	14	...	...	...	...	26	8
Total	1,473.0	2,660	1.8	22	1	63	2	163	6	165	6	1,261	47	215	8	211	8	206	8	9	tr.	...	...	345	13
District 6																									
April	404.3	463	1.1	1	tr.	...	...	...	...	...	...	95	21	1	tr.	1	tr.	...	...	15	3	6	1	344	74
May	402.8	597	1.5	...	...	...	...	...	...	10	2	60	10	...	...	20	3	46	8	14	3	102	17	345	58
June	686.9	1,101	1.6	52	5	20	2	293	27	30	3	158	14	...	...	62	6	96	9	12	1	52	5	326	30
July	853.2	1,492	1.7	106	7	22	1	524	35	55	4	125	8	1	tr.	24	2	49	3	1	tr.	239	16	346	23
August	176.7	322	1.8	50	16	9	3	197	61	14	4	19	6	...	...	4	1	...	...	...	...	1	tr.	28	9
September	82.5	148	1.8	2	1	2	1	70	47	2	1	...	...	1	1	2	1	...	...	...	...	69	47	...	...
Total	2,606.4	4,123	1.6	211	5	53	1	1,084	26	111	3	457	11	3	tr.	113	3	191	5	42	1	469	11	1,389	34
District 8																									
March	103.5	42	0.4	...	...	...	...	...	...	...	...	12	29	3	7	9	21	...	...	...	...	...	...	18	43
May	226.0	177	0.8	...	...	...	...	...	...	...	...	...	...	137	77	27	15	...	...	...	...	...	...	13	7
June	314.5	337	1.1	32	9	76	23	39	13	35	10	64	19	23	7	16	5	36	11	2	1	...	...	14	4
July	1,306.9	640	0.5	83	13	195	30	60	9	5	1	128	20	65	10	47	7	25	4	9	1	...	...	23	4
August	339.5	536	1.6	67	13	127	24	139	26	11	2	132	25	31	6	9	2	4	1	...	...	...	...	16	3
September	119.5	74	0.6	10	14	11	15	40	54	...	...	...	...	2	3	1	1	8	11	...	...	...	...	2	3
Total	2,409.9	1,806	0.7	192	11	409	23	278	15	51	3	336	19	261	14	109	6	73	4	11	1	...	...	86	5

[1] District 7 omitted because of inadequate data. Some months for other districts are omitted for the same reason.

[2] Trace = less than one half of 1%.

[3] Most records for June were probably taken from June 25 to 30. This applies, more or less, to all districts.

TABLE 2. CATCH PER HOUR, BY MONTHS (FROM TABLE 1)

District	January	February	March	April	May	June	July	August	September
1	3.1	3.3	1.2	3.0	2.6	1.5	2.2	1.8	...
2	1.5	1.7	1.6	1.1	0.8	1.7	1.7	1.6	1.5
3	1.5	2.7	3.7	0.9	1.6	2.5	2.2	2.3	2.1
4	1.4	1.8	1.5	...	1.3	1.5	1.6	1.5	0.4
5	1.0	2.5	1.8	...	...	1.4	2.0	2.2	...
6	...	...	...	1.1	1.5	1.6	1.7	1.8	1.8
7	...	...	0.4	...	0.8	1.1	0.5	1.6	0.6
Average[1]	1.7	2.4	1.7	1.5	1.4	1.6	1.7	1.8	1.3

[1] Unweighted

January. Few bass were caught during this month. Since fishing for bass is not permitted, the few which were caught were obviously taken while fishing for other species. The few which were recorded were apparently returned. The above applies also for other winter months.

The data for the five districts for which records were taken in January indicate that January was the best month for taking Bluegills in one district (District 1, limited data for April not considered), Perch in District 2, Northern Pike in District 3, Perch in District 4, and Northern Pike and Suckers in District 5. The January catch consisted primarily of Bluegills (in the southern areas), Perch, Northern Pike, Suckers, and Crappies (in northern districts).

February. Perch were best represented in the catch during this month in District 1 and 3, Suckers in District 4. The catch consisted primarily of the same species as those taken in January.

March. March was the best month for taking Suckers in District 1, and for taking Perch in District 5. The catch consisted primarily of the same species as taken in January and February.

April. Data for April fishing were available for 4 districts. The catch during this period differed decidedly from the catch during the first 3 months. In District 2 about three-fourths of the fish taken were Suckers; in District 3 about half of the fish taken were Suckers. It appears that this month was decidedly the "Sucker month". Northern Pike, Walleyes, Perch and Bluegills were also well represented in some areas.

May. The taking of a number of species was not permitted in May and fishing was limited to certain waters. These restrictions obviously affected the nature of the catch. The May catch in District 2 consisted primarily of Crappies, Rock Bass, Pike and Suckers; in District 3, Rock Bass, Perch, and Crappies; in District 4, Rock Bass, Northern Pike and Walleyes; and in District 6, Bullheads, Carp, Crappies, Perch and Rock Bass.

June. The June fishing recorded is probably primarily for the period from the 25th to the 30th, since fishing on most lakes begins on the 25th. Most species were taken in June. Large-mouthed Bass were best represented in the catch in Districts 1, 2, 4 and 5, Sunfish in Districts 1 and 2, and Rock Bass in Districts 5 and 6.

July. More records were obtained in this month than in any other. In District 3 both species of bass were best represented in the catch during this month; Small-mouthed Bass were also best represented in Districts 5 and 8, also Bluegills in District 5, Sunfish in District 3 and 5, Walleyes in District 5, and Crappies in District 1 and 4.

August. During this month both species of bass were most represented in the catch in one district (6), and Bluegills and Sunfish in one district (4).

September. The rather limited data for September indicate that Bluegills represent a very large percentage of the fish taken during that month in several of the areas. Perch represented almost half of the September caught fish in District 4.

Data by Species

Large-mouthed Bass. In general, this species was best represented in the June catch. It was seldom taken in winter, but was slightly better represented than the Small-mouthed in the winter catch. In several districts the percentage of Large-mouthed Bass in the total catch declined each month after June. The species is a warm-water species and is decidedly a summer-caught fish.

Small-mouthed Bass. Small-mouthed Bass were decidedly summer-caught fish. The percentage of Small-mouths in the total catch for each month varies in the several areas; in general, they were best represented in July and August.

Bluegills. In Districts 1 and 2 this species dominates the winter catch. Since Bluegills tend to be warm-water fish, the percentage of Bluegills ~~tend to be~~ caught in winter is rather surprising. The winter Bluegill fishing has apparently been expanded considerably in recent years and the extensive winter fishery for this species is probably due to the discovery of the winter feeding habits and winter habitat of these fish. It is possible that a winter fishery of other species

could be better developed by a study of their distribution in the lakes in winter and by a study of their food habits at that season. In districts farther north the Bluegill was decidedly a summer-caught species and was probably best represented in the fish catch in the month of August.

Sunfish. Sunfish were summer-caught fish. In some areas they were most taken during one of the summer months, in other areas during another summer month.

Perch. Perch were invariably best represented in the winter catch and the summer-caught Perch in the warmer areas (Districts 1, 2, 3 and 6) were most represented in the June catch and were less well represented in mid-summer. In the more northern areas Perch fishing maintained a fairly high level in mid-summer, but the summer-caught Perch were invariably poorly represented compared with those taken in winter. It appears that this fish is primarily a "cool-water" species and is best taken when the water temperature is cold or cool.

Walleyes. Except in Districts 4, 5 and 8 the catch was too meager to show a significant seasonal trend. In two of the three areas the catch declined in mid-summer and in the other it was best represented in July. Walleyes tended to be best represented in the catch in winter and spring.

Northern Pike. This species, like the Perch with which it is generally associated, is best represented in the winter catch and is taken relatively little in summer in the southern districts. It is apparently a "cool-water" species.

Rock Bass. This species was primarily taken in spring and summer, being generally most represented in the spring (May) catch. It declined in the catch as the summer progressed. It appears to be more tolerant of cooler waters than the other members of the Sunfish group. The Rock Bass is apparently not an important fish in the southern counties, perhaps because of the relatively high water temperature of lakes in the southern areas.

Suckers. With few exceptions this species was taken only in winter (by spearing) and in spring during the spawning run into streams or on the shoal area near the margin of lakes. Suckers are known to be common in lakes where they are

seldom or never caught and are perhaps more abundant in the fish population of the state than is generally realized. It would appear, on first thought, that this fish is not utilized to any great extent except in some localities. It is apparently true that most adult Suckers never are caught, but it is also probable that the Sucker serves as one of the principle forage fish for Northern Pike and Walleyes, with which it is generally associated, perhaps also, to some extent, as food for Small-mouthed Bass. Even though not especially desirable for angling, it probably plays a very significant part in maintaining the Pike and Walleye fishing and for that reason is probably deserving of any protection now given it.

Crappies. Crappies were caught in spring, summer and winter. They appeared to be most represented in the catch in May. The Black Crappie is not easily taken in some of the lakes by persons unfamiliar with the waters because of its apparent local distribution within the lakes. The species seems to be taken, in some waters, only in certain limited areas.

Other Species. Other species were too poorly represented to permit a study of the trend of the catch of these fish by months. The general trend of a few of these species, Smelt for instance, is fairly well known.

General Comments on the Census

This section of the report concludes the discussion, temporarily at least, of the 1935 general census (some of the data in Report No. 379 were also obtained from this census). Other data are still available and further use of the census material can be made at relatively little cost, when and if the further use is considered desirable.

An apparently important item in the previous census reports--catch per hour of each species--has been omitted here and, in its place, the relative abundance of a species in the catch has been emphasized. Catch per hour for individual species has been omitted because of the apparent unreliability of the data if they were used, an unreliability not due to methods of taking the census, but due to the fact that it is not generally known for what species the angler was fishing. For an individual

lake (intensive census) the catch per hour of any one species is based on all fishing. For an entire district this basis is hardly justified. For example, Smelt were taken in a few waters in several districts. On the basis of all fishing in these areas the catch per hour of Smelt would have been extremely small; in reality the catch per hour of Smelt in these few waters was relatively high. The ratio of the catch per hour of various species would be the same as the ratio of the abundance of several species in the catch. Determination of the catch per hour of a species on the basis of those records on which the species were listed would not give a fair picture because records for the fishermen who fished for the species but caught none would be excluded and the figures for "catch per hour" for the species would be too high. The catch per hour for all trout and for all fish taken in non-trout waters were listed.

Data which might be compiled by a further sorting of code cards include:

1. The extent used and effectiveness of the different kinds of bait. These data would be of interest primarily to the fisherman.
2. The extent used and effectiveness of different methods (still-fishing, trolling, casting and spearing). These data would be available for about half or two-thirds of the records (the census sheets, not the census cards).
3. The residence of the non-resident angler. It is already known that a majority of the non-residents are from Ohio, Indiana and Illinois. These data could be more accurately obtained from a study of the license "stubs".
4. The catch under various weather conditions. Available for about half or two-thirds of the records.

The records for individual waters are valuable and add much to the general information for those waters. These records taken for a period of years will be of value in the management of the lakes and streams.

It is believed that the effort spent in taking the census and in compiling the data was well spent and that the census should be continued. Michigan now probably

has a better and more complete record of its fishing than any other state.

While the nature of the catch is rather well known, several other important items are not:

1. The preference of the anglers. If the general wishes with regard to desirability of the several species were known, the information might help to determine stocking and management policies to the extent that, if the environment were suited for several species, the more desired fish could be encouraged. Obviously the desires of the anglers, with regard to preference for species, could not always be satisfied because of the definite habitat requirements of the several species and for other reasons.

   The desires of the fishermen could probably be determined on the licenses better than on the census blanks. A small stub on each license on which could be placed the 3 or 4 species most desired by the angler getting the license would provide this information. It is believed that, for one season, this added time and expense might be well justified.

2. The relative distribution of fish in the waters as compared with the relative distribution of these fishes in the catch. If the waters are to be used most effectively, those fish should be encouraged from which a maximum crop may be expected. It is probable that a much greater percentage of the total population of some species is taken than the per cent of the total population of others.

   This problem can be solved only by an extensive study of fish populations by netting, tagging and other methods, coupled with the creel census, preferably with an intensive census.

If Michigan knew what the fisherman wanted and what were available for him, in addition to knowing what he catches, it would have an excellent basis for its management program.

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