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WALLEYES IN THE INLAND WATERWAY

By

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Introduction

The Inland Waterway, comprising an extensive system of rather large lakes and connecting rivers (Fig. 1), lies at the northern tip of Michigan's Lower Peninsula in Cheboygan, Emmet, and Presque Isle counties, and empties into Lake Huron through the Cheboygan River at the City of Cheboygan. The drainage area is 1,594 square miles.

The Inland Waterway is unquestionably one of Michigan's more important fishing centers, and offers a great variety of sport fishing. Together with the common game and pan fishes the area affords fishing for sturgeon, muskellunge, and trout. Throughout most of the system the walleye is the most sought after, and highly prized game fish.

The area's importance as a fishing locale is enhanced by the presence of state parks on the shores of Burt, Mullett, and Black lakes. The Inland Waterway was one of the earliest areas of Michigan to be developed for outdoor recreation, and resort development is extensive.

Distribution

The first investigation of which I have been able to secure any record was made by the Michigan Fish Commission in 1888, and at that time walleyes

Figure 1.--Inland Waterway, Cheboygan, Emmet,
Presque Isle counties, Michigan

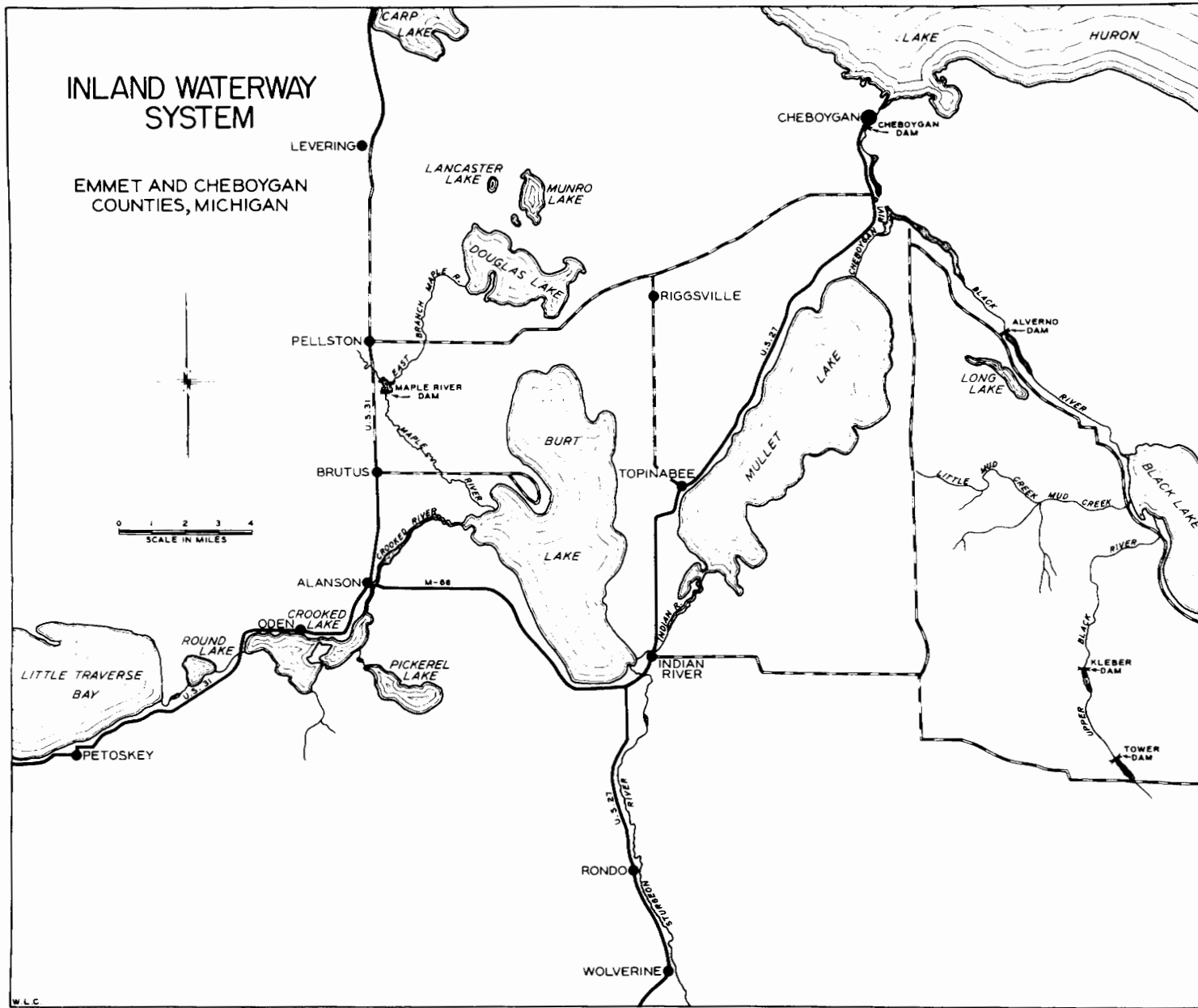


Figure 1

were found to be present in Burt and Mullett lakes. Their native distribution in the Inland Waterway was probably identical to their distribution now. I have been unable to locate any record of walleyes having been planted in any part of the system before 1892. All lakes of the Inland Waterway, except Douglas Lake, were easily accessible to fish from Lake Huron. The small East Branch of the Maple River, which joins Douglas Lake to the rest of the system, apparently constituted a barrier to walleye dispersal. It is usually recognized that walleyes are inhabitants of the larger lakes and streams.

Walleyes and other fish originally could move through all of the Inland Waterway but more recently certain portions of the system were set apart by man-made barriers. The Cheboygan Dam was constructed in 1868. Alverno Dam, which separates Black Lake from the other parts of the system, was constructed in 1903. A dam on the Maple River at the confluence of the East Branch and the West Branch was constructed in 1906. This dam, which once isolated the upper portion of the Maple River and Douglas Lake, is no longer effective for it went out in 1952. The upstream portions of the Upper Black River are cut off by the Tower Dam constructed in 1922, and the Kleber Dam constructed in 1949. All of the operative dams must be regarded as barriers to upstream movement by fish. None of them have functional fish ladders. The Cheboygan Dam may at times be an incomplete barrier because a boat lock is incorporated in the dam. The lock may permit the upstream movement of fish from the lower Cheboygan River or from Lake Huron. That the various dams do not entirely prevent downstream migration has been demonstrated by tagging experiments.

The fish populations of the lakes of the Inland Waterway are qualitatively similar. Walleyes are present throughout the system, except in Douglas and Round lakes. (Recently, attempts have been made to establish the species in both lakes through the introduction of fingerlings.) Bluegills are not numerous except in Crooked, Pickerel, Round, and Douglas lakes.

Early investigations and management

Real or imagined scarcity of walleyes in the Inland Waterway has been a frequent complaint by fishermen and resort owners. Consequently, several investigations dealing with the fisheries of the Inland Waterway have been made. An examination of a part of the system by the Michigan Fish Commission in 1888 has been mentioned. From 1892 to 1942, walleyes were stocked more or less regularly. After 1945 maintenance stocking of walleyes and other warm-water species was discontinued on a state-wide basis.

In 1931 a program for transferring walleyes from Lake Huron to various parts of the Inland Waterway was initiated. These walleyes, entering the Cheboygan River on a spawning migration, were trapped and transported by tank truck to upstream portions of the waterway. The number of walleyes transferred in this manner was never large, and 1942, when 2,987 walleyes were transferred, was the best year. The transfer was discontinued in 1949 because of the expense and the insignificant numbers of walleyes transferred.

In an effort to determine the value of the "Cheboygan transfer," 2,367 walleyes were tagged in 1931-1932 and released in upstream waters. In these early experiments anglers reported the recapture of 32 or 1.4 percent during the first 6 1/2 months after release. Doubtless the low rate of recapture was due primarily to the loss of the opercular tags soon after application (Eschmeyer and Crowe, 1955). In 1942, 568 walleyes were jaw-tagged before transfer; anglers reported the recapture of 11.3 percent of these fish over a 10-year period. No recaptures have been reported since 1951.

Biological inventories of some of the large lakes of the waterway have been completed: Black Lake, 1939; Crooked Lake, 1954; Burt Lake, 1955; and Mullett Lake, 1956. (The presence of the University of Michigan Biological Station on the shore of Douglas Lake has contributed much to the knowledge

of that body of water.) The biological surveys indicated that walleyes, along with other game and pan fish, were fairly numerous throughout most of the system. The extensive water area, composed of large lakes, moderate size connecting rivers, and cold trout streams provides a diversified fish habitat, and conditions suitable to a variety of fishes.

In 1939 a netting program was begun on the Inland Waterway. This program had a dual purpose. First, it was known that the lakes contained a large population of rough fish (mostly suckers) and it was felt that the harvest of a portion of these suckers would be desirable. Doubtless the suckers competed with game fish for food and space, and also they constituted a marketable crop. Second, the netting would provide additional information on the abundance and composition of the fish populations of the lakes. Most of the netting was done by commercial fishermen, under permit from the Department of Conservation. The fishermen supplied the trap nets and other gear used. All lifts were made under the direct supervision of a representative of the Conservation Department. The only compensation received by the fishermen was the authorization to sell all rough fish captured. The number of rough fish sold and the number of game fish released were recorded for each lift. This netting program has been continued intermittently to the present time. Results are presented in Table 1.↓

No consistent pattern of walleye abundance was revealed by the netting. Walleyes were numerous in Black, Burt, and Mullett lakes, and also in the Black River below Alverno. In Crooked Lake walleyes were less numerous than in other parts of the system. In all of the lakes, the commercial fishermen wanted to catch suckers, and therefore no effort was made to secure repre-

↓ Detailed records for each lake for each netting period are not included here but are on file at the Institute for Fisheries Research.

Table 1.--Summary of netting results with commercial trap nets, Inland Waterway,
Michigan, 1939-1956

Species	Water, and number of netting periods							Total
	Crooked Lake 6	Burt Lake 7	Mullett Lake 4	Black River 3	Black Lake 7	Douglas Lake 2	Pickereel Lake 1	
White sucker	39,313	41,791	901	35	9,296	9,871	16	101,223
Yellow walleye	2,127	7,459	2,392	526	6,225	1	1	18,731
Rock bass	5,022	2,405	351	203	9,422	96	52	17,551
Bullhead	3,286	1,996	305	39	1,695	883	..	8,204
Northern pike	837	809	104	169	1,385	157	..	3,461
Bluegill	2,175	...	...	...	8	153	..	2,336
Bowfin	890	292	77	38	567	69	..	1,933
Pumpkinseed	1,016	42	6	8	705	126	..	1,903
Redhorse	...	4	12	39	1,571	...	..	1,626
Largemouth bass	734	389	...	1	14	93	..	1,231
Yellow perch	471	85	35	3	205	3	67	869
Smallmouth bass	227	276	87	4	268	...	..	862
Burbot	120	501	...	...	...	...	6	627
Carp	74	16	1	1	...	...	..	92
Lake sturgeon	...	4	2	...	10	...	..	16
Muskellunge	...	1	...	...	10	...	..	11
Other ↓	17	149	31	...	44	2	..	243
Total	56,309	56,219	4,304	1,066	31,425	11,454	142	160,919
Walleyes per lift	4	27	37	23	14			
Percentage of total catch contributed by walleyes	4	13	56	49	20			

↓ Includes trout, herring, whitefish, crappies.

sentative samples of the other species; consequently suckers made up the bulk of the catch. Nevertheless, the netting programs at Burt, Black, and Crooked lakes were roughly comparable, and differences in results probably reflect actual differences in the fish populations. At Crooked Lake game fish (wall-eyes, pike, bass) made up 7 percent of the catch, pan fish (bluegills, pumpkin-seeds, perch) contributed 15 percent, and other fish (suckers, bullheads, etc.) made up 78 percent. At Burt Lake 16 percent of the catch was composed of game fish, 4 percent of pan fish, and other fish accounted for the remaining 80 percent. At Black Lake the percentages were 25, 33, and 42. At Mullett Lake (percentages, 60, 9, and 31, respectively) most of the netting was done during the walleye spawning season, and nets were set at the north end of the lake, near the outlet. As might be expected considerable numbers of walleyes were captured as they were migrating to spawning grounds in the Black River below Alverno. The netting in the Black River below Alverno was done for the express purpose of capturing walleyes for tagging, and the sample was probably not representative of the population normally inhabiting the river. This belief was confirmed by tagging results (to be described later). Walleyes were not present in Douglas Lake until fingerlings were introduced in 1954. Although the netting probably does not accurately reflect the relative abundance of all species, it probably does give a good idea of the abundance of the more numerous species in the different lakes.

Movement and exploitation

Several experiments have been conducted in which tagged walleyes were released in various parts of the Inland Waterway. From these tagging experiments information on movement and exploitation rates has been obtained. Results of experiments initiated prior to 1953 have been published (Eschmeyer and Crowe, 1955). The present report gives a few additions to the material presented in the earlier report, and also gives results of experiments started after 1952.

The results of the transfer of tagged walleyes from the lower Cheboygan River to various portions of the Inland Waterway in 1931, 1932, and 1942 have already been mentioned. Returns from these experiments demonstrated that the transferred walleyes were able to move throughout much of the Inland Waterway, and that they could bypass dams in a downstream direction.

In 1948, tagging experiments with walleyes native to the Inland Waterway were started, and these experiments have continued to the present. Walleyes were tagged and released in Black Lake as recently as 1956. Tables 2 and 3 give a summary of movement of tagged walleyes released in the different portions of the Inland Waterway. Walleyes tagged in Crooked Lake were usually recaptured in that body of water, or moved downstream to Burt Lake; upstream movement to Pickerel Lake was negligible. Walleyes tagged and released in Burt Lake were frequently recaptured in Burt Lake, but an appreciable number moved upstream into the Sturgeon River where 11 were recaptured; a few moved upstream to Crooked River, and through Crooked Lake into Pickerel Lake. Most of the recaptures of walleyes released in Mullett Lake were made in the same body of water, but some moved upstream into the Indian River, Burt Lake and the Sturgeon River, as well as downstream to the Cheboygan and Black rivers.

Four tagging experiments were conducted in the Black River below Alverno Dam. These experiments showed that walleyes in the Black River during the spawning season were not resident there, but were in the area temporarily. Only 11 of 102 recaptures were made in the vicinity of release. Most had returned to Mullett Lake. To date, I have only one record (June 30, 1954) of the recapture of a walleye in the Black River at any time other than the spawning season.

At Black Lake, three groups of fish were tagged and released. With few exceptions recaptures of these fish were made in Black Lake. One walleye

Table 2.--Locality of recapture of tagged walleyes released
at five localities in the Inland Waterway, 1948-1956

Locality of recapture ↓	Locality of release				
	Crooked Lake	Burt Lake	Mullett Lake	Black River (below Alverno Dam)	Black Lake
Crooked Lake	48	...	...	1	...
Pickerel Channel	1	...	...	...	...
Pickerel Lake	5	2	...	...	...
Crooked River	5	2	...	1	...
Burt Lake	32	35	4	3	...
Sturgeon River	2	11	1	1	...
Indian River	5	3	2	6	...
Mullett Lake	1	...	23	66	...
Cheboygan River	...	...	2	12	...
Lake Huron	...	...	...	1	...
Black River (below Alverno Dam)	...	...	2	11	...
Black River (below Black Lake)	...	...	...	...	3
Black Lake	...	...	...	...	105
Black River (above Black Lake)	...	...	...	...	2
Mud Creek	...	...	...	...	2
Total recaptures	99	53	34	102	112

↓ Recaptures were made by anglers, nets, or other means. Recaptures by nets were excluded unless fish had been at liberty for 6 months or longer.

Table 3.--Summary of movement of walleyes tagged and released at five localities,
Inland Waterway, Michigan 1948-1957

Locality	Release		Relation of recovery locality to place of release [↓]						Total number
	Year	Number	Same water		Upstream		Downstream		
			Num- ber	Per- centage	Num- ber	Per- centage	Num- ber	Per- centage	
Crooked Lake	1952	249	37	48.0	6	7.8	34	44.2	77
	1954	116	11	50.0	..	...	11	50.0	22
Burt Lake	1948	300	41	77.3	11	20.8	1	1.9	53
Mullett Lake	1954	249	23	67.6	7	20.6	4	11.8	34
Black River	1952	33	2	20.0	7	70.0	1	10.0	10
	1953	398	5	7.1	55	78.6	10	14.3	70
	1954	94	4	20.0	14	70.0	2	10.0	20
	1955	30	..	...	2	100.0	..	...	2
Black Lake	1954	36	4	80.0	1	20.0	..	...	5
	1955	642	88	94.6	3	3.2	2	2.2	93
	1956	186	13	92.9	..	...	1	7.1	14

[↓]Recaptures by anglers, nets, or other means. Recaptures by nets were excluded unless fish had been free for 6 months or longer.

tagged in Black Lake was recovered just below Kleber Dam. Others recaptured outside of Black Lake were caught within 1/2 mile of the lake, in the Lower Black River (3), Upper Black River (1), and Mud Creek (2).

The tagging experiments indicated that the walleye population of Black Lake is distinct from that in other parts of the Inland Waterway. Black Lake walleyes remain in Black Lake throughout the year, and there is very little movement out of the lake even during the spawning season. Tagged walleyes were readily recaptured in Black Lake in nets set at the peak of the spawning season. The walleyes in the rest of the Inland Waterway move freely from one area to another, and many migrate to the Black River to spawn.

Records of the number and percentage of recaptures of tagged walleyes by anglers are summarized in Table 4. Recaptures from early experiments (1931, 1932 and 1942) have been discussed in a previous section. The percentage return from the fish transferred in 1942 was directly proportional to the distance of the release locality from Lake Huron. Crooked Lake, the body of water at the greatest distance from Lake Huron provided the greatest percentage of return, followed by Black Lake, Burt Lake, Mullett Lake, and the Cheboygan River. The inference, supported by detailed recapture records, is that walleyes released in the downstream portion of the system could more easily return to Lake Huron where they presumably dispersed widely, and where few were recovered. Walleyes which are known to have passed through Cheboygan Dam were planted just above the dam, or at the junction of the Black and Cheboygan rivers. (Some walleyes planted at the north end of Black Lake moved downstream past Alverno Dam and reached the portion of the Cheboygan River a short distance above the Cheboygan Dam, before recapture [Eschmeyer, 1950]).

In 1948-1956, 11 experiments involving 2,333 native walleyes were conducted. No consistent pattern was apparent among later recoveries. The rate

Table 4.--Number and percentage (in parentheses) of tagged walleyes recovered by fishermen in the
Inland Waterway, Michigan, 1931-1957

Release information			Year after tagging [↓]										Total
Locality	Year	Number	First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth	Tenth	
Inland Waterway ²	1931	213	3(1.4)	...	...	...	...	...	...	...	...	...	3(1.4)
Inland Waterway ²	1932	2,154	29(1.3)	...	...	...	...	...	...	...	...	...	29(1.3)
Cheboygan River ²	1942	154	3(1.9)	1(0.6)	1(0.6)	...	...	...	...	1(0.6)	...	...	6(3.9)
Mullett Lake ²	1942	87	1(1.1)	1(1.1)	3(3.4)	2(2.3)	1(1.1)	...	...	...	...	...	8(9.2)
Burt Lake ²	1942	82	5(6.1)	2(2.4)	4(4.9)	...	...	...	...	...	...	...	11(13.4)
Crooked Lake ²	1942	109	7(6.4)	1(0.9)	2(1.8)	2(1.8)	1(0.9)	2(1.8)	...	1(0.9)	1(0.9)	1(0.9)	18(16.5)
Black Lake ²	1942	136	5(3.7)	3(2.2)	5(3.7)	1(0.7)	3(2.2)	1(0.7)	1(0.7)	...	...	1(0.7)	20(14.7)
Burt Lake	1948	300	20(6.7)	22(7.3)	4(1.3)	3(1.0)	1(0.3)	...	...	3(1.0)	...	...	53(17.7)
Crooked Lake	1952	249	28(11.2)	18(7.2)	10(4.0)	8(3.2)	2(0.8)	8(3.2)	---	---	---	---	74(29.7)
Black River	1952	33	3(9.1)	4(12.1)	1(3.0)	1(3.0)	1(3.0)	...	---	---	---	---	10(30.3)
Black River	1953	398	18(4.5)	23(5.8)	13(3.3)	13(3.3)	1(0.3)	---	---	---	---	---	68(17.1)
Crooked Lake	1954	116	10(8.6)	3(2.6)	5(4.3)	4(3.4)	---	---	---	---	---	---	22(19.0)
Black River	1954	94	9(9.6)	6(6.4)	3(3.2)	2(2.1)	---	---	---	---	---	---	20(21.3)
Mullett Lake	1954	249	13(5.2)	9(3.6)	8(3.2)	5(2.0)	---	---	---	---	---	---	35(14.0)
Black Lake	1954	36	...	3(8.3)	1(2.8)	...	---	---	---	---	---	---	4(11.1)
Black River	1955	30	2(6.7)	2(6.7)	...	---	---	---	---	---	---	---	4(13.3)
Black Lake	1955	642	47(7.3)	20(3.1)	7(1.1)	---	---	---	---	---	---	---	74(11.5)
Black Lake	1956	186	11(5.9)	3(1.6)	---	---	---	---	---	---	---	---	14(7.5)
Totals: "transfers" 1931-													
	1932	2,367	32(1.4)										32(1.4)
Totals: "transfers" 1942		568	21(3.7)	8(1.4)	15(2.6)	5(0.9)	5(0.9)	3(0.5)	1(0.2)	2(0.4)	1(0.2)	2(0.4)	63(11.1)
Totals: Native fish 1948-													
	1956	2,333	161(6.9)	113(4.8)	52(2.2)	36(1.5)	5(0.2)	8(0.3)	...	3(0.1)			378(16.2)

[↓]In the body of the table "... " indicate no recoveries during the year, "---" indicate that recoveries could not have been expected because the experiment was not in progress.

²Walleyes in these experiments came from the "Cheboygan transfer."

of recapture was highest for experiments conducted at Crooked Lake. The Black River below Alverno provided the next highest rate of return followed by Burt Lake, Mullett Lake and Black Lake. It is expected that there will be only a few additional returns from these experiments. Percentage of recovery in these experiments was low in comparison with that reported from some other North American waters, but compared favorably with that reported for other waters in Michigan. It is apparent that the walleye population is not over-exploited by anglers. Walleye tagging experiments in Michigan (and other places in North America) clearly suggest that hook and line fishing is capable of removing only a small percentage of the available walleyes. The experiments have also shown that in Michigan, at least, walleyes remain available to the angler over a considerable period of years.

The data in Table 4 suggest that native walleyes were somewhat more vulnerable to fishing than were those transferred from below Cheboygan Dam. Probably the difference is apparent, rather than real. Fishing pressure before World War II was doubtless less than now. Also, the numerous tagging experiments of recent years have caused anglers to become more aware of the necessity for reporting the capture of tagged fish.

Creel census

For many years Conservation Officers have obtained records of fishing in waters of their districts as one of their regular duties. Mr. K. G. Fukano, of the Institute staff, compiled these creel census records for the Inland Waterway for the period 1940-1956. Table 5 gives a summary of the data from individual waters. Detailed summaries for each body of water are not included with this report, but are on file at the Institute for Fisheries Research. The number of records secured at each body of water varied considerably from

Table 5.--Creel census summary, Inland Waterway, Michigan, 1940-1956

Item	Pickereel Lake	Crooked Lake	Round Lake	Crooked River	Burt Lake	Douglas Lake	Indian River	Mullett Lake	Cheboygan River	Black River	Black Lake	Totals (or average)
Number of anglers	546	2,538	576	185	4,156	1,147	1,511	3,261	469	501	2,909	17,799
Hours fished	957	5,872	1,394	426	8,455	2,033	2,545	5,943	759	1,010	6,371	35,765
Catch per hour	1.08	1.71	1.25	1.19	0.33	0.57	0.36	0.33	0.72	0.50	0.21	0.63
Species:												
Perch	403	6,360	127	70	1,305	96	119	1,219	169	41	265	10,174
Rock bass	112	630	316	258	135	204	317	195	272	294	295	3,028
Walleye	64	251	35	57	1,150	1	39	209	19	78	373	2,276
Bluegill	234	1,249	497	13	3	223	22	18	1	3	12	2,275
Northern pike	54	449	321	49	125	182	252	170	33	43	223	1,901
Pumpkinseed	93	690	297	27	2	357	141	33	37	37	84	1,798
Smallmouth bass	42	201	99	4	12	39	10	40	12	8	40	507
White suckers	26	186	2	...	12	21	1	1	...	...	7	256
Largemouth bass	6	10	35	...	3	41	10	6	...	1	2	114
Rainbow trout	...	2	...	...	60	...	1	...	...	...	...	63
All fish	1,034	10,028	1,729	478	2,807	1,164	912	1,891	543	505	1,301	22,392↓

↓Also included in the catch were 128 other fish as follows: bullheads (41), shallow water cisco (26), muskellunge (22), bowfin (11), lake whitefish (9), lake sturgeon (7), crappies (5), bluegill x pumpkinseed hybrids (2), brook trout (2), brown trout (1), redhorse (1), burbot (1).

one year to another, and usually more records were obtained in recent years than in earlier ones. The greater number of fishing records in recent years doubtless reflects increased fishing pressure throughout the area.

Examination of the data presented leaves little doubt that the walleye is the prime game fish in much of the Inland Waterway. Walleyes made up the following percentages of the catch in the various bodies of water: Pickerel Lake, 6.2; Crooked, 2.5; Round, 2.0; Crooked River, 11.2; Burt Lake, 40.1; Indian River, 4.2; Mullett Lake, 10.8; Cheboygan River, 3.4; Black River, 15.4; and Black Lake, 28.4. For the whole system, exclusive of Douglas Lake, walleyes made up 10.7 percent of the recorded catch during the 17-year period. More walleyes than any other single game species were caught in Pickerel Lake, Crooked River, Burt Lake, Mullett Lake, Black River, and Black Lake. The composition of the anglers' catch varied considerably from one part of the Inland Waterway to another. Bluegills made up a significant portion of the catch in Pickerel, Crooked, Round and Douglas lakes. In other waters they were unimportant. Except for perch, other pan fish were relatively unimportant in the rest of the Waterway.

The composition of the anglers' catch in the Inland Waterway differed considerably from the composition of the catch in other waters (excluding the Inland Waterway) of the northern half (Conservation Department Region II) of the Lower Peninsula of Michigan (Table 6). In the Inland Waterway, game fish (bass, pike, walleyes, trout) made up 21.6 percent of the anglers' catch, whereas in Region II, game fish made up only 9.6 percent. In the Inland Waterway walleyes alone made up a greater percentage (10.1 percent) of the catch than did all game fish in Region II. Also, in the Inland Waterway, pan fish, exclusive of perch, made up only 31.5 percent of the catch as compared to 41.2 percent in Region II.

Table 6.--Relative abundance of 10 species most numerous in anglers' catch in the Inland Waterway and in other waters

of Region II

Species	Inland Waterway 1940-1956		Region II [↓] 1942-1956	
	Rank	Percentage of total catch	Rank	Percentage of total catch
Perch	1	45.2	1	41.9
Rock bass	2	13.4	6	4.2
Walleye	3	10.1	10	1.3
Bluegill	4	10.1	2	25.6
Northern pike	5	8.4	3	5.1
Pumpkinseed	6	8.0	5	4.5
Smallmouth bass	7	2.3	9	1.3
White sucker	8	1.1	11	0.9
Largemouth bass	9	0.5	7	1.4
Rainbow trout	10	0.3	8	0.5
Black crappies	17	0.0 ²	4	6.9

[↓]Excludes records for the Inland Waterway.

²Less than 0.05 percent.

Growth

Scale samples from walleyes in different parts of the Inland Waterway were collected at various times. In all, 421 scale samples were examined by W. C. Latta and results are presented in Table 7. The growth rate of walleyes in the Inland Waterway is about average for the species in inland waters of the Great Lakes region. Apparently they grow at a better than average rate for their first four years, and less than average thereafter. Walleyes in the Inland Waterway reach legal length (13 inches) at an age of three years, i.e., during their fourth summer of life.

Table 7.--Average total lengths (inches) for various age groups
of walleyes from the Inland Waterway, Michigan

Number of specimens in parentheses

Age group	Locality						Averages, all waters
	Crooked Lake	Round Lake	Burt Lake	Mullett Lake	Black Lake	Cheboygan River	
I	9.6(1)	...	8.7(10)	9.5(1)	9.6(2)	11.6(4)	9.5(18)
II	12.6(7)	11.9(2)	12.2(26)	11.8(5)	13.6(2)	13.9(2)	12.3(44)
III	15.0(8)	18.4(1)	13.8(25)	14.3(10)	11.7(2)	12.5(1)	14.1(47)
IV	16.7(4)	...	15.7(13)	15.2(6)	15.8(15)	...	15.7(38)
V	19.3(2)	17.9(1)	17.1(45)	16.3(5)	15.8(38)	...	16.5(91)
VI	21.3(2)	...	18.1(41)	18.1(2)	16.7(31)	...	17.6(76)
VII	22.6(2)	...	19.0(31)	19.1(1)	17.7(31)	...	18.5(65)
VIII	19.1(1)	...	19.6(15)	19.9(1)	18.5(12)	...	19.2(29)
IX	21.0(1)	...	18.7(10)	...	18.9(11)
X	24.2(1)	24.2(1)
XII	24.5(1)	24.5(1)

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