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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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Report No. 1693

June 5, 1964

FISH FAUNA AND FISHING IN THE DETROIT RIVER NEAR STONY ISLAND, GROSSE ILE TOWNSHIP[1]

By Gerald P. Cooper

A netting survey of fish life in the Detroit River near Stony Island was made by a Conservation Department field crew on April 8 to 17, 1964. The netting gear included trap nets of a type commonly used by commercial fishermen, gill nets of various mesh sizes, and a 50-foot bag seine. Some netting was also done around Sugar Island, lying about two miles to the south of Stony Island, for the purpose of a general comparison with results of a similar netting survey which was made around the two islands during September of 1952.

To supplement the information on fish obtained by nets, this report also includes a summary of information on sport fishing in the lower Detroit River; this is a summary of records from the general creel census which Conservation Officers obtain in their routine checking of fishermen on public waters.

[1] Contribution from Dingell-Johnson Project F-27-R-2.

MICHIGAN WATER WONDERLAND

The purpose of this review of netting records and angling statistics is to make an appraisal of the importance of fish and fishing in the lower Detroit River, with special reference to waters immediately adjacent to Stony Island.

Regular members of the field netting party were R. C. Barber, D. F. Thomas, D. E. Parsons, and P. M. Earl; irregular members were W. R. Crowe, G. P. Cooper, and W. E. Mason; all seven are employees of the State Conservation Department. Three other persons assisted in the field work, all from the University of Michigan: W. E. Cooper, C. C. Swift, and Dr. R. M. Bailey, Curator of Fishes in the Museum of Zoology. Dr. Bailey verified some of the more difficult fish identifications. Mr. Earl, a Conservation Department Cartographer, did the photography contained in this report. Messrs. Thomas and Parsons assisted in tabulation of field records.

Trap nets were fished at five stations along the south end of Stony Island and at two stations near Sugar Island, gill nets at four stations near Stony, and the bag seine at one station near Stony and two near Sugar Island. These stations are shown on the accompanying map (Figure 1). Information on location of netting stations, on description of gear, and on netting effort at each station, is given in appendix tables at the end of this report. The trap nets were fished for a total of 28 net-days at Stony Island, 4 net-days at Sugar Island. Gill netting and seining represented considerably less effort than went into trap netting.

Figure 1.--The Detroit River along the southeast shore of Grosse Ile, showing locations of fish survey stations around Stony and Sugar islands. T 1, T 2 equal trap net stations; G, gillnet stations; S, seine stations.

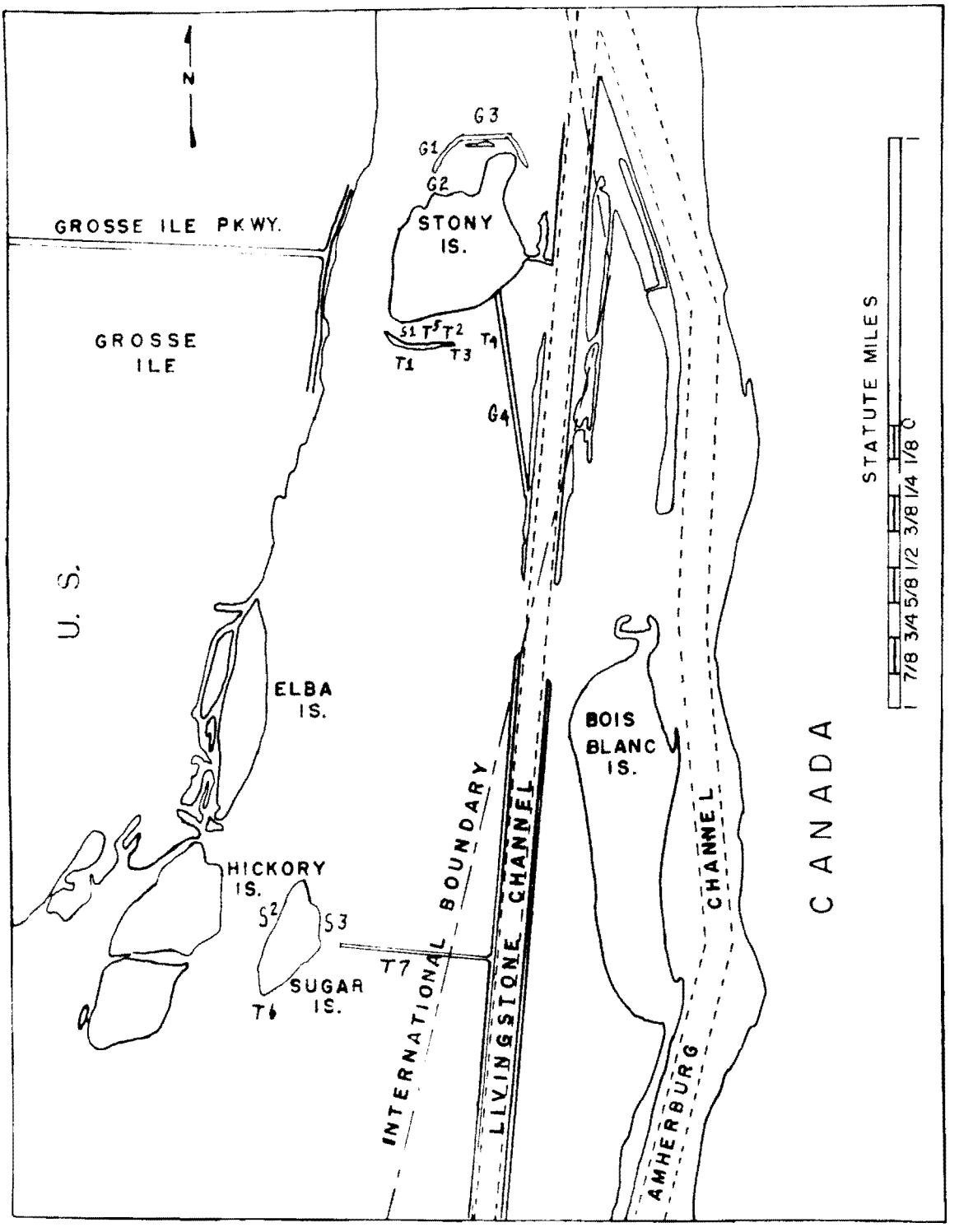
N
GROSSE ILE PKWY.
GROSSE ILE
STONY IS.
G1
G2
G3
G4
S1
T5
T2
T4
T1
T3
U. S.
ELBA IS.
HICKORY IS.
S2
S3
T7
SUGAR IS.
T6
INTERNATIONAL BOUNDARY
LIVINGSTONE CHANNEL
BOIS BLANC IS.
AMHERBURG CHANNEL
CANADA
STATUTE MILES
7/8 3/4 5/8 1/2 3/8 1/4 1/8 0

Figure 1

In the combined netting with the three types of gear, twenty-five different species of fish plus one kind of fish hybrid were collected around Stony Island; many of the same species, plus one additional species (the white crappie) were collected near Sugar Island. A list of these twenty-seven species, divided into "game fish" and "non-game fish," is given below; some fishermen would regard the channel catfish and smelt as game species, which would increase the game fish list to ten kinds.

Game fish species

Northern pike, Esox lucius
Muskellunge, Esox masquinongy
Yellow perch, Perca flavescens
Largemouth bass, Micropterus salmoides
Rock bass, Ambloplites rupestris
Black crappie, Pomoxis nigromaculatus
White crappie, Pomoxis annularis
Pumpkinseed, Lepomis gibbosus

Non-game species

Channel catfish, Ictalurus punctatus
Brown bullhead, Ictalurus nebulosus
Smelt, Osmerus mordax
White sucker, Catostomus commersoni
Bigmouth buffalo, Ictiobus cyprinellus
Quillback sucker, Carpiodes cyprinus
Carp, Cyprinus carpio
Goldfish, Carassius auratus
Carp x Goldfish hybrid, C. carpio x C. auratus
Stonecat, Noturus flavus

Alewife, Alosa pseudoharengus
Trout perch, Percopsis omiscomaycus
Bowfin, Amia calva
Longnose gar, Lepisosteus osseus
Golden shiner, Notemigonus crysoleucas
Spot-tail shiner, Notropis hudsonius
Bluntnose minnow, Pimephales notatus
Mimic shiner, Notropis volucellus
Lake emerald shiner, Notropis atherinoides

In terms of total number and variety of different species, number of game species, and number of forage species such as minnows and shiners, the fish fauna in the Detroit River around Stony Island is typical of the natural fauna which occurs generally in shallow-water areas of the Great Lakes and connecting waters. In other words, it is concluded that there are the expected variety and kinds of fish in the Stony Island area.

The numerical composition of the fish fauna around Stony Island, at the time of the netting survey in April, is judged from the records of total number of fish of each species caught by trap nets and gill nets (Table 1). Carp, goldfish and their hybrids are by far the most abundant of the larger fishes around Stony Island, at least in April; the nets took 1,307 fish of these three types. This compared with 130 game fish, 233 bullheads, and some 30 other non-game fish. In spite of the abundance of carp and goldfish, which are species of minor value, there is nevertheless a good population of perch, pike, crappies, rock bass and other game fish.

Table 1.--Numbers of fish, by species, caught in trap nets and gill nets around Stony and Sugar islands, April 9 to 17, 1964

(for locations of stations, see Figure 1)

Species	Stations around Stony Island							Sugar Island		
	Gill net		Trap net				Total	Trap net		Total
	2	4	2	3	4	5		6	7	
Game										
Northern pike	1	1	9	..	6	4	21	..	1	1
Muskellunge	..	..	..	..	1	..	1	..	..	..
Yellow perch	..	14	9	13	26	4	66	53	18	71
Largemouth bass	..	..	..	..	1	..	1	..	..	..
Rock bass	..	..	3	..	7	1	11	4	33	37
Black crappie	..	..	11	3	9	3	26	1	2	3
White crappie	..	..	..	..	..	..	..	1	1	2
Pumpkinseed	..	..	2	..	2	2	6	..	..	..
Non-Game										
Channel catfish	..	..	..	..	1	..	1	..	..	..
Brown bullhead	..	..	95	5	109	24	233	..	6	6
White sucker	..	..	5	..	1	..	6	..	..	..
Bigmouth buffalo	..	..	3	..	..	..	3	..	..	..
Quillback	..	..	3	..	1	..	4	..	..	..
Carp	..	4	89	5	55	40	193	..	9	9
Goldfish	..	1	325	26	249	175	776	..	15	15
Carp x Goldfish hybrid	..	..	163	3	30	142	338	..	2	2
Stonecat	..	..	..	..	..	..	..	1	3	4
Alewife	..	2	..	..	1	..	3	..	..	..
Trout perch	..	3	..	..	1	..	4	..	..	..
Bowfin	..	..	2	..	1	1	4	..	1	1
Longnose gar	..	2	..	..	2	..	4	..	..	..
Golden shiner	..	3	..	..	..	..	3	..	..	..

All fish in the collections were measured for individual lengths, and certain individual fish were selected from various length groups and were weighed. From lengths and sample weights, the total weight of fish of each species taken in gill nets and trap nets was then computed. Carp and goldfish were predominant elements of the population, not only numerically as indicated above, but in terms of size and weight. Carp averaged 17 inches in length, goldfish 10 inches, and their hybrids 15 inches. The 1, 307 carp, goldfish and hybrids weighed 2, 100 pounds. The game fish weighed 130 pounds, the bullheads 148 pounds. Notably of good average size were the northern pike (24 inches average length), black crappie (10 inches), and yellow perch (7 inches).

One seining collection was made on April 16 along the south shore of Stony Island, between the island and the harbor-line fill which is located about 200 yards off the south shore of the island. The fish taken in this collection are listed in Table 2 and are shown in an accompanying photograph. The two seining collections attempted around Sugar Island were unsuccessful (no fish were caught) because of inclement weather and heavy wave action. Fish taken in the seining on the south side of Stony Island included several species of shiners and minnows which are important food for the game species.

All fish in collections were photographed (in groups) and negatives are on file in the Institute for Fisheries Research. Photographs of a few, representative collections are included in Figures 2 to 6 of this report.

Table 2.--Fishes in collection taken by 50-foot bag seine, inside of harbor line along south side of Stony Island, April 16, 1964, 1:30 to 3:00 PM

1	Yellow perch, 5.1"
1	Carp, 18.7"
1	Brown bullhead, 9.3"
2	Smelt, 3.6" - 5.9"
2	Trout perch, 3.5" - 3.7"
1	Spot-tail shiner, 3.8"
2	Bluntnose minnows, 1.6" - 1.7"
1	Mimic shiner, 1.5"
50	Lake emerald shiner, 2.2" - 4.2"
2	Crayfish

Figure 2 (a-d). --Fish from trap net at Station 2 along the south side of Stony Island, April 11, 1964. The total collection (shown on 4 prints) included: 28 carp, 92 goldfish, 39 carp x goldfish hybrids, 45 brown bullheads, 1 rock bass, 1 pumpkinseed sunfish, 6 black crappies, 2 northern pike, and 1 bowfin.

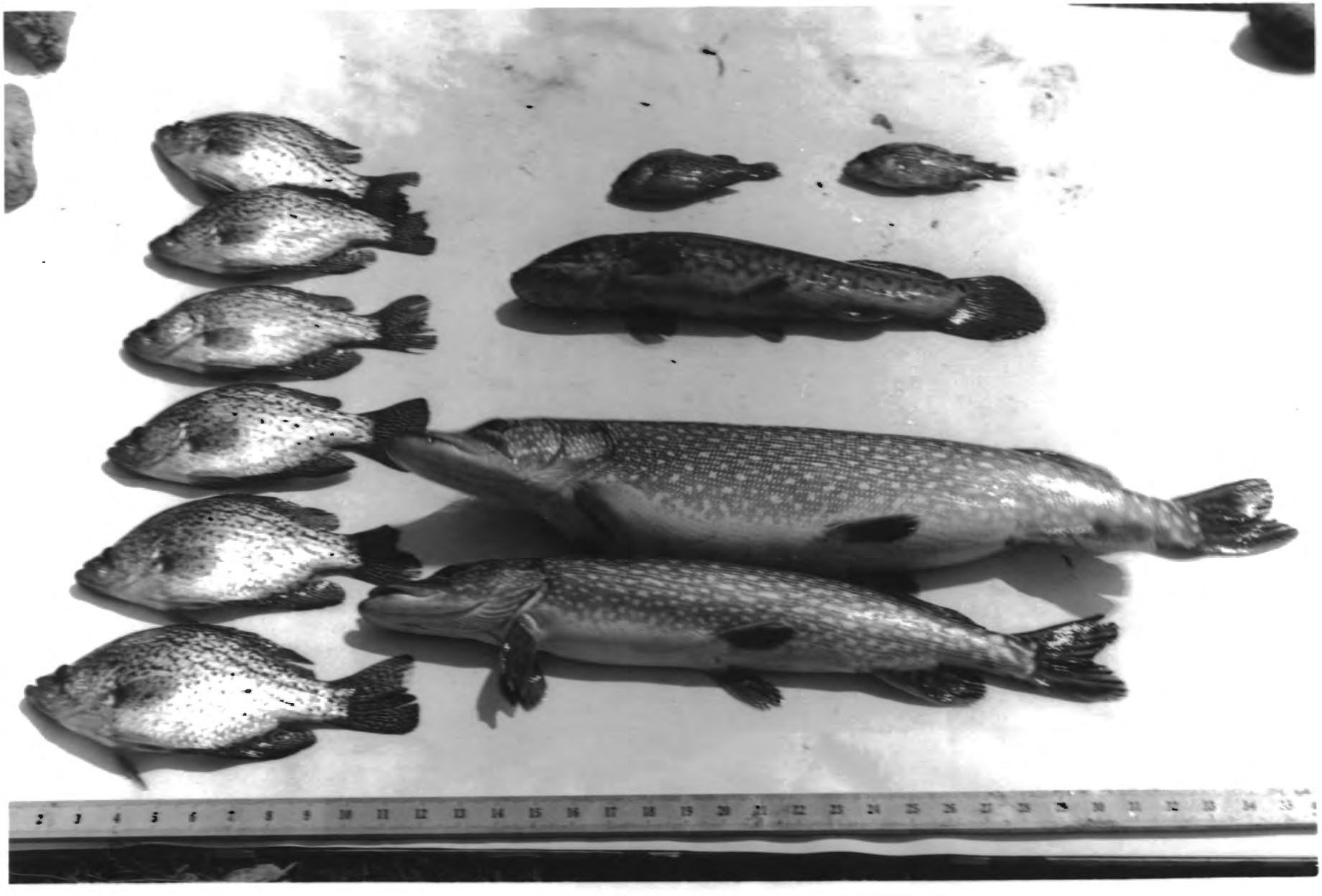

Figure 2a.

Figure 2b.

Figure 2c.

Figure 2d.

Figure 3(a-f).--Fish from trap net at Station 4 along the south side of Stony Island, April 10, 1964. The total collection (shown on 6 prints) included: 10 carp, 55 goldfish, 12 carp x goldfish hybrids, 10 brown bullheads, 3 black crappie, 3 yellow perch, 2 northern pike, and 1 longnose gar.

Figure 3a.

Figure 3b.

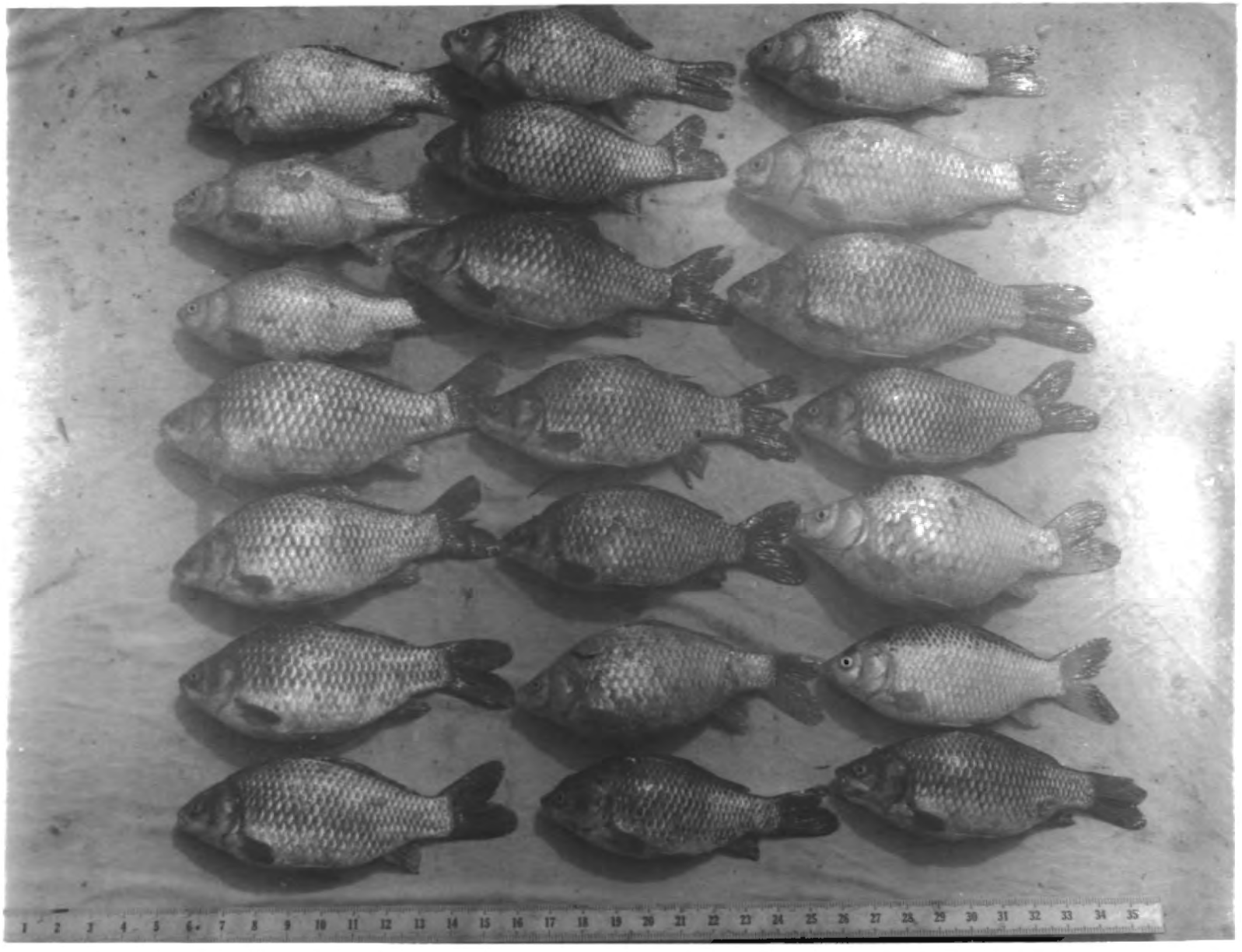

Figure 3c.

Figure 3d.

Figure 3e.

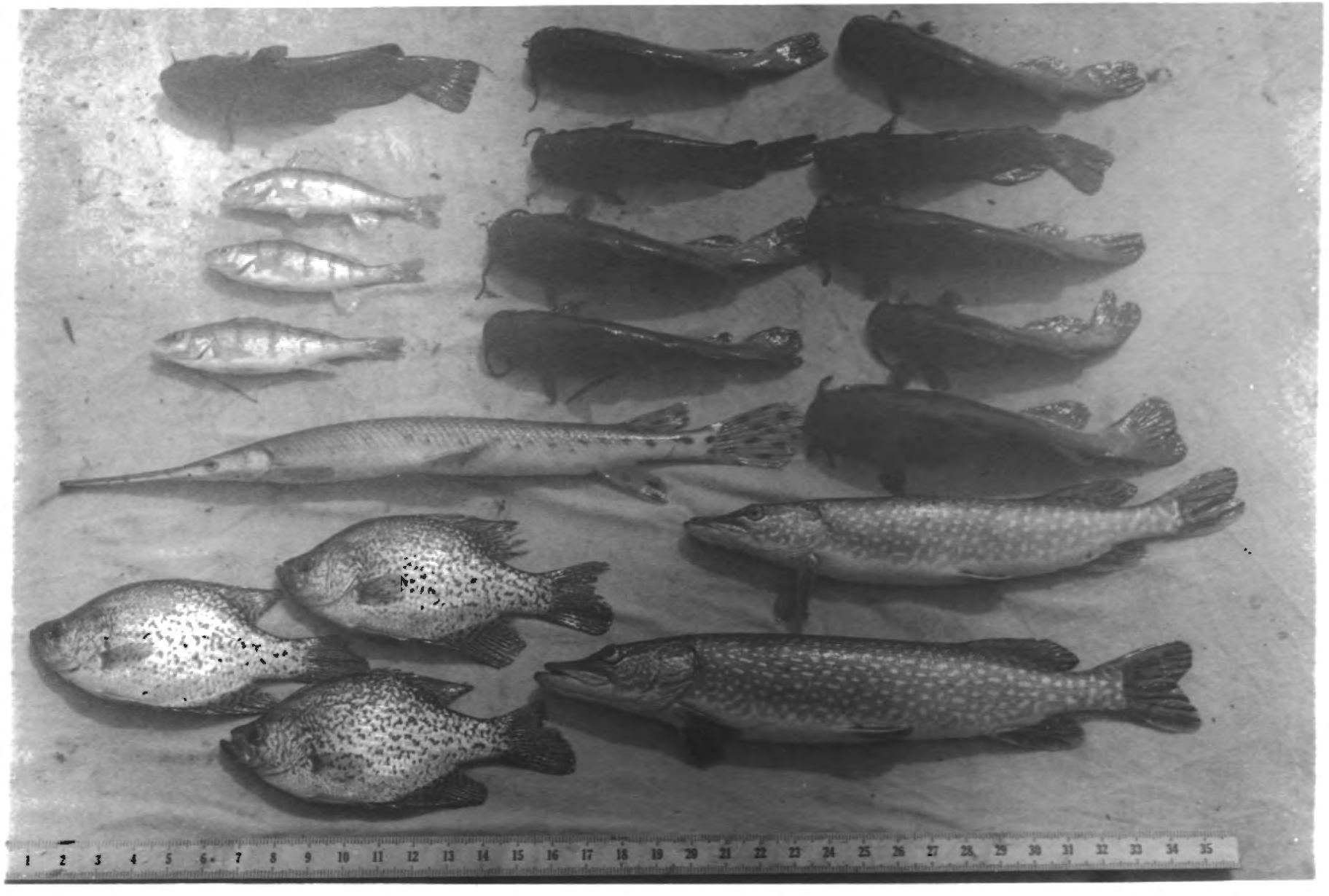

Figure 3f.

Figure 4. --Fish from trap net at Station 7 on the east side of Sugar Island, April 16, 1964. The total collection (shown on 2 prints) included: 5 carp, 9 goldfish, 1 carp x goldfish hybrid, 3 brown bullheads, 11 rock bass, 2 black crappie, 8 yellow perch, and 1 northern pike.

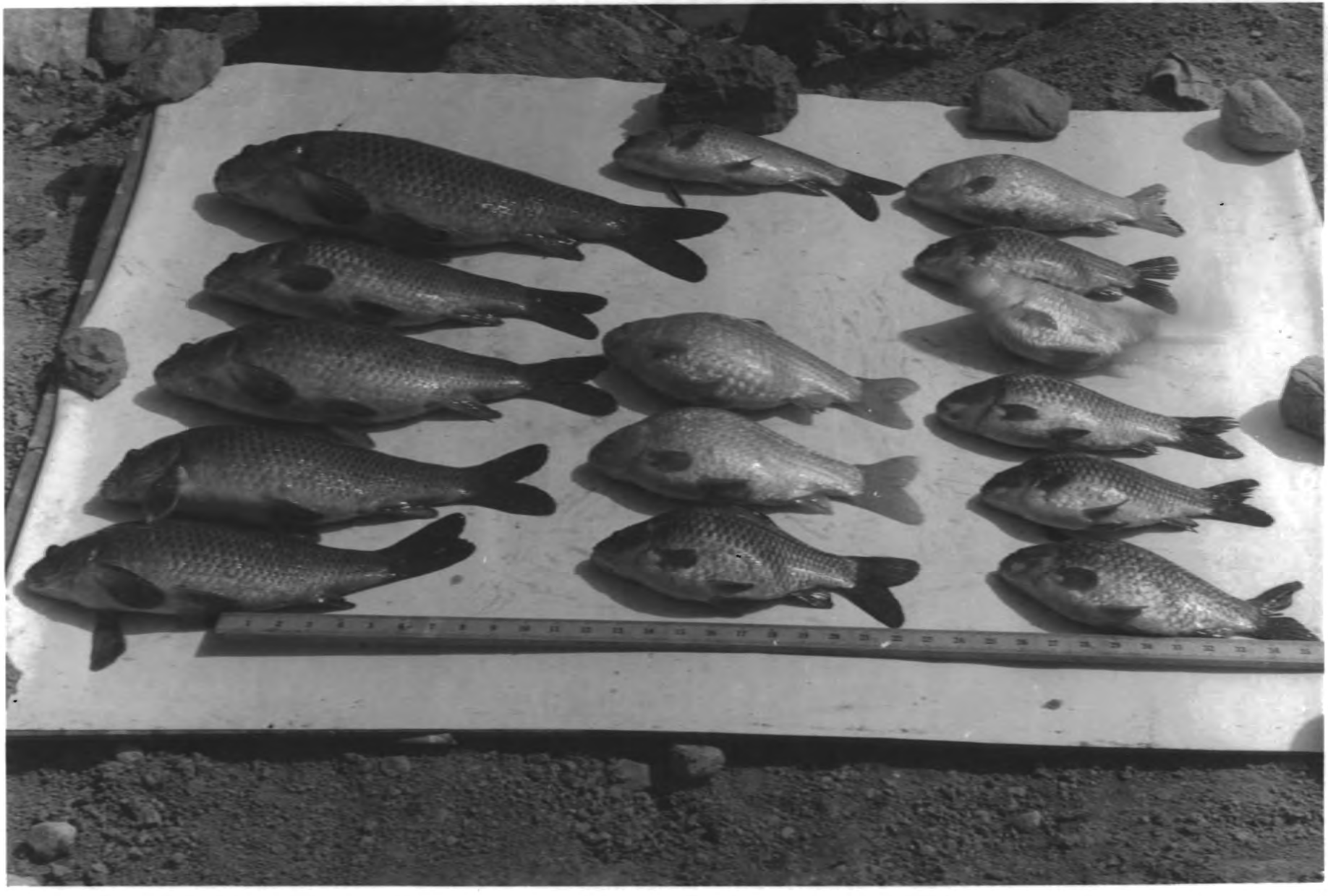

Figure 4a.

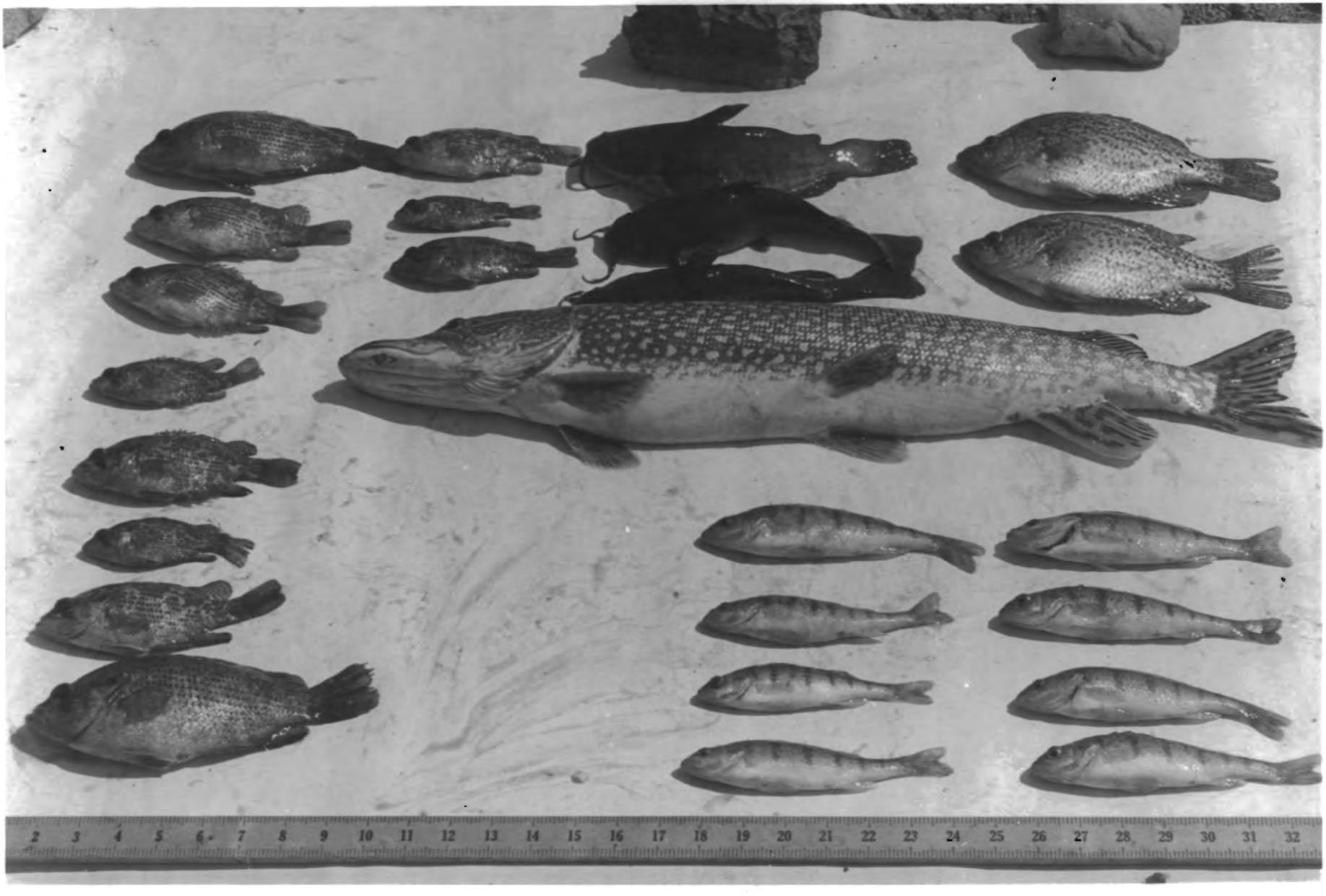
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

Figure 4b.

Figure 5.--Fish from gill net at Station 4 located one-half mile south of Stony Island, April 15, 1964. Total collection (on this one print) included: 4 carp, 1 goldfish, 14 yellow perch, 1 northern pike, 2 longnose gar, 2 alewives, 3 trout perch, and 3 golden shiners.

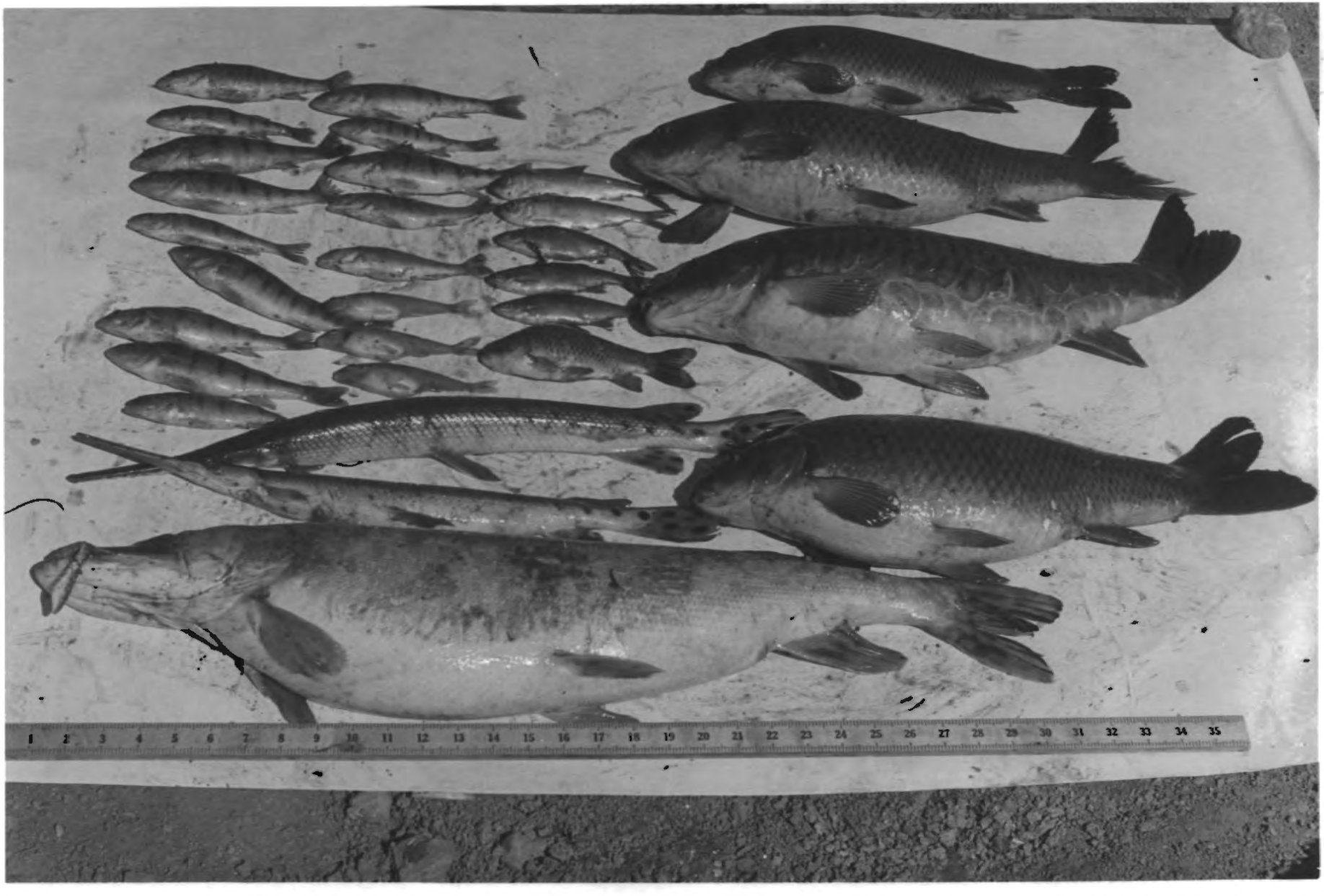

Figure 5.

Figure 6.--Fish in seining collection at Station 1 along south side of Stony Island, April 16, 1964. The total collection (shown on 2 prints) included: 1 carp, 1 brown bullhead, 1 yellow perch, 2 smelt, 2 trout perch, 1 spot-tail shiner, 2 blunt-nose minnows, 1 mimic shiner, 50 emerald shiners, and 2 crayfish.

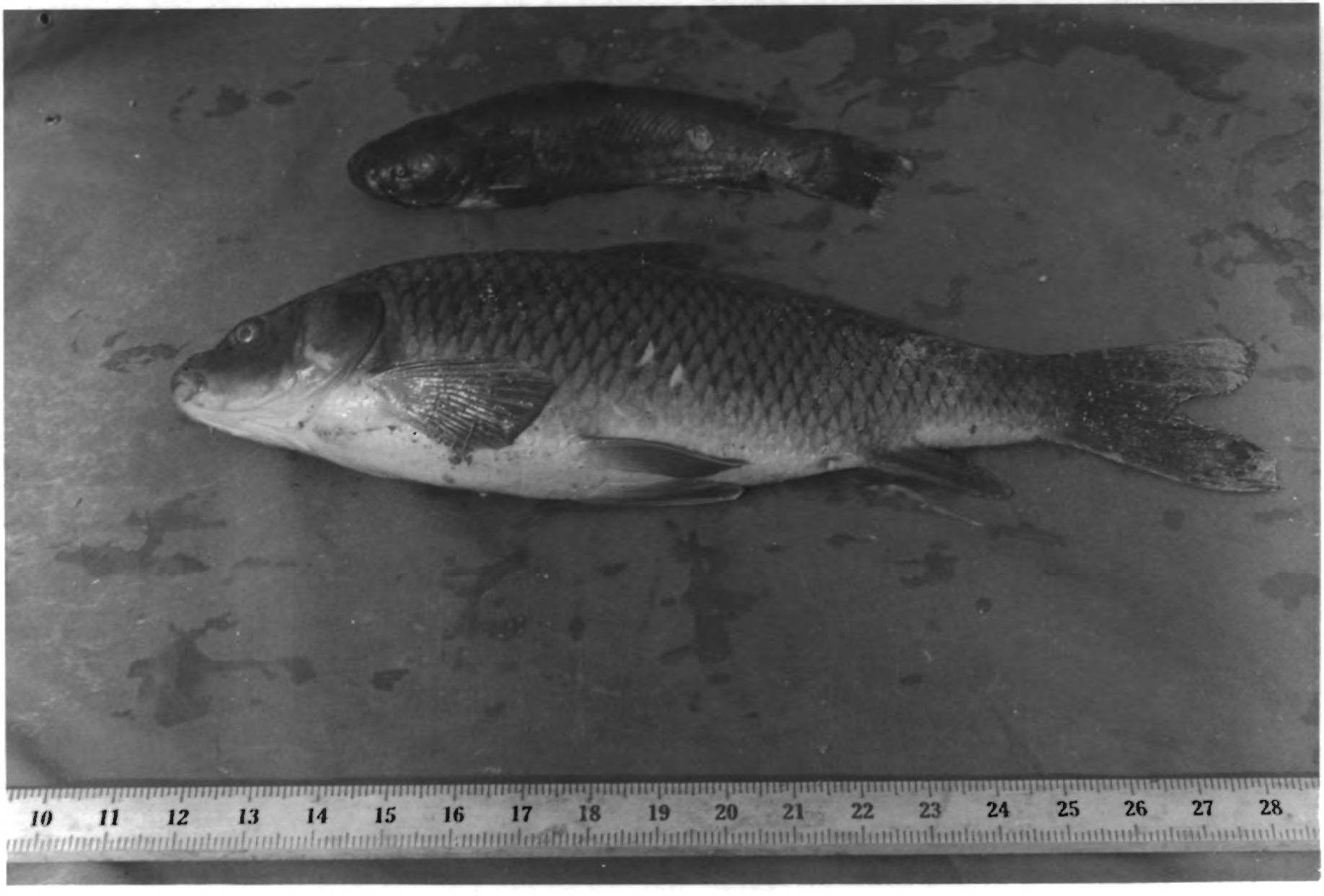

Figure 6a.

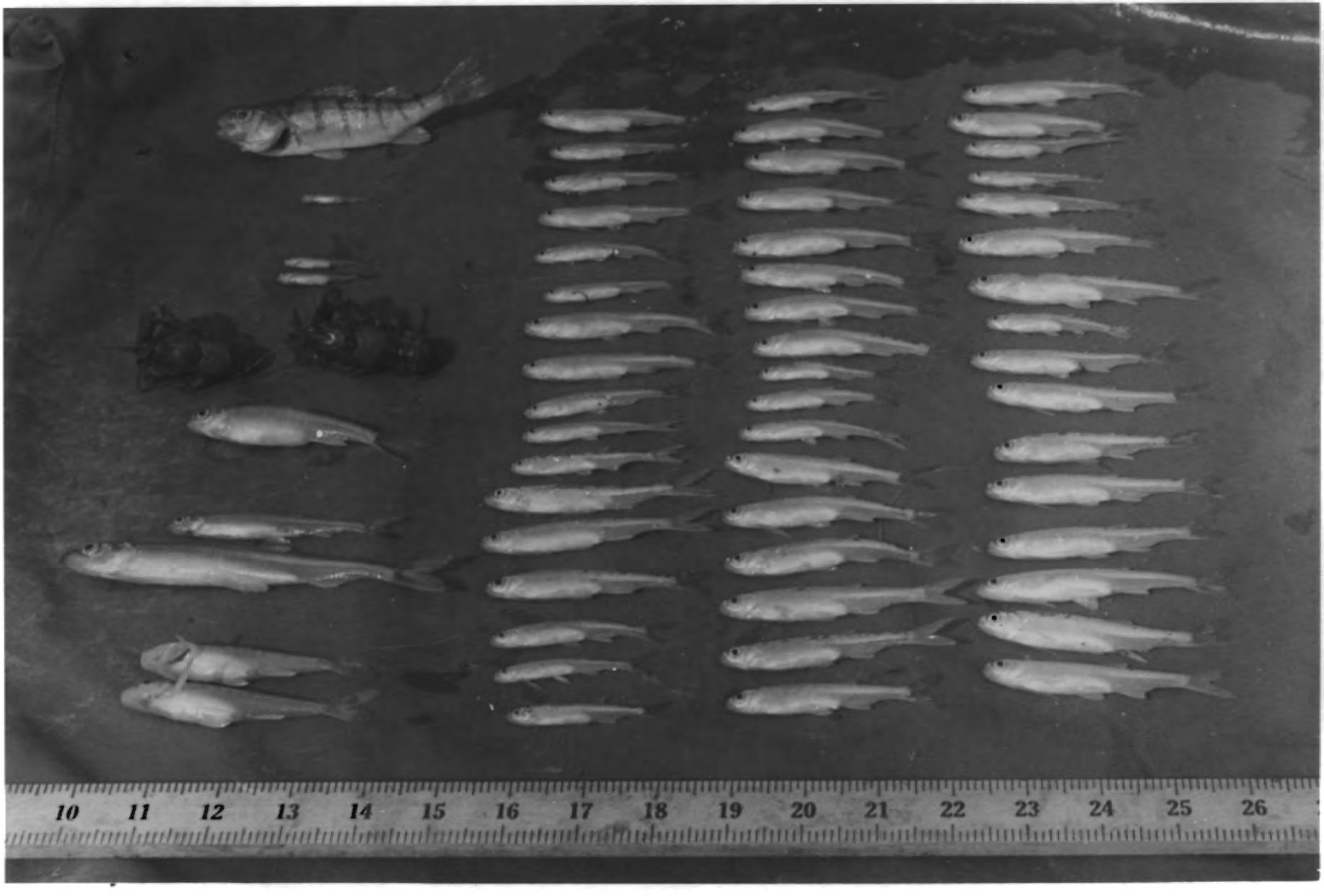

Figure 6b.

Figure 7.--Conservation Department field party seining along the inside of the harbor line fill at the south end of Stony Island, Grosse Ile Township, May 16, 1964.

Figure 7.

Figure 8.--Conservation Department field crew seining in marshy area at south end of Stony Island, Grosse Ile Township, May 16, 1964.

Figure 8.

The Conservation Department carries out a state-wide General Creel Census of sport fishing; the records are obtained by Conservation Officers, and are tabulated and summarized by the Institute for Fisheries Research. For the lower part of the Detroit River, the records (for 1945-1963) are rather sparse, and for seven of the nineteen years in question, no records were obtained, but the records are sufficient for a very general appraisal of sport fishing (Table 3). The various game species caught by anglers over the past 19 years were about the same as the species taken by our netting survey in April of 1964. Perch, rock bass, and pike were among the more abundant species. From the bottom of Table 3, certain totals provide an estimate of fishing quality: the 3,057 anglers whom officers contacted had fished a total of 10,878 hours and caught 16,441 fish, for an average catch per hour of 16,441 ÷ 10,878 = 1.5 fish. This catch of 1.5 fish per hour in the Detroit River in Grosse Ile Township is somewhat below the average (2.4) for all Great Lakes waters in Michigan, but is better than the average (1.3) for inland warm-water lakes and streams (compare Table 3 with Fish Division Pamphlet No. 28, Rev. July 1963, which is included as an appendix to this report). The point is that sport fishing in the Detroit River around Grosse Ile is of good quality, by average Michigan standards.

As stated above, a fish netting survey in the Detroit River was made during September of 1952,* similar to the survey of April 1964. In

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* Results of the 1952 survey were summarized in Institute for Fisheries Research Report No. 1350, and are reviewed herewith.

Table 3.--General creel census records obtained by Michigan Conservation Officers on fishing in the Grosse Ile Township portion of the Detroit River, 1945-1963

Year	Anglers	Hours	Fish	Number of fish, by species										
				Yellow perch	Rock bass	Blue-gill and sunfish	Crappie	White bass	Small-mouth bass	Large-mouth bass	Wall-eye	North-ern pike	Bull-heads, carp suckers	Sheeps-head
1945	323	877	452	266	17	12	...	23	...	...	4	127	3	...
1946	412	1,495	1,583	660	191	...	7	620	...	...	31	74	...	...
1947	661	1,841	2,704	2,271	...	...	...	...	...	...	...	431	2	...
1948	50	123	45	36	1	...	...	...	...	...	...	8	...	...
1949	238	512	425	373	...	...	...	...	...	...	...	52	...	...
1950	NO RECORDS													
1951	91	252	1,897	1,897	...	...	...	...	...	...	...	...	...	...
1952	1,066	5,034	8,484	4,762	1,809	37	40	544	122	3	636	88	...	443
1953	7	32	22	...	4	...	...	6	...	...	11	1	...	...
1954	NO RECORDS													
1955	NO RECORDS													
1956	NO RECORDS													
1957	4	20	57	52	...	...	...	...	...	...	...	5	...	...
1958	NO RECORDS													
1959	123	395	373	242	46	...	...	16	46	...	7	...	3	13
1960	NO RECORDS													
1961	54	151	326	251	32	...	...	...	10	...	5	2	25	1
1962	28	146	73	67	6	...	...	...	...	...	...	...	...	...
1963	NO RECORDS													
Totals	3,057	10,878	16,441	10,877	2,106	49	47	1,209	178	3	694	788	33	457

1952 the netting effort was mostly around Sugar Island, with less effort around Stony Island; in 1964 the distribution of netting effort was reversed, with most effort around Stony Island and less around Sugar Island. During the two surveys, the same types of nets were used, but there was a seasonal difference in season of collecting (one in fall, one in spring). The fishes which were collected during the two surveys were very similar in species composition and relative abundance. In other words the fish fauna in the Detroit River along the east side of Grosse Ile has not changed greatly during the last 12 years or so.

The case might be argued that the fish population around Stony Island is not of the greatest potential value because the population is made up so largely of carp and goldfish which are species of low value. That this is the present situation is not refuted, but it would be short-sighted to conclude that the composition of the fish fauna will not change for the better in the future. By a "change for the better" I mean a reduction in numbers of carp and goldfish, which should in turn allow some increase in the population of game fish. Carp and goldfish do well in waters which have much organic enrichment. This is the situation in the western end of Lake Erie which gets sewage disposal effluent from the Detroit River. Public health and fisheries scientists are working on the problem of recovering organic nutrients from sewage effluent, and allowing for progress in this direction, conditions in the lower Detroit River and adjacent portion of Lake Erie may improve with time.

INSTITUTE FOR FISHERIES RESEARCH
Gerald P. Cooper

Report approved by
G. P. Cooper

Typed by M. S. McClure

Appendix I

Data on fish collecting stations, Detroit River, vicinity of Stony Island, April 8 to 17, 1964. For locations of netting stations, see Figure 1.

Net number	Net locations
T-1	800' off S. W. end Stony Island. Not inside harbor line.
T-2	600' off S. center Stony Island. Inside harbor line.
T-3	1200' off S. center Stony Island. On harbor line.
T-4	900' off S. E. end Stony Island. Inside harbor line.
T-5	900' off S. center Stony Island. Inside harbor line.
G-1	50' off N. W. face of harbor-line fill of Stony Island. Not inside harbor line.
G-2	200' off N. W. end of Stony Island. Inside harbor line.
G-3	200' off N. face of harbor-line fill of Stony Island. Not inside harbor line.
G-4	1800' S. E. end of Stony Island off inside rock breakwater. Inside harbor line.
S-1	S. end of Stony Island. Inside harbor line.

Appendix II

Data on fish collecting stations, Detroit River, vicinity of Sugar Island, April 15 to 17, 1964. For locations of netting stations, see Figure 1.

Net number	Net locations
T-6	600' off S. end Sugar Island.
T-7	1800' E. of Sugar Island off S. side of breakwater.
S-2	At old docks on W. side of Sugar Island.
S-3	N. E. end of Sugar Island.

Gear descriptions:

Trap nets (T) 1 through 7 have pots 3' deep x 5' wide x 8' long of 1" bar mesh twine, hearts and wings 3' high of 1 1/2" bar mesh twine and leads are 3' deep x 150' long of 1 1/2" bar mesh twine.

Gill nets (G) 1 through 4 are 6' deep x 125' long of five 25' sections of the bar mesh sizes 3/4", 1", 1 1/4", 1 1/2" and 2".

Bag seine (S) used on seining stations 1 through 3 was 5' deep x 50' long, with a 5' x 5' bag, trailing 5' of 1/4" bar mesh and the two wings are 5' deep x 22 1/2' long of 3/8" bar mesh.

Appendix III

Data on fish collecting stations, Detroit River, vicinity of Stony and Sugar islands, April 8 through 17, 1964

Net number	Dates nets were on stations April	Netting effort	Comments on netting effort
T-1	8-9	1 day	Current upset wings. Net did not fish properly.
T-2	8-14	6 days	13-14 April net loosened by waves. Net did not fish properly.
T-3	8-14	6 days	13-14 April net loosened by waves. Net did not fish properly.
T-4	8-16	8 days	This net fished properly at all times.
T-5	9-16	7 days	11 April net found loosened. Net took fish anyway.
T-6	15-17	2 days	Net fished well.
T-7	15-17	2 days	Net fished well.
G-1	11-12	1 day	No fish taken.
G-2	11-14	3 days	One fish taken.
G-3	12-14	2 days	No fish taken.
G-4	12-15	3 days	Net not tended until 15 April because of heavy waves.
S-1	16	1 1/2 hrs.	A variety of fish present, but small fish not particularly abundant.
S-2	17	30 min.	No fish taken.
S-3	17	20 min.	No fish taken.

All nets removed from test waters by late afternoon April 17, 1964.

Appendix IV

MICHIGAN DEPARTMENT OF CONSERVATION
Lansing 26, Michigan

Fish Division Pamphlet No. 28

5 C Rev. July 1963

THE MICHIGAN GENERAL CREEL CENSUS, 1927-1962

By K. G. Fukano

The Michigan Department of Conservation has been recording a sample of the sport fishing in the State since 1927. Harold Titus, former member of the Conservation Commission, is credited with recognizing the need for the general creel census and having it established.

General creel census records are obtained by conservation officers as a part of their regular duties and incidental to the enforcement of fishing laws. Most records are taken during periods of heavy fishing and on bodies of water with heavy fishing pressure. Most officers obtain widespread coverage of the various waters in their portion of a county. The number of records obtained annually by each officer has averaged about 225, with a maximum of about 2,000. In counties where there is very little fishing, no records are obtained in some years. Fishermen are interviewed either during or at the end of a fishing trip. The number of each kind of fish taken, hours fished and angler's residence are recorded on a general creel census form.

The census records are compiled at the Institute for Fisheries Research in Ann Arbor, where the census slips are checked, sorted, and coded for IBM tabulation. Punching and tabulation are done by the Department's Accounting Section in Lansing. The data are summarized by type of water (trout lakes, trout streams, nontrout lakes, nontrout streams, and Great Lakes and connecting waters); by county; by Conservation district and region; and state-wide. All summaries are pooled figures; i.e., they are obtained simply by adding all records and computing averages from these totals. The catch per hour, as an index of fishing quality, is computed by dividing total catch by total hours of fishing (except for the unweighted means given in the accompanying table).

In Michigan, the large-scale hatchery planting of warm-water fish (mostly bluegills and bass) was discontinued in 1946. If this curtailment of stocking had resulted in a decline in fishing quality, the decline should have occurred about 1949 or 1950, allowing three to four years for the planted fish to be caught by anglers. For the years 1942-1949 the unweighted mean catch per hour for nontrout waters was 1.21 fish; for 1950-1962 it was 1.29 fish. The analysis of census records for a comparison of fishing quality before and after 1949 is complicated by the facts that the state-wide size limit on bluegills was removed by legislative act in 1949, and the census did not record separately the bluegills under six inches kept by anglers after 1949. Therefore, use of the general creel census records to evaluate the effect of discontinuance of warm-water fish plantings must be with reservations, but it is quite clear that the quality of fishing did not decline markedly.

(over)

Michigan General Creel Census, 1927-1962

Total fishing time (thousands of hours) recorded by conservation officers, and average catch per hour, summarized by type of water

Year	Thousands of hours of fishing	Type of water			
		Non-trout	Great Lakes[1]	Trout	All waters
1927[2]	26	..	..	..	1.15
1928	48	1.05	..	1.17	1.09
1929	52	0.88	..	1.17	0.96
1930	74	0.85	..	0.93	0.88
1931	63	0.88	..	0.97	0.91
1932	38	1.32	..	1.10	1.26
1933	47	1.28	..	0.68	0.97
1934	53	1.80	..	0.79	1.73
1935	59	1.85	..	0.80	1.58
1936	67	1.66	..	0.79	1.40
1937	62	1.68	..	0.76	1.46
1938	82	1.41	..	0.91	1.29
1939	109	1.12	..	0.83	1.06
1940	98	1.04	..	0.78	0.99
1941	118	1.06	..	0.77	1.00
1942	151	1.11	1.67	0.89	1.14
1943	103	1.17	1.60	0.90	1.16
1944	152	1.13	1.81	0.79	1.16
1945	144	1.05	2.16	0.83	1.12
1946	145	1.37	1.56	0.80	1.31
1947	96	1.44	2.72	0.79	1.42
1948	161	1.15	2.92	0.80	1.14
1949	168	1.28	3.06	0.72	1.29
1950	130	1.65	4.84	0.63	1.61
1951	123	1.50	3.21	0.76	1.37
1952	123	1.43	2.62	0.71	1.39
1953	148	1.37	3.00	0.64	1.29
1954	169	1.29	3.31	0.81	1.49
1955	147	1.27	2.82	0.81	1.47
1956	175	1.23	1.92	0.77	1.27
1957	209	1.24	1.33	0.75	1.19
1958	194	1.21	1.92	0.63	1.24
1959	167	1.20	2.91	0.62	1.35
1960	187	1.27	2.24	0.58	1.28
1961	167	0.96	1.53	0.62	0.98
1962	146	1.15	1.66	0.52	1.13
Unweighted mean	117	1.27	2.42	0.79	1.24

[1] The Great Lakes were included with "nontrout waters" prior to 1942.

[2] Data for 1927 were not divided according to type of water.