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AN EXAMINATION OF CADILLAC AND MITCHELL LAKES (WEXFORD COUNTY) TO DETERMINE SUCCESS OF GAME FISH SPAWNING

By

W. F. Carbine and G. N. Washburn

Game fish have not been stocked in Cadillac and Mitchell Lakes since 1940. This policy was adopted by the Conservation Department following the fisheries survey conducted on August 7-8, 1941. Each year since 1941 both of these lakes have been checked to determine the success of natural reproduction of all game species present in these lakes. Each year our netting has proven conclusively that sufficient young game fish are present to adequately insure a maximum population of adult (legal) game fish.

Although we had planned on making just a routine check during 1945, it was decided to make a special effort to obtain as many fish as possible to demonstrate to the sportsmen that natural reproduction of game fish in Cadillac and Mitchell Lakes was successful enough to take care of restocking. Consequently, the writers arrived in Cadillac late in the afternoon of August 21 and stayed until early afternoon on August 23, 1945.

We wish to acknowledge the assistance and cooperation extended during the period of this investigation by the following: Mr. Orville

Rettig, Assistant District Supervisor, Division of Field Administration; Conservation Officer Miller Biddleman; Richard Bohland, Fish Division; Messrs. Johnson, Eardly and Skellenger of the Cadillac Big Game Club.

Approximately 500 feet of experimental gill netting (five different sizes of mesh) was set in each lake on the morning of August 22. These gill nets were lifted on the morning of August 23 and brought in to the State Park where the fish were removed from the nets. Length measurements and samples of scales were obtained from all of the fish. The entire catch of fish from each lake was then laid out on tables so that the hundreds of sportsmen and campers could view them during the remainder of the morning (see attached pictures of fish made by Mr. Orville Rettig).

The following fish were taken in the gill nets:

Mitchell Lake

17 walleyed pike - 6.5 to 16.5 inches

19 perch: 5 small fish - 5.9 to 6.7 inches
14 large fish - 7.9 to 12.1 inches

1 common sucker - 17.5 inches

Cadillac Lake

9 walleyed pike - 7.7 to 13.6 inches

101 perch: 62 fish - 4.3 to 6 inches
22 fish - 6 to 8.7 inches
17 fish - 9 to 12.7 inches

No young of the year walleyed pike were taken in our gill nets because the smallest mesh was too large. From an examination of the scales,

the following results were obtained for walleyes:

	No. fish	Size Range(")	Age
Mitchell Lake	3	6.5 - 7.2	Second yr. of life-hatched 1944
	1	9.3	Third yr. of life -hatched 1943
	6	11 - 11.7	Fourth yr. of life-hatched 1942
	1	14.1	Fifth yr. of life - hatched 1941
	6	14.4 - 16.5	Sixth yr. of life and older - hatched 1940 or previous to 1940
Cadillac Lake	4	7.7 - 9.0	Second yr. of life-hatched 1944
	2	10.9 - 11.9	Third yr. of life -hatched 1943
	3	13.1 - 13.6	Fourth yr. of life-hatched 1942

Since walleyes have not been planted in either Cadillac or Mitchell Lakes since 1940, it is obvious that the 9 fish from Lake Cadillac and at least 11 of the 17 fish from Lake Mitchell resulted from natural reproduction. The six largest and oldest fish taken from Lake Mitchell could have been introduced by the plantings that were made previous to 1941 or they could have resulted from natural reproduction. Although the number of small walleyes taken in the nets is not impressive, it does indicate that there is a good population of young fish considering that only about one-fifth (approximately 100 feet) of the experimental gill nets set in each lake could be expected to take fish of this size.

Walleyed pike in both Cadillac and Mitchell Lakes are growing slower than average for the entire State. The average walleye in Michigan will reach the legal size of 14 inches sometime during the third summer of life. Walleyes in Lakes Mitchell and Cadillac do not reach legal size until sometime during their fourth year of life. Walleyes in Mitchell Lake are growing slightly slower than those in Cadillac Lake. Calculations show that the growth during the first year varied from 4.1 to 6.3 inches in Cadillac and 3.1 to 4.8 inches in Mitchell. Likewise, growth to the end of the second year varied from 7.7 to 9.0 inches in Cadillac

as compared with 6.5 to 7.2 inches for Lake Mitchell.

Slow growth is usually associated with a scarcity of food brought on by over population. A tremendous perch population is present in both of these lakes and it is known that perch and walleyes of the same size have similar feeding habits. Besides perch and walleyes, these lakes also contain northern pike, black crappies, rock bass, smallmouth bass, and largemouth bass. All of these fish are cannibalistic and are competing with one another for food. From reports of fishermen, Lakes Mitchell and Cadillac contain an abundance of just undersized walleyes. The presence of so many small walleyes is another indication that natural reproduction is successful. If so, the stocking of additional small walleyes would not improve the fishing for legal fish. Many sportsmen claim that there are very few legal walleyes in these lakes. The results of our netting operations did not indicate that this was true. But it is entirely possible that many walleyes are being "cropped" about as fast as they reach legal length.

We also seined at three different places in Mitchell Lake, one location in Cadillac and in one spot in the channel connecting the two lakes. Under ordinary circumstances it would have been possible for us to seine in at least ten different places on each lake. But our seining on this trip was done at or near popular resorts so that a maximum number of people could witness these operations and ask us questions. As a consequence, we did not make enough seine hauls to give a fully satisfactory sample of the fish populations in either lake, but it was the best that we could do in the one day allotted to seining. Also, it must be mentioned that we did not choose the most favorable spots on either lake for our

seining. Therefore, the results obtained can be considered minimal.

The fish obtained in all of the seine hauls from each lake are combined as follows:

Mitchell Lake

118	bluegills	1 - 5 inches
102	smallmouth bass	1.5 - 2 inches
18	smallmouth bass	4 - 6 inches
80	perch	2 - 3 inches
25	largemouth bass	1.5 - 5 inches
3	rock bass	4 - 6 inches
1	northern pike	14 inches
1	log perch	4 inches

Cadillac Lake

39	perch	2 - 3 inches
23	smallmouth bass	1.5 - 2 inches
17	smallmouth bass	4 - 5 inches
7	bluegills	1 - 1.5 inches

Connecting channel

An estimated 5,000 fish were taken in one seine haul. The catch was composed of about 65 per cent bluegills and 35 per cent black crappies.

If fish were as abundant around the entire shoreline (shore to about 50 feet out) of each of these lakes, the total fish population would have

been:

Mitchell Lake		Cadillac Lake	
Smallmouth bass	48,480	Smallmouth bass	15,400
Bluegills	47,672	Perch	15,015
Largemouth bass	10,100	Total all species	33,110
Perch	32,320		
Total all species	140,592		

The results of our seining can also be computed in a different fashion. If we were to assume that the fish were about equally distributed around the entire lake, the following results are obtained: Lake Mitchell - number of fish per acre 1,087 or 2,804,000 fish in the entire lake. Lake Cadillac - 187 fish per acre or 215,000 fish in the entire lake.

It must be emphasized that all of the above figures are minimal. If more seining had been possible a better average figure could have been obtained. In looking over seining records of past years, we find that over 30,000 fish were collected in one day of seining. Nevertheless, the above figures are of interest.

No walleyes were taken in our seining operations. Walleyes are extremely difficult to obtain by ordinary daytime seining methods. We also know that small walleyes are more apt to be found in deeper water.

From our observations on Lakes Mitchell and Cadillac, we believe that natural reproduction for all species is adequate and that no further stocking is necessary.

The poor fishing on Cadillac and Mitchell Lakes that was reported to us by the sportsmen cannot be laid to the fact that stocking has been

stopped. The young of all species of game fish were extremely abundant. If any scarcity of adult fish exists in either lake it is probably due to a shortage of food caused by overpopulation or because the legal fish are caught as fast as they reach legal size. It must also be remembered that adult game fish have their ups and downs as do game animals such as grouse and pheasants.

A great many sportsmen at Cadillac seemed to feel that the Conservation Department was using their lakes for experimental purposes. We are not experimenting on these lakes. We are just carrying out well established fish management practices based upon long time scientific observations and huge amounts of data. Planting of warm-water fish has been stopped on at least a hundred other lakes and similar check-ups have been made or are planned for the future. In no lake checked has there been any lack of naturally spawned game fish.

Another more extensive investigation is planned for sometime in late June or early July in 1946. The Cadillac Big Game Club will be notified in advance so that as many members as possible will be on hand to view the results.

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GILL NET CATCH FROM MITCHELL LAKE

Walleyed pike (fish on the right) range in length from 6.5 to 16.5 inches. The length of the perch varied from 5.9 to 12.1 inches. The common sucker was 17.5 inches long.

COMBINED CATCH OF FISH FROM MITCHELL AND CADILLAC LAKES