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WALLEYED PIKE EXPERIMENTS CONDUCTED AT THE LYDELL AND WOLF LAKE HATCHERIES IN 1943

by

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Our first experiments in raising walleyes to the fingerling size were conducted in 1942 (Reports 842 and 842a). In 1943, as in 1942, ponds at the Lydell and Wolf Lake hatcheries were used. Three ponds at the Lydell Hatchery were set aside for the 1943 experiments, as follows: Pond No. 12 (1.24 acres) was to be stocked with walleyes. Pond No. 13 (1.07 acres) was to be stocked with walleyes and suckers. Pond No. 14 (0.46 acres) was to be used as a stock pond for suckers which were to be fed to the walleyes in Pond 13. Pond No. 24 (37.5 acres) at the Wolf Lake Hatchery was also to be used for walleyed pike, and fathead minnows were to serve as forage fish.

Walleye eggs were obtained from the Bay City Hatchery on April 26. Twenty quarts of green eggs (stripped from Saginaw Bay fish on April 22) were taken to the Lydell Hatchery where they were placed in hatching jars. These eggs were used to stock all of our experimental ponds. It was decided to leave the eggs in the jars until they were about ready to hatch and then place them on bluegill trays in the hatchery ponds. All ponds were to be stocked at the rate of approximately 25,000 per acre. The eggs started to hatch on May 6, and the eggs were measured out and placed on trays in the ponds on May 7.

Lydell Hatchery

An estimated 28,100 walleye eggs (22,700 per acre) were placed on trays in Pond No. 12, and 24,800 eggs (23,200 per acre) were placed on trays in Pond No. 13. The weather turned cold following the planting of the eggs on May 7 and the last eggs hatched and left the trays on May 12 and 13.

On May 7 a total of 20 quarts (approximately 600,000) sucker eggs and fry were placed on bluegill trays in Pond No. 13. On this same date 9 quarts (approximately 270,000) of sucker eggs and fry were placed on trays in Pond No. 14. On May 14 two quarts (60,000) of sucker eggs and fry were scattered over a stretch of clean sand bottom in Pond 14. This latter planting of eggs hatched with little or no loss. On July 6 Pond 14 was drained and 6,624 suckers were placed in Pond 13.

Collections were made at intervals throughout the summer. The lengths of the fish at each collection date are summarized in Table 1. Brief notes that were taken at each collection date are given as follows:

June 20. Pond 12. An occasional walleye could be seen in the weeds near shore and were fairly numerous because we did not experience any difficulty obtaining a sample. Pond 13. A few suckers and walleyes were observed about the edge of the pond. Both species taken in each seine haul. Only about 1 1/2 suckers were taken in the seine for every walleye, indicating that little food was left in the pond for the walleyes. Pond 14. Suckers were observed about the edge of the pond and appeared to be fairly abundant. Two seine hauls yielded several hundred fish. The suckers in this pond are slightly smaller than those in Pond 13. This is probably due to the fact that they are less numerous in Pond 13 and therefore have more food available. On July 6 Pond 14 was drained and the remaining 6,624 suckers were placed in Pond 13.

Table 1. Growth during the season of walleyed pike

at the Lydell and Wolf Lake Hatcheries in 1943

Lydell Hatchery Pond No. 12				Lydell Hatchery Pond No. 13			Wolf Lake Hatchery Pond No. 24			
	Number	Total length (inches)		Number	Total length (inches)			Number	Total length (inches)	
Date	in sample	Range	Average	in sample	Range	Average	Date	in sample	Range	Average
							5/27	12	0.5-0.6	0.5
6/20	32	1.3-1.9	1.5	16	1.8-2.8	2.1	6/20	32	1.8-2.2	2.0
7/7	54	1.9-2.4	2.1	67	2.1-3.3	2.4	7/8-9	27	2.2-2.7	2.5
7/30	36	2.3-3.0	2.6	33	2.8-3.7	3.1	7/31	14	2.5-3.7	2.9
8/17	51	2.7-7.5	3.2	45	3.0-7.5	3.4	8/18	2	2.8-3.7	3.2
9/18-19	194	3.4-9.8	4.8[1]	309	3.5-9.9	4.6[1]	9/13-16	300	3.1-10.9	6.1[1]

[1] Weighted average

July 7. Pond 12. Seining was made difficult by the dense weed growth. It took about 2 hours to obtain a sample of 54 fish. Pond 13. Seining was made difficult because of dense weed growth, but it only took an hour to obtain a sample of 67 fish.

July 30. Pond 12. All vegetation in the pond has been cut by the crayfish, who are also responsible for making the water roily. Seined over about three-quarters of the pond in order to get our sample of 36 fish. Pond 13. Difficult to obtain our sample of 33 fish. No suckers were taken.

August 17. Pond 12. Water level about one foot low, which enabled us to seine out in center of pond. Not much difficulty was experienced obtaining a sample of 51 fish. Pond 13. Water level also low in this pond, but we had to cover at least half of the pond to get a sample of walleyes. One 5.3 inch sucker taken in this pond.

Ponds 12 and 13 were drained during September 18 and 19, 1943. The results obtained at this time are summarized in Table 2. Both ponds were stocked at the rate of approximately 23,000 walleyes per acre. The percentage survival in Pond 13 was almost twice that of Pond 12 (2.96 to 1.57 per cent). This greater survival in Pond 13 is probably due to the suckers that were placed in the pond as forage for the walleyes. The presence of the suckers in Pond 13 was also probably responsible for the greater production (686 to 355 fish and 31.3 to 22.7 pounds per acre). Despite the fact that suckers were introduced in Pond 13 as forage for the walleyes, the fish in Pond 12 were larger when the pond was drained than were the fish in Pond 13 (Table 3). This can be explained by the fact that fewer walleyes were present in Pond 12 and therefore probably grew faster. Another factor that may have a bearing on this condition is that the suckers in Pond 13 were all consumed early in July, whereas if suckers had been present all summer the walleyes could probably have been expected to make a better

Table 2. Production, survival and weight of the walleyed pike raised at the Lydell and Wolf Lake Hatcheries in 1943

Pond	Acreage	Number fish planted	Number fish recovered	Percentage survival	Total weight (pounds)	Number fish per acre	Number pounds per acre
Lydell No. 12	1.24	28,100	440	1.57	28.2	355	22.74
Lydell No. 13	1.07	24,800	734	2.96	33.5	686	31.31
Wolf Lake No. 24	37.5	873,900	3,302	0.38	393.4	88	10.49

Table 3. Comparison of the length and weight of the walleyed pike at the time the ponds were drained

Pond	Size group	Number produced	Total weight (pounds)	Individual weight (ounces)	Length (inches)		
					Minimum	Average	Maximum
Lydell Hatchery	Cannibals	97	19.45	3.21	4.9	8.5	9.9
Pond No. 12	Small	343	8.75	0.41	3.5	3.8	4.4
Lydell Hatchery	Cannibals	154	25.75	2.68	4.9	8.1	9.8
Pond No. 13	Small	580	7.75	0.21	3.4	3.7	4.2
Wolf Lake Hatchery	Cannibals	1,793	378.70	3.38	4.7	8.4	10.9
Pond No. 24	Small	1,509	14.70	0.16	3.1	3.5	4.2

growth. This is further borne out by examining the lengths of the fish at the various collection dates (Table 1). On June 20 and July 7 the walleyes in Pond 13 were growing at a much faster rate than the fish in Pond 12. Therefore, after the suckers were all eaten in Pond 13 the walleyes grew slower, on the average, than did the walleyes in Pond 12.

Wolf Lake Hatchery

An estimated 873,900 walleye eggs (23,300 per acre) were placed on bluegill trays in Pond No. 24 on May 7, 1943. The weather turned cold after May 7 and these advanced eyed eggs were not completely hatched until May 13.

On May 1 an estimated 116,000 adult fatheaded minnows weighing 116 pounds were placed in Pond 24 as forage for the walleyed pike. A truck load of old boards and planks was placed in the pond for the minnows to spawn on.

Collections were made at intervals throughout the summer. The lengths of the fish at each collection date are summarized in Table 1. Notes taken at each collection date are as follows:

May 27. Dr. Hazzard and Mr. O. H. Clark caught over 20 walleyes in a bobbinet seine. These walleyes averaged about one-half an inch in length and had been feeding on plankton. Fatheaded minnows were spawning.

June 20. Walleyes were seen near shore, around the entire pond. All appeared to be about the same size and they were all cruising about, apparently in search of food. Only one advanced fry of the fatheaded minnow was observed, but many adults were observed and some were taken in each haul of the seine. Fatheaded minnow eggs were found under countless stumps and boards. It is believed that the walleyes were eating the fathead fry as soon as the fry became free-swimming.

July 8-9. It was extremely difficult to obtain a sample of walleyes. We spent four hours seining on July 8 and only picked up 8 fish, while 19 fish were picked up in about four hours of seining on July 9. No fatheaded minnow eggs or young were observed although adults were still taken in each haul of the seine.

July 31. Had difficult time seining and were only able to secure 14 walleyes and all of these were taken in outlet of the seining basin from Pond 17.

August 18. Only able to take two walleyes from this pond. It is almost impossible to secure a sample from such a large pond. A few fatheaded minnows were taken in almost every haul of the seine.

Pond No. 24 at Wolf Lake was drained during September 13-16. A great deal of trouble was experienced in draining this pond because of the large expanse (several acres) of shallow water and deep mud in front of the outlet. Many walleyes could not be removed from the pond and were left stranded in the mud. Apparently walleyes hang up in a pond until almost all of the water is gone. A total of 621 large (cannibals) and 25 small walleyes were picked out of the mud after the pond was drained. Because of the size of this mud flat and the depth of the mud, it is believed that many other dead walleyes were not picked up. Long exposure in the muddy water during the draining process and in the seining basin was responsible for the death of many other walleyes even though they were placed in fresh, clean water immediately. Only 1,038 of the 3,302 fish taken from this pond were planted; the rest died.

The production and percentage survival of the walleyes in Pond 24 are presented in Table 2. The percentage survival (only 0.38 per cent) of the walleyes in this 37.5 acre pond was very disappointing. The number of fish

and the number of pounds of fish per acre was lower than in any of our previous walleye experiments. Walleyes were fairly abundant in this pond during June, as evidenced by the ease with which samples were obtained. But as the summer progressed it became more difficult to secure an adequate sample. Apparently the cannibals accounted for more fish than do cannibals of largemouth and smallmouth bass. Also, the more than 100,000 fatheaded minnows placed in the pond as breeders and all of their young were not sufficient to relieve the food shortage and prevent excessive cannibalism.

In comparing the length and weight of the walleyes (Table 3), it is interesting to note the similarity in size of the cannibal and small-sized walleyes in the two ponds at the Lydell Hatchery and the one pond at Wolf Lake. All three ponds were stocked with the same number of walleyes per acre but otherwise each pond was different. One pond was stocked with walleyes only while the two other ponds were supplied with forage fish--suckers and fatheaded minnows. The production and percentage survival of walleyes differed with each pond but the minimum, maximum and average lengths of the walleyes in each pond was very nearly the same.

The following pertinent facts should be kept in mind in case walleye culture is attempted in future years:

1. There is hardly any point in securing samples of walleyes during the season because the larger the walleyes get the more difficult it is to obtain an adequate sample. Cannibal walleyes are seldom taken by seining.

2. Good growth is obtained as long as an adequate supply of forage fish is present. Growth is slowed down tremendously after the forage fish are all devoured and apparently cannibalism becomes a factor in the percentage survival. An experiment should be conducted in which the walleyes are removed and planted as soon as the forage fish have disappeared.

3. Walleyes cannot withstand a great deal of handling and care should be taken to handle them as little as possible during the process of draining the ponds. If possible, the walleyes should be planted immediately after they are removed from the rearing pond.

We wish to express our appreciation for the cooperation received from Messrs. J. G. Marks and Claude Lydell and members of their hatchery crews.

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