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WARM-WATER FISH EXPERIMENTS CONDUCTED IN

HATCHERY PONDS DURING 1946

by

W. F. Carbine

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FISH DIVISION

This report has been long delayed due to the many changes in the original plans that have been made and because of the difficulties involved in stocking all of the ponds. For some time this past spring we were afraid that most of the program would have to wait until 1947. Thanks to the untiring efforts of the hatchery men and Institute personnel, we were able to get most of our program underway this year.

Wolf Lake Hatchery and Almena Rearing Ponds

Eleven ponds have been stocked with bluegills for an experiment in the control of stunted populations of this species. These ponds range in area from 0.85 to 4.13 acres and have a total area of 26.69 acres. A total of 1,779,000 fry and 612 pounds of yearling bluegills was stocked in these 11 ponds as follows:

Pond number	Area (acres)	Stocking rate per acre	Total stocked
8	0.90	200 pounds	180 pounds (yearlings)
22	2.07	100 pounds	207 pounds (yearlings)
5 (Almena)	1.50	150 pounds	225 pounds (yearlings)
3	0.85	25,000 fry	21,200 fry
14	3.11	25,000 fry	77,700 fry
18	3.50	100,000 fry	350,000 fry
19	3.51	50,000 fry	175,000 fry
20	1.77	150,000 fry	265,000 fry
21	2.35	100,000 fry	235,000 fry
23	4.13	50,000 fry	206,000 fry
4 (Almena)	3.00	150,000 fry	450,000 fry

A careful check will be made on the growth rate of these bluegills. At such time when we are certain that the peak of the carrying capacity has been reached and passed and that the growth rate of the bluegills has declined to such an extent that the length of the fish remains stationary, attempts will be made to increase the growth of the stunted fish by decreasing their numbers in each pond. Fingerling and adult largemouth bass will probably be used at first to control the stunted bluegills and if this fails, we will use smallmouth bass, walleyed pike, and northern pike. Partial poisoning may also be resorted to if large predatory species of fish fail to control the stunting. All of the above ponds will be drained each fall and spring and total weights and measurements of length will be made at such times. By having a large number of ponds available for such experiments several rates of stocking of largemouth bass can be made and still leave several ponds for control.

Three ponds (all stocked at the rate of 25,000 fry per acre) are being used to determine the carrying capacity, and to give us further information as to whether a large variety or a smaller number of species will give the greatest yield. Two of the ponds (No. 6 at Wolf Lake having an area of 2.27 acres, and Pond No. 3 at Almena having an area of 5.5 acres) with a total area of 7.77 acres have been stocked with 193,700 largemouth bass (No. 3--137,000; No. 6--56,700). The third pond (No. 2 at Almena) with an area of 4 acres was stocked with 100,000 bluegill fry. These three ponds will be drained each spring and fall until maximum carrying capacity has been reached. Then bluegills will be placed in the largemouth bass ponds and bass in the bluegill ponds. After maximum carrying capacity has been reached again, a third species will be added to each pond. These experiments should tell us whether it is possible to produce a higher poundage of fish per acre using one, two, or more species.

Pond No. 15 (7.0 acres) at Wolf Lake has been stocked with 25,000 smallmouth bass. This pond will be drained this fall and the "hogs" (cannibals) and "normal" growing bass will be sorted, weighed, counted, and placed in separate ponds. The purpose of this experiment is to determine whether fast growing fish have an earlier mortality than slower growing fish. Pond No. 13 (4.8 acres) will be used to hold either the small fish or the cannibals this winter.

Pond No. 24 at Wolf Lake (37.5 acres) has been stocked with bluegills and largemouth bass. This pond will not be drained until the fall of 1947 or the spring of 1948 at which time the fish will be used for various experiments.

Hillsdale Rearing Ponds

All of the ponds at Hillsdale were to be stocked and opened to the public for fishing under special regulations. All of the ponds but No. 5 (12.0 acres) were stocked with fish and have been open to fishing since April 27 (Pond No. 2) and June 24 (Ponds 3, 4, and 6). (For further information on the experiments that are underway at Hillsdale refer to the report (no number) of April 15, 1946, titled "Experiments to be Conducted at the Hillsdale Rearing Station in 1946.")

Pond No. 2 (4.0 acres) was stocked with 70 each of brook, brown, and rainbow trout.

The other ponds were stocked with the following number and pounds of fish:

Pond number	Area (acres)	Legal bluegills		Sublegal bluegills		Legal large-mouth bass		Sublegal large-mouth bass		Total	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
3	4.0	459	240.2	625	8.7	67	98.5	58	7.2	1,209	354.6
4	6.0	987	353.3	229	17.1	62	88.5	106	41.2	1,384	500.1
6	16.0	2,468	845.7	1,000	70.9	318	338.9	186	24.4	3,972	1,279.9
Total	26.0	3,914	1,439.2	1,854	96.7	447	525.9	350	72.8	6,565	2,134.6

Pond No. 5 was stocked with 100,000 bluegill fry and 1,000 largemouth bass fry. These fish will be used to supplement the stocks in other ponds.

All ponds at Hillsdale will be drained this fall. The fish removed from each of the ponds will be weighed measured and returned to the same pond.

Drayton Plains Hatchery

Ponds 2, 6, 7, 8, 9, 10, and 11 at Drayton Plains were to be used for warm-water fish experiments. George Washburn needed one extra pond for his chub experiments, so Pond 2 was turned over to him. Dr. Robert C. Ball took over the fertilization experiments and Ponds 6, 8, and 10 were turned over to him. (Ponds 6, 8, and 10 were stocked with 736, 1,040, and 7,150 largemouth bass fry and 11,000, 15,000, and 106,000 bluegill fry respectively.)

Ponds 7 and 9 were to have been used for experiments on carrying capacity and were to have been stocked with 162,500 bluegill fry and 167,500 largemouth bass fry, respectively. Mr. Hughes was unable to obtain the largemouth bass fry for Pond 9, so this pond was stocked on July 12, with 40 adult bluegills, which were being held in the experimental ponds. Pond 7 was stocked with 165,000 bluegill fry. Pond No. 11 was to have been stocked with largemouth bass fry at the usual rate per acre (25,000 fish per acre or a total of 195,000 fish). A total of 47,387 largemouth bass (size range $5/8$ to $1\ 3/4$ inches) were stocked in this pond between June 29 and July 9, according to figures furnished by Mr. Hughes on July 30. Apparently, only one pond (No. 7) was stocked at the appropriate rate and is the only one of the three ponds from which the results will have much significance. It might be possible to salvage something from Pond 11, but the tremendous variation in the size of the bass stocked

might result in all cannibal fish by the time the pond is drained. It might be possible to obtain a supply of fingerling bass from the Wolf Lake Hatchery so that the experiments that were planned for Drayton Plains can be gotten underway this fall.

All experiments conducted in the small experimental ponds were unsuccessful because of our failure to obtain a supply of bluegill breeders and because of the pressure of other duties which prevented us from initiating these experiments early in the summer.

Ponds 1 and 2 at the Fenton Rearing Ponds were stocked with walleyed pike fry and should not be drained until sometime during the last half of September, so that Mr. Paul Eschmeyer can be on hand to obtain weights and lengths of the fish.

Pond No. 3 at Fenton was stocked with 18 adult bluegills. Whether this pond is to be drained this fall depends upon the draining of the ponds at Drayton Plains and the plans that can be developed for the use of these fish.

Summary

The following number of ponds are being used for warm-water fish experiments at the various hatcheries and rearing stations:

- (1) Wolf Lake Hatchery
12 ponds (36.26 acres) plus Pond No. 24 (37.5 acres)
- (2) Almena Rearing Ponds
4 ponds (14.0 acres)
- (3) Hillsdale Rearing Ponds
5 ponds (42.0 acres)
- (4) Drayton Plains Hatchery
3 ponds (21.0 acres) plus 10 experimental ponds (1 acre)
- (5) Fenton Rearing Ponds
3 ponds (10.48 acres)
- (6) Total: 38 ponds (162.24 acres)

INSTITUTE FOR FISHERIES RESEARCH
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