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REARING OF WALLEYE PIKE IN THE RAPID RIVER BORROW PIT, DELTA COUNTY, 1975

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SUMMARY

Walleye fingerlings were successfully raised in the Rapid River Borrow Pit in 1973 and 1974. Therefore, the pond was stocked again in 1975 with 225,000 walleye fry.

Plankton populations were monitored at various times during the spring. A total of 23,634 fingerling walleyes were harvested in six days of seining between July 2 and 18, 1975. This represents 10.5% of the plant. An abundance of filamentous algae made seining difficult, but the walleyes did not appear to be adversely affected.

It is recommended that the stocking level be reduced to 175,000 fry in 1977. Increased survival from decreased competition should result and, therefore, lower the cost of the operation (6.94 cents/fingerling).

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INTRODUCTION

The Rapid River Borrow Pit, Section 4, T40N, R21W, was created during the summer of 1972. It is 7 acres in size and was used during 1973 and 1974 to rear walleye fry to the fingerling stage. Good success was obtained in 1973 when 37,619 fish were harvested and in 1974 when 24,124 fish were harvested (18.8% and 12.1% of the respective plants). These successes prompted a continuation of the program in 1975.

METHODS

Preparation & Stocking of the Borrow Pit

Walleye fingerlings remaining in the borrow pit after the 1974 harvest operation were removed by chemical treatment on August 19, 1974. Fintrol concentrate at the rate of 5.0 parts per billion was used, and a complete kill was surmised.

To enhance and maintain an adequate zooplankton population, torula yeast was added to the Rapid River Borrow Pit in 1975. The yeast was applied manually to the pond surface on May 12, 19, 27 and June 3, 9, 16 and 23.

On May 27, 1975, 225,000 swim-up walleye fry were stocked in the borrow pit. The fry were the progeny of wild adult walleyes captured in Little Bay De Noc earlier in the spring.

Fingerling Harvest Techniques

The walleye fingerlings were harvested with 150-foot long, 12-foot deep, 1/4-inch mesh nylon seines. It was necessary to tie two of the seines together to reach the areas where the fingerlings were concentrated.

RESULTS

Spring-Summer Observations

A Wisconsin-style plankton net was used to monitor zooplankton populations in the borrow pit. A 100-foot transect was set up along the north shore, and tows were made on May 12, 19, 27 and June 4, 9, 16 and 23.

The Rapid River Borrow Pit did not develop a significant bloom of desirable zooplankton in 1975. The limnetic cladoceran Bosmina sp. and the cyclopoid copepod Cyclops sp. were the only organisms that developed substantial populations. Zooplankton tows on May 11, 19

and 27 failed to capture enough organisms to quantify although Bosmina sp. and Cyclops sp. were encountered. Quantitative analysis of zooplankton revealed Bosmina sp. populations of 4.1 organisms per liter on June 4, 34.1 per liter on June 9, 6.4 per liter on June 16 and 4.7 per liter on June 23. Cyclops sp. numbered 0.47 organism per liter on June 4, 0.97 per liter on June 9, 5.75 per liter on June 16 and 8.8 per liter on June 23. Only a trace of Daphnia pulex was found on June 9 and 16. The small cladoceran Scapholeberis sp. was found in small quantities on June 16 and 23. This organism was apparently more numerous than the plankton tows revealed. It also appears to have been important in the walleye diet.

The Rapid River Borrow Pit was quite turbid all spring and summer reflecting a dense phytoplankton bloom. Filamentous algae began developing on May 24, and dense growths carpeted the substrate and parts of the surface all summer.

During the yeast application on June 9, considerable numbers of 0.75-inch walleye were observed throughout the pond about 2 - 2.5 feet below the water surface. The fish were observed singly and in pairs.

Fry Harvest Operations

Seining began on June 2 and terminated on July 18. The total catch was 23,634 fish (10.5% of the plant) in six days of seining (Appendix I & II). When harvest operations began, the fish averaged 2 inches; they averaged 2.64 inches when operations ceased. Cannibalism appeared nonexistent.

A small number of yearling walleyes were also captured. These fish were 7.5 - 8.0 inches and were apparently survivors of the 1974 chemical treatment.

Post Harvest Operations

Food habit analyses were made on July 2 and 10, 1975. On July 2, a small cladoceran (probably Scapholeberis sp.) occurred at a rate of more than 100 individuals per digestive tract. On the second occasion, chironomid larvae and pupae predominated, but the small cladoceran (probably Scapholeberis sp.) was also encountered in large numbers. The general condition of the walleye fingerlings was excellent.

Residual walleyes were removed by chemical reclamation on August 15, 1975. Rotenone was used at a concentration of 1.0 part per million, and a complete kill (±300 fish) resulted.

DISCUSSION

For the third consecutive year, a significant number of walleye fingerlings were produced in the Rapid River Borrow Pit. The total 1975 project cost was $1,643 (Appendix III); 23,634 fingerlings were harvested; so each fingerling was produced at a cost of 6.95 cents. This cost is higher than the similar harvest operation at the Moss Lake Borrow Pit, but it is felt that the full potential of the Rapid River pond has not yet been realized. Reduction of the stocking rate to 175,000 fry in 1977 should reduce competition,

increase survival and, therefore, lower the production costs.

Development of a better zooplankton population should also assist in attaining a higher survival rate. The cyclopoid copepod Cyclops sp. and the limnetic cladoceran Bosmina sp. comprised most of the zooplankton population during the rearing period in 1975, but their numbers were low and food habit studies showed the young walleyes did not depend significantly on either species. The small cladoceran Scapholeberis sp. and chironomid larvae and pupae were the principle food items of the young fish. Habit preferences of the organisms precluded their capture in the plankton net.

Two 150-foot long seines were tied together to capture walleyes. The technique worked well, but at least six individuals were required to operate the large seines.

Profuse growths of filamentous algae made seining operations quite difficult in 1975. Much time was consumed removing individual fish from the algae. The walleyes did not appear to suffer adverse effects from entanglement in the algae, however.

Considerable assistance with the project was given by the Upper Peninsula Game Protectors Association, Mead Rod and Gun Club and Sport Fishing Unlimited. Their help was sincerely appreciated.

APPENDIX I

DATA SUMMARY

Number planted -	225,000 swim-up fry
Weight planted -	1.8 pounds
Number harvested -	23,634
Weight harvested -	76.8 pounds
Percent harvested -	10.5
Number of walleyes removed by chemical reclamation -	300
Total number of walleyes produced in the Rapid River Borrow Pit -	23,934
Percent survived during 1975 -	10.6

APPENDIX II

SUMMARY OF 1975 HARVEST OPERATIONS

Date	No. of Walleyes	Average Length	Average Weight
July 2, 1975	3,354	2.00"	1.10 grams
July 3, 1975	4,182	2.10"	1.12 grams
July 10, 1975	9,700	2.36"	1.47 grams
July 14, 1975	3,420	2.44"	2.10 grams
July 15, 1975	2,051	2.44"	2.10 grams
July 18, 1975	927	2.64"	2.50 grams
	23,634		

APPENDIX III

1975 PROJECT COSTS

The following is a breakdown in costs involved in the total rearing pond operation in 1975:

I. Fertilization with torula yeast

Salary - Biologist		$ 203.84
C.E.T.A. employee		146.44
C.S.S.& M.		19.25
Torula yeast		200.00
	Sub-total:	569.53

II. Spring & summer observations & harvest operations

Salary - Biologist		174.72
C.E.T.A. employee		251.04
Fish culturist		120.72
Fish Area Manager		134.40
Force account		192.00
W.I.N. employee (2 man days)		
Youth Conservation Corps (3 days expended - 8 individuals each day)		
Local sportsmens club assistance (14.5 man days)		
C.S.S.& M. - Travel expense		41.25
Vehicle expense		31.99
	Sub-total:	946.12

III. Chemical Reclamation

Rotenone		72.30
Salary - Biologist		29.12
C.E.T.A. employee		20.92
C.S.S.& M. - Travel expense		2.75
Vehicle expense		2.10
	Sub-total:	127.19

Grand total: $ 1,642.84