Original: Fish Division
cc: Education-Game
Mr. Lydell
Mr. J. G. Marks
Mr. Widmyer
Dr. Allison
Mr. Fortney
Institute for Fisheries Research
Mr. Hughes

INSTITUTE FOR FISHERIES RESEARCH
DIVISION OF FISHERIES
MICHIGAN DEPARTMENT OF CONSERVATION
COOPERATING WITH THE
UNIVERSITY OF MICHIGAN

ALBERT S. HAZZARD, PH.D.
DIRECTOR

ADDRESS
UNIVERSITY MUSEUMS ANNEX
ANN ARBOR, MICHIGAN

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# EXAMINATION OF BASS FRY FROM MICHIGAN HATCHERIES AND REARING PONDS IN 1943

Bass fry from bass hatcheries and rearing ponds were examined in 1943 to determine the effectiveness of the few changes in rearing methods recommended last year to eliminate the bass tapeworm (Proteocephalus ambloplitis) (Institute for Fisheries Research Report No. 852). The recommendations were to remove bass fry from the spawning pond shortly after they swam up and to hold adult bass in ponds of the series below the fry ponds.

## Lydell Hatchery

Examined in July, 1943

| Pond | Species | Number Examined | Number Positive | % Infection | Comments |
|---|---|---|---|---|---|
| 3 | SM Fry | 16 | 0 | 0% | Removed from breeders in Island and #7 within 72 hrs. after swimming up. Pond 2 containing infected breeders flows directly into #3, but did not infect it. |
| 5 | SM Fry | 25 | 1 | 4% | Removed from Island and Pond 7 within 72 hrs. after swimming up. Water from Pond 3 flows into this pond. |
| 7 | SM Fry | 25 | 25 | 100% | Breeders still in pond. |
| 9 | SM Fry | 25 | 25 | 100% | Breeders still in pond. |
| 11 | SM Fry | 21 | 21 | 100% | Fry transferred from Pond 7 |
| 17 | SM Fry | 25 | 0 | 0% | Fry removed within 48 hrs. after swimming up. |

Examined in July, 1943 (continued)

| Pond | Species | Number Examined | Number Positive | % Infection | Comments |
|---|---|---|---|---|---|
| 18 | SM Fry | 25 | 0 | 0% | Removed from nest with tube. Never swam up. |
| 21 | SM Fry | 25 | 0 | 0% | Removed from screens within 48 hrs. after swimming up. To be reared for breeders. |

Examined in September, 1943

| Pond | Species | Number Examined | Number Positive | % Infection | Comments |
|---|---|---|---|---|---|
| 18 | SM Fry | 25 | 0 | 0% | (See July, 1943) |
| 19 | LM Fry | 23 | 1 | 4.54% | No breeders in pond. |
| Belmont #3 | SM Fry | 25 | 0 | 0% | |
| Belmont | Bluegill | 24 | 0 | 0% | |
| Webber Dam | SM Fry | 13 | 0 | 0% | |

In all ponds containing both breeders and fry, 100% of the fry examined were infected with the bass tapeworm larvae. In pond #5, a 4% infection was found in fry removed approximately 72 hours after swimming up. The infection probably was acquired before the fry were removed from the spawning pond. This means that the fry can become infected within 72 hours after swimming up and should be removed from the spawning pond prior to that time. In pond 19, which contains no breeders, a 4.54% infection was found. This infection was undoubtedly acquired before the fry were placed in the pond because there are no bass in the supply water.

Pond 2 contains breeder bass and empties directly into pond 3 containing bass fry, sixteen of which were found to be uninfected. This finding does not mean that the infected intermediate host cannot pass from one pond to another in the water supply. It means that the number of fry examined was too small, or the adult bass were not infected with adult

tapeworm, or that the intermediate host was not present. Since fry were found to be infected in ponds containing breeders, proving that infected adult bass and the intermediate host are present, the logical conclusion is that an insufficient number of fry were examined.

Hastings Hatchery

Examined in July, 1943

| Pond | Species | Number Examined | Number Positive | % Infection | Comments |
|---|---|---|---|---|---|
| 4 | LM Fry | 21 | 0 | 0% | Collected from lakes when one-half to one inch long. |
| 5 | SM Fry | 25 | 21 | 84% | Adults in pond. |
| 6 | SM Fry | 25 | 12 | 48% | Removed from screen shortly after swimming up. |
| 7 | SM Fry | 25 | 0 | 0% | Removed from screen shortly after swimming up. |
| 11 | SM Fry | 25 | 0 | 0% | From Lydell Hatchery. |
| 10 | SM Fry | 25 | 0 | 0% | From Lydell Hatchery. |

Examined in September, 1943

| Pond | Species | Number Examined | Number Positive | % Infection | Comments |
|---|---|---|---|---|---|
| Gun Lake Pond | SM Fry | 25 | 0 | 0% | |
| Orangeville Pond | SM Fry | 25 | 0 | 0% | |

Pond 5 in which 84% of the fry examined were infected also contained adult bass. All other ponds containing only fry were uninfected, except pond 6. The high percent of infected fry in this pond undoubtedly was caused by leakage of water from pond 5 which contained infected breeders and is above pond 6 in the series. Although the connection between ponds 5 and 6 was supposed to be kept closed, it was opened several times by a new member of the crew who did not realize its importance. That such

accidents do occur is another good reason for keeping infected breeders in a pond at the lower end of the series or where water from the infected fish cannot contaminate the water supplying ponds containing bass or bluegill fry.

Wolf Lake Hatchery

Examined in July, 1943

| Pond | Species | Number Examined | Number Positive | % Infection | Comments |
|---|---|---|---|---|---|
| 3 | SM Fry | 25 | 0 | 0% | From Lydell Hatchery. |
| 5 | SM Fry | 25 | 0 | 0% | From Lydell Hatchery. |
| 6 | LM Fry | 28 | 2 | 7.1% | Collected from Big Lake, Allegan County. |
| 9 | LM Fry | 21 | 0 | 0% | Collected from Wolf Lake. |
| 13 | LM Fry | 25 | 25 | 100% | Adults present. Some fry from Muskrat Lake. |
| 14 | SM Fry | 28 | 27 | 96.4% | Adults present. Some fry from Lydell Hatchery. |
| 21 | SM Fry | 25 | 0 | 0% | Fry from Lydell Hatchery. |
| Almena 2 | SM Fry | 25 | 0 | 0% | Fry from Lydell Hatchery. |
| Almena 4 | LM Fry | 25 | 0 | 0% | Collected from Three Mile Lake, Van Buren County. |

Examined in September, 1943

| Pond | Species | Number Examined | Number Positive | % Infection | Comments |
|---|---|---|---|---|---|
| 3 | SM Fry | 12 | 0 | 0% | |
| 4 | SM Fry | 12 | 0 | 0% | |
| 5 | SM Fry | 12 | 0 | 0% | |
| 6 | LM Fry | 13 | 0 | 0% | |
| 7 | SM Fry | 12 | 0 | 0% | |
| 8 | SM Fry | 12 | 0 | 0% | |
| 9 | LM Fry | 12 | 0 | 0% | |

| Pond | Species | Number Examined | Number Positive | % Infection | Comments |
|---|---|---|---|---|---|
| 11 | SM Fry | 12 | 0 | 0% | |
| 12 | LM Fry | 12 | 0 | 0% | |
| 13 | LM Fry | 13 | 10 | 77% | |
| 14 | SM Fry | 12 | 7 | 58% | Adults in pond. |
| 15 | LM Fry | 12 | 0 | 0% | |
| 16 | LM Fry | 14 | 0 | 0% | |
| 21 | SM Fry | 12 | 0 | 0% | |
| 22 | SM Fry | 12 | 0 | 0% | |
| Almena 1 | LM Fry | 12 | 0 | 0% | |
| Almena 2 | SM Fry | 12 | 0 | 0% | |
| Almena 3 | SM Fry | 12 | 0 | 0% | |
| Almena 4 | LM Fry | 13 | 0 | 0% | |
| Almena 5 | SM Fry | 12 | 0 | 0% | |
| Crum Pond | SM Fry | 12 | 0 | 0% | |
| Hillsdale | LM Fry | 12 | 0 | 0% | |
| Benton Harbor 7 | SM Fry | 3 | 0 | 0% | |
| Benton Harbor 9 | LM Fry | 5 | 0 | 0% | |
| Benton Harbor 10 | LM Fry | 4 | 0 | 0% | |

The only ponds showing an infection of bass tapeworm among the fry examined were ponds 6, 13 and 14. Both ponds 13 and 14 contained infected adult bass. Pond 6 contained largemouth bass fry collected from Big Lake,

Allegan County. This infection could have been present when the fry were collected or could possibly have been carried in through the supply water from Wolf Lake since it is pumped directly into pond 6. Whether infected intermediate hosts (Cyclops, etc.) are actually pumped into the hatchery from Wolf Lake could be checked by stocking pond 6 with fry known to be free of tapeworm. This could be accomplished by stocking it with fry from Lydell Hatchery, provided that the fry were removed from the spawning ponds within 48 hours after swimming up. Other ponds should also be stocked as usual with fry from Lydell Hatchery as control ponds. If infection developed in pond 6 and not in the other ponds stocked from Lydell Hatchery, it would strongly indicate that the infection originated in Wolf Lake.

Since some ponds at Lydell Hatchery were infected, the fry were obviously transferred from uninfected ponds.

Northville Hatchery

Examined in August, 1943

| Pond | Species | Number Examined | Number Positive | % Infection |
|---|---|---|---|---|
| A | SM Fry | 19 | 0 | 0% |
| K | SM Fry | 27 | 0 | 0% |
| M | SM Fry | 20 | 0 | 0% |
| N | SM Fry | 18 | 0 | 0% |
| O | LM Fry | 25 | 0 | 0% |
| P | SM Fry | 27 | 0 | 0% |

No infections were found in the bass fry examined from this hatchery. The fry were removed from the spawning ponds shortly after they swam up and placed in ponds that were above the adult bass in the series or in series of ponds containing only bass fry.

## Drayton Plains Hatchery

Examined in September, 1943

| Pond | Species | Number Examined | Number Positive | % Infection | Comments |
|---|---|---|---|---|---|
| 3 | LM Fry | 25 | 0 | 0% | Contains adult and fry largemouth from Cass Lake. |
| 5 | SM Fry | 25 | 12 | 48% | From Lydell Hatchery. |
| 7 | SM Fry | 26 | 12 | 46% | From Lydell Hatchery. |
| 11 | SM Fry | 13 | 9 | 69% | From Lydell Hatchery |
| Fenton 1 | LM Fry | 25 | 0 | 0% | From Liggets Lake. |
| Adrian 2 | LM Fry | 14 | 0 | 0% | |

Of the four ponds examined at Drayton Plains, only pond 3 was free of infection. Pond 3 contained fry and adult largemouth bass from Cass Lake. Obviously, either the adult bass did not harbor the adult tapeworm or the intermediate host, Cyclops, etc., was not present. Apparently, no infection was carried in with the water supply. The infected ponds 5, 7 and 11 contained smallmouth bass fry transferred from Lydell Hatchery. If no infection was brought in by the water supply, as indicated by the status of pond 3, the smallmouth bass fry must have been transferred from the infected ponds at Lydell Hatchery.

### Comments

The results of the suggested cultural plan have demonstrated that large- and smallmouth bass can be reared free of bass tapeworm. The two most important points of the plan are the removal of fry from the spawning pond within 48 hours after swimming up, and the holding of adult bass in ponds lower in the series than those containing bass fry.

An attempt is being made at Lydell Hatchery to rear uninfected smallmouth bass for use as breeders. The young bass from pond 21, of which 25 were examined and found negative, are to be used. When infected breeder bass are disposed of, the bass tapeworm will be eliminated provided the water supply is uninfected.

The success of this year's plan is largely due to the fine cooperation of the superintendents of the hatcheries involved.

INSTITUTE FOR FISHERIES RESEARCH

By Leonard N. Allison

Report approved by: A. S. Hazzard

Report typed by: V. M. Andres