

Original: Fish Division
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INSTITUTE FOR FISHERIES RESEARCH
DIVISION OF FISHERIES
MICHIGAN DEPARTMENT OF CONSERVATION
COOPERATING WITH THE
UNIVERSITY OF MICHIGAN

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PROPOSED PLAN FOR FORAGE FISH AND BAIT EXPERIMENTS,
SUMMER OF 1938

1. Northern Pike. Pond No. 9.
 - A. Strip about six quarts of pike eggs at Walled Lake.
Hatch in jars. After hatching:
 1. Place in a five acre pond, using young bluegills, minnows or suckers for food.
 2. Place 200 in one experimental pond, with ample food.
 3. Put some in the Clinton River, where some may be recovered at periods throughout the summer. (Check growth of 1937 with 1938.)
 - B. Continuation of the pike feeding experiment. These fin-clipped pike should be retained in the pond they now occupy for further observations on feeding habits and rate of growth.
2. Common suckers. Pond Nos. 3 and 5.
Obtain as many sucker eggs as possible to be hatched in jars at the Drayton Plains Hatchery. Also:
 1. Place some fertilized eggs on gravel in one pond (use 1 holding pond for this).
 2. Use two experimental ponds. Feed suckers in one pond and not the other.

3. Place some fry in Fenton bass pond.
4. Place some fry in northern pike pond.
3. Horned dace (Semotilus). Pond No. 7.
 1. Place some adults in experimental pond No. 7 to see if they will spawn on gravel.
 2. Strip some horned dace. Eggs to be placed in
 - a. hatchery jars
 - b. hatching tray in trough.
 - c. on screen in river.
 - d. on gravel in one pond.
4. Comparison of production, spawning requirements, rate of growth, etc. of the blunt-nose and fat-headed minnows. Ponds 8 and 10.
5. Mud minnows. Pond No. 2.

200 young of last year to be placed in one experimental pond.
6. Golden shiners. Pond Nos. 4 and 6.
 - 1 spring water pond -- delay spawning.
 - 1 river water pond - control.
7. Fenton bass ponds.

One bass pond to be stocked with a number of adult golden shiners and sucker fry.

If the same number of bass fry is placed in ponds as in recent years, some comparison of production can be made. Cooper retained samples of bass in 1936, and I have samples from 1937 to give average lengths for those years. Object of experiment - to determine the relative value of golden shiners and suckers as forage fish in bass rearing ponds.
8. Earthworms.

This will consist of placing a certain known number

of earthworms in a box to be buried beneath the surface of the ground. Occasional feeding and moistening will be required. At the end of a 4-5 month period contents of box will be examined to determine if any reproduction has taken place, and if so the numbers and size of worms produced. Above mentioned box to be located a Drayton. Another box is to be placed in Dr. Hazzard's back yard. Here certain numbers will be removed periodically to determine what production is possible starting with a given number of individuals.

(Also experiment with hardening and clearing worms by placing them in crock with damp sphagnum moss.)

9. Cooperative experiment with Justin Striggow of Holly, Michigan in growth and production of certain minnows. (See outline I have for further information if necessary.)
10. Contact certain selected Michigan minnow dealers, to find:
 1. Minnows fishermen prefer.
 2. Where they obtain their minnows, abundance, etc.
 3. General set-up of dealer.
 4. Troubles he may have.
11. Check up on plantings of minnows in fresh water lakes (includes Little Long Lake and various lakes in which lake shiners have been planted).
12. If time and conditions permit, carry on minnow bucket experiments to determine the relation of the species involved with regard to O_2 and CO_2 , temperatures, etc. (Length of time of survival of say 50% at various temperatures.) Also, if opportunity presents, experiment in the reduction of loss in minnows due to fungus.

13. Disposition of young fish that were produced last year.

\ Bluntnose, golden shiners, suckers and mud minnows to be held in Pond No. 1. Some feeding will be necessary as the number held will be considerable. Adult chubs (breeders remaining after experiments) should be carried over in a hatchery pond. It is suggested that these might be carried over in one of the bluegill rearing ponds, as the small number would probably not noticeably interfere with production.

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W. F. Carbine

By W. F. Carbine
Research Assistant

<p style="text-align: center;">Bluntnose</p> <p>10</p>	<p style="text-align: center;">Northern pike</p> <p>9</p>
<p style="text-align: center;">Fathead</p> <p>8</p>	<p style="text-align: center;">Semotilus</p> <p>7</p>
<p style="text-align: center;">Golden shiners</p> <p>6</p>	<p style="text-align: center;">Suckers</p> <p>5</p>
<p style="text-align: center;">Golden shiners Spring water</p> <p>4</p>	<p style="text-align: center;">Suckers</p> <p>3</p>
<p style="text-align: center;">Mud minnows</p> <p>2</p>	<p style="text-align: center;">Golden shiners) Bluntnose) Mud minnows) Yg. Suckers)</p> <p>1</p>

COOPERATIVE EXPERIMENT TO BE CONDUCTED WITH
MR. JUSTIN STRIGGOW OF HOLLY, MICHIGAN, 1938.

1. Numbers of breeders of each species placed in pond. Date of stocking.
Size of breeders, age and other available information. A sample of these breeders to be preserved.
2. Daily temperatures of air and water.
3. The amount and the kind of food used.
4. Date (or approximate date) of spawning.
5. Notes on the following:
 1. Length of spawning season.
 2. The spawning act. Where are eggs laid--
on plants, bottom, etc.
 3. Incubation period.
 4. Any observations of interest regarding
spawning, or habits of young fry, fingerlings,
etc.
6. Sample of young fish to be preserved at intervals for rate of growth,
feeding habits, etc.
7. Production, average size, etc. at the time the pond is drained.
8. Area of pond, depth.
9. Source of water supply, amount of water running into pond, chemistry
of water supply.
10. Character of bottom. Plants present and their abundance.
11. Predation, if any. (a) Among fishes themselves, or (b) birds, snakes
or turtles.

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④ minimum dealer -

was shown about the
helotary and had many
fungus and fish that
left over - says that dead
fish are coming down
again. this spring.

Fence located between
N. C. Ry + Dixie highway.

4-4-38

See B.

1. about using a sac
pond - for peba rearing.
at Doughton place

2. Use of pond at
Fenton. (Lyon).

3. Ry - find at prouton
experimental ponds