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STEPHENSON'S BROOK POND

Preliminary Report on Seining, May 16-17, 1935.

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by

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On arrival at the Pond on the morning of May 16th., the water was found to be sufficiently low for the immediate commencement of seining. The first five hauls of the seine obtained the following numbers of trout: 37, 31, 7, 1, 2. In addition 22 were removed from the water between the sluice screen and the screen at the lower end of the seining pool. Further seining in the afternoon increased the total catch to 111. All but 13 of these were placed in the distributing scow, after a short interval in a fry can. Seven trout were preserved, 2 were used for experiments and later preserved and 4 were released alive in the stream below the sluice-way. The preserved trout were representative of the sizes and measured:

<u>Inches</u>	<u>Centimetres</u>	<u>No. of Fish</u>
3½	8	1
3¾	9	1
4	10	2
4½	11	4
4¾	12	0
5	13	1

At about 5 p.m., the distributing scow was towed about ¼ mile from where Stephenson's brook enters Loch Lomond and the 98 trout were released in water about 50 to 100 feet offshore.

On May 17th. at 11:30 a.m., the pool was seined again three

times with catches of 21, 6 and 2 trout respectively. These were transferred to the distribution scow in the lake and an attempt was made to measure them. Thirteen slipped into the scow without being satisfactorily measured. The lengths of the others were:-

<u>Inches</u>	<u>Centimetres</u>	<u>No. of Fish</u>
3½	9	3
4	10	3
4½	11	5
4¾	12	5

Preceding this seining four 50 lb. bags of hydrated lime (Snowflake) were introduced into the stream above the upper screen (in the woods). One bag was introduced at each of the first four rapids above the screen or over a distance of approximately 50 - 75 feet. The lime was added by throwing it by handfuls into the most rapid water and was added simultaneously from 10:45 - 11:00 a.m., at the four points. This method proved excellent for securing maximum solution of the lime as very little remained on bottom.

At 11:05 about 15 lbs. of lime was placed in a small feeder stream near its mouth.

Tests made in the stream as it entered the seining pool were negative for lime up to 12:15 p.m.

At 12:05 p.m. the water in the stream about 1/3 way up the swamp was negative showing that the lime had not traversed that far.

At 1:30 p.m. the water entering the pool began to show pink with phenolphthalein although the test was still negative in the sluice-way. Large numbers of trout and tadpoles came tumbling

down ahead of the stronger lime solution. Two seine hauls were made in the pool which yielded a large number of trout. These were immediately transferred to a 12 gallon can of fresh water. There was a 10 minute delay at this point in securing assistance.

The pool was thereafter seined continually until no trout were obtained. At frequent intervals those captured were transferred to the distribution scow and fresh water brought up from the lake to place the newly seined ones in. These operations were completed at 3:30 p.m. At this time no more fish or tadpoles appeared to be coming downstream.

The treatment was drastic and the trout were more or less injured by it. They became so sluggish that they could be caught by hand and those longest exposed showed a cloudiness in the cornea of the eyes. In a dozen or so extreme cases the eyes became blood shot and protruded from the sockets. The specimens which were affected most were immediately preserved.

These fish were left in the distribution scow until 7:30 p.m. Tests were made at frequent intervals to make certain that no polluted water discharging from the stream reached the scow. At that time 10 dead trout were found in it but the remainder, with an odd exception, were vigorous and their eyesight appeared to be returning in most cases as they were difficult to catch with a dipnet. Two hundred and forty-six trout were released from the scow after it had been towed about $\frac{1}{2}$ mile along the lake shore. Subtracting the 29 taken in the morning hauls, 217 of these were caught in the pool after the lime treatment. In addition 28 dead ones had been preserved. Thus a total of 245 trout was driven downstream by the treatment.

The lengths of the preserved specimens were:-

<u>Inches</u>	<u>Centimetres</u>	<u>No.of Fish</u>
3½	9	4
4	10	6
4½	11	5
4¾	12	5
5	13	1
5½	14	2
6	15	1
6¼	16	1
6¾	17	1
7	18	0
7½	19	2

Of the trout released in the lake 6 specimens were over 7 inches long.

Between 3:45 and 5:30 the stream through the marsh was examined for dead trout, etc., and 113 were found scattered fairly evenly along the entire length of stream below the rapids in the woods. Owing to the nature of the stream it is probable that some would be missed in this collection. Two trout of fair size were seen alive in the lower part of the stream. Most of the tadpoles seemed to have survived and some sticklebacks. Farther up the stream the percentage of dead tadpoles and sticklebacks increased until near the upper end, they too appeared to have been mostly killed.

All of the trout collected on this examination were measured with the following result:

<u>Length in Inches</u>	<u>Length in Centimetres</u>	<u>No. of Fish</u>
3 $\frac{1}{4}$	8	8
3 $\frac{3}{8}$	9	11
4	10	18
4 $\frac{1}{4}$	11	31
4 $\frac{3}{8}$	12	16
5	13	11
5 $\frac{1}{2}$	14	4
6	15	3
6 $\frac{1}{4}$	16	6
6 $\frac{3}{8}$	17	4
7	18	0
7 $\frac{1}{2}$	19	0
8	20	0
8 $\frac{1}{2}$	21	1

The stream rapidly cleared of lime. At 4:00 p.m. strong positive tests were obtained at the seining pool. About 1/3 way up the marsh positive tests were obtained at 4:10 p.m. But a short distance further up the phenolphthalein test was negative. This continued on up the stream until a short distance below the point of introduction of the lime where a faint pink test was given probably from residual lime on bottom; the solution being neutralized before going far downstream. At 5:30 p.m. the tests were negative at the seining pool.

Since at least 2 trout were known to be alive in the lower stream, a further 90 lbs. of lime were added to the stream about 100 yards above the seining pool, and above where the live fish were seen. This was at 5:35 p.m. The water was moving slowly here and the solution of the lime was less perfect, a fair amount dropping to bottom. This treatment drove many more tadpoles into the pool and a few trout were observed. Repeated seinings of the pool only produced 6 trout which were in dying condition. The lengths of five were 5, 6, 6, 7 $\frac{1}{2}$ and 8 inches or 13, 15, 15, 19 and 20 centimetres.

In view of this result it was considered that the stream had been quite effectively cleared of trout.

Growth since October 1934.

In view of the mixed sizes of the trout taken from the area it is obvious that some were in it previous to the October 1934 planting. Consequently comparisons of size are difficult.

If the fish seined from the pool before the lime was used are considered (insofar as they were measured) it develops that their average length was $4\frac{1}{2}$ inches or 10.6 centimetres. This is based on the measurement of 25 specimens. When the trout were planted on October 5, 1934, the average length was 3 inches or 7.8 centimetres. This is based on measurements of 46 specimens. An average growth of 1 inch in length is indicated for the fall, winter and spring period.

Effect of lime treatment on lake water.

When the stream from the pond was discharging the most heavily polluted water into Loch Lomond the area affected in the lake was very small. At no time ~~was~~^{were} positive tests for lime (with phenolphthalein) obtained farther than 100 feet from the stream mouth and this effect soon disappeared due doubtless to dilution and neutralization by the slightly acid lake water.

Tests of strength of lime solution necessary to kill trout.

Some rough tests were performed on May 16th. and it was found that the addition of 2 tablespoonsful of hydrated lime to 12 gallons of water produced a solution which killed 2 trout in 30 minutes. No tests of weaker solutions were made.

While the lime treatment was effective, it is felt that a less drastic method of clearing the stream should be worked out if possible for future use.