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MANUSCRIPT REPORTS OF THE BIOLOGICAL STATIONS

No. 351

The construction of ponds on Prince Edward Island streams as a method of improving the trout angling. Blackett's Brook, Annandale. Report of progress for 1942, 1943 and 1944.

by

M. W. Smith

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FISHERIES RESEARCH BOARD OF CANADA

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Fig. 1. View of Blackett's brook area from site of old mill dam before flooding. 1942.

Fig. 2 Length frequencies of trout taken from several specific pools of Blackett's brook before flooding. 1942.

Fig. 3. Length frequencies of trout taken from Blackett's brook before flooding. Based on a composite sample of all trout taken from the stream and measured. 1942.

Fig. 4. Length frequencies of trout taken from Blackett's pond.

A. Angled August, 1943.

B. Angled May, 1944.

Fig. 1. View of Blackett's brook area from site of old mill dam before flooding. 1942.

flooded in the fall of 1942.

THE AREA BEFORE FLOODING (1942)

Considerable time had elapsed since the area had previously been flooded so that there remained little evidence of that inundation. The open ground was well sodded, but pastured, with the result that the herbage was kept low. Scattered spruces, particularly over the upper part of the area, and alders, along much of the stream's course, were well established. Only over a small area immediately above the old embankment did there still remain a shallow pond as a vestige of that which had formerly existed. (Fig. 1). A stand of cattails (Typha) occurred along the upper margin of this pond, and for approximately fifty yards above where the stream was a stillwater, with mud bottom, scattered plants of Potamogeton and Nuphar found conditions suitable for growth. From there upward, however, the stream had scoured its bed to fine gravel and sand for the most part, and consisted of alternate riffles and pools, with little rooted aquatic vegetation.

THE POND

The area of the pond was determined by H.R.Found in early July, 1944.

During the high water period in the spring of 1944 the water washed through the embankment at the old waste-gates, but did not drain the entire pond, although the water level was reduced by two feet at least. The washout was repaired during the summer, but the pond was not filled to capacity. When Found made the survey the area was calculated as 5.3 acres. He estimated that when the pond was full, however, the area would be about 8 acres.

CHARACTER OF THE WATERS

(a) Before Flooding.

The water in the stream was clear in June and September, 1942. It was also quite cool, although the temperature fluctuated considerably and followed the air temperature rather closely. These features are illustrated by the following data which were secured from the stream at the first riffle, at the head of the stillwater noted above:

		Air (°C.)	Water (°C.)
September 1,1942,	9:57 A.M.	24.0	13.2
(Sky clear)	1:00 P.M.	24.2	17.6
September 2	10:00 A.M.	22.0	14.2
(Sky clear)	4:58 P.M.	29.0	20.0
September 3			
(Sky mostly cloudy)	10:00 A.M.	22.1	15.2
	1:00 P.M.	17.5	16.8
	3:40P.M.	17.0	16.0

As one went above the area to be flooded the stream became cooler, under the influence of a number of small springs and shade from overhanging trees.

At the point in the stream where the temperature readings were made the dissolved oxygen content of the water at 10:10 A.M., September 3, 1942 (15.2°C.) was 7.59 ml. per litre or 107.2 per cent saturated. The water was alkaline with pH values of 8.2 (phenol red) and 8.1 (thymol blue).

(b) <u>After Flooding</u>.

On August 25, 1943, the following observations were made:

Station 1. Just above dam (2 metres of water)
Temperature (°C.) 1:45 P.M. surface 22.9
2 m. 18.2
(Sky clear; Air 25.6)

Oxygen content surface 4.36 ml. per litre or 71.6% sat.
2 m. 3.53 " " " " 53.1% "

pH value surface 7.6
2 m. 7.4

Station 2. Half-way up pond in old stream bed (1.5 metres of water).
Temperature (°C.) surface 22.9
1.5 m. 17.1

Oxygen content 1.5 m. 4.31 ml. per litre or 63.0% sat.

Station 3. At first riffle above pond.
Temperature (°C.) 15.0

pH value 8.4

Station 4. About 200 yards above pond at small tributary.
Temperature (°C.) - Tributary 14.0
- Main stream just above tributary 14.5

Although we have seen from the description of the area before flooding that there was not a large amount of vegetative material to be covered with water, yet the above data show that sufficient was present, through its decomposition, to reduce materially the dissolved oxygen content and the pH value of the water. The reduction in the dissolved oxygen content, however, was not serious enough to make conditions particularly unfavourable for trout.

Before flooding the water in the stream was clear. After flooding the decomposition of the vegetation liberated considerable colouring matter into the water and a colour of 114 (platinum-cobalt standards) was determined for August 25, 1943. (Perfectly clear water would give a reading of zero.)

On September 9, 1944, the surface temperature of the

water near the dam was 18.8°C. (Air: 20.6;3:18 P.M.;Sky:partly cloudy) and at 2 metres, 18.0°C. The dissolved oxygen content was not as low as found in August, 1943, being 5.51 ml. per litre (85.4% sat.) at the surface and 4.51 ml. per litre (67.5% sat.) at 2 metres. Further, the pH values were higher at 9.0 and 8.8 for the above depths respectively. The results indicate a decline in the decomposition of vegetative material in the pond.

OBSERVATIONS UPON THE TROUT POPULATION BEFORE FLOODING.

Prior to the flooding in 1942 the population of trout in a number of pools was determined as accurately as possible. All of the pools, except one (VIII), were in the area to be flooded.

(a) Procedure. A pool from which the trout were to be taken was blocked up and down stream by netting of sufficiently small mesh to stop fish of the year from escaping. The upper margin of the block nets was held above the surface of the water by draping over a stick lying from bank to bank, and the lower edge was firmly anchored into the bed and sides of the stream by lead weights and stones. The block nets were usually placed in shallow water and could be installed without danger of driving the trout from the comparatively deep pools, if actual disturbance in the pools was avoided. Once the block nets were in place, debris was removed from the pool and bushes at the shore were cut away in order to have as little interference as possible in operating a seine.

The fish were removed from the pool by seining, and kept alive in tubs. Five to ten hauls of the seine were required, depending upon how well the pool lent itself to seining, before no more fish would be captured in a haul. The pool was then allowed to clear and, by observation, any fish that remained were counted, and subsequently captured.

Certain precautions were necessary. The lower block net would become clogged when removing material from the pool and during the seining so that in some instances the net had to be cleared rather frequently. Care had also to be taken that holes in the bank of the stream did not exist. If present, they had to be filled or enlarged in order to secure the trout which hid and remained hidden in them.

The above procedure was quite successful in Blackett's brook which was small and in which there were pools that could be readily cleared of debris. Certain pools were avoided, however, since they would have been too difficult to clear of projecting roots, stumps, etc. At best the procedure was time-consuming.

(b) Brief descriptions of the pools.

Pool I. 430 sq.ft. or 40 sq.m. Two clumps of alders opposite deeper portion of the section, but not shading pool extensively. Trout usually rested between alders in mid-stream in full view. Mud bottom. Flow slow. Maximum depth 0.6 m.

Pool II. 269 sq. ft. or 25 sq.m. Group of alders leaning over deepest

section and into the water. Fish rested under alders. Mud bottom. Flow slow. Some Potamogeton in upper portion of pool. Maximum depth 0.8 m.

Pool III. 125 sq. ft. or 12 sq. m. Overhanging alders under which trout usually lay. A few large stones but mainly mud and sand bottom. Moderate current. Maximum depth of 0.3 m. near one bank.

Pool IV. 194 sq. ft. or 18 sq. m. Group of alders at head of pool hanging downstream but no shading deepest portion of pool where trout usually rested. Riffles at head of pool deflected to one side by alders. One bank open, other somewhat overhanging. Sand and mud bottom. Maximum depth 0.35 m.

Pool V. 308 sq. ft. or 29 sq. m. Overhanging alders shading most of pool. Slow water. Mud bottom with sunken log in deepest part. One bank open, other overhanging. Maximum depth 0.55 m.

Pool VI. 175 sq. ft. or 16 sq. m. Open pool with coarse gravel bottom. Water comparatively rapid. Maximum depth 0.5 m.

Pool VII. 234 sq. ft. or 22 sq. m. Overhanging bank at lower part and at one side. Thick overhanging alders at head of pool, leaning into water. Trout rested just at lower edge of alders which was not in deepest part of pool. Moderate current. Mud and sand bottom. Maximum depth 0.6 m.

Pool VIII. 215 sq. ft. or 20 sq. m. Above area to be flooded. One abrupt bank, the other low. Protective clump of alders at one side. Current moderate. Coarse gravel over most of the bottom. Trout rested in deepest part of pool, not under alders. Maximum depth 0.6 m.

(c) Number and weight of trout. Data concerning the number and weight of trout in the eight pools are presented in Table I. From 113 specimens, which were captured in the pools and other sections of Blackett's brook and which were preserved in four per cent formalin, the length-weight relationship expressed by the equation, $W\ (gm.) = 0.01247\ L^{3.010}$, was determined. (The lengths (notch) ranged from 4.3 to 27.9 cm.) The individual notch length of the fish from the pools, which were returned to the stream, was measured in the field to the nearest 0.5 cm. By use of the above equation the weight of the fish in the pools was calculated.

The number and weight of trout in a particular pool does not appear large, but it is to be remembered that the area of the pools was small. When calculated on the basis of an acre or hectare, however, the standing crops proved surprisingly large. These results may be compared to standing crops determined for Second river (Cobequid), Nova Scotia, when the fish in that stream were poisoned, although the data for this stream do not apply so strictly to pools as in Blackett's brook. The weight of trout and

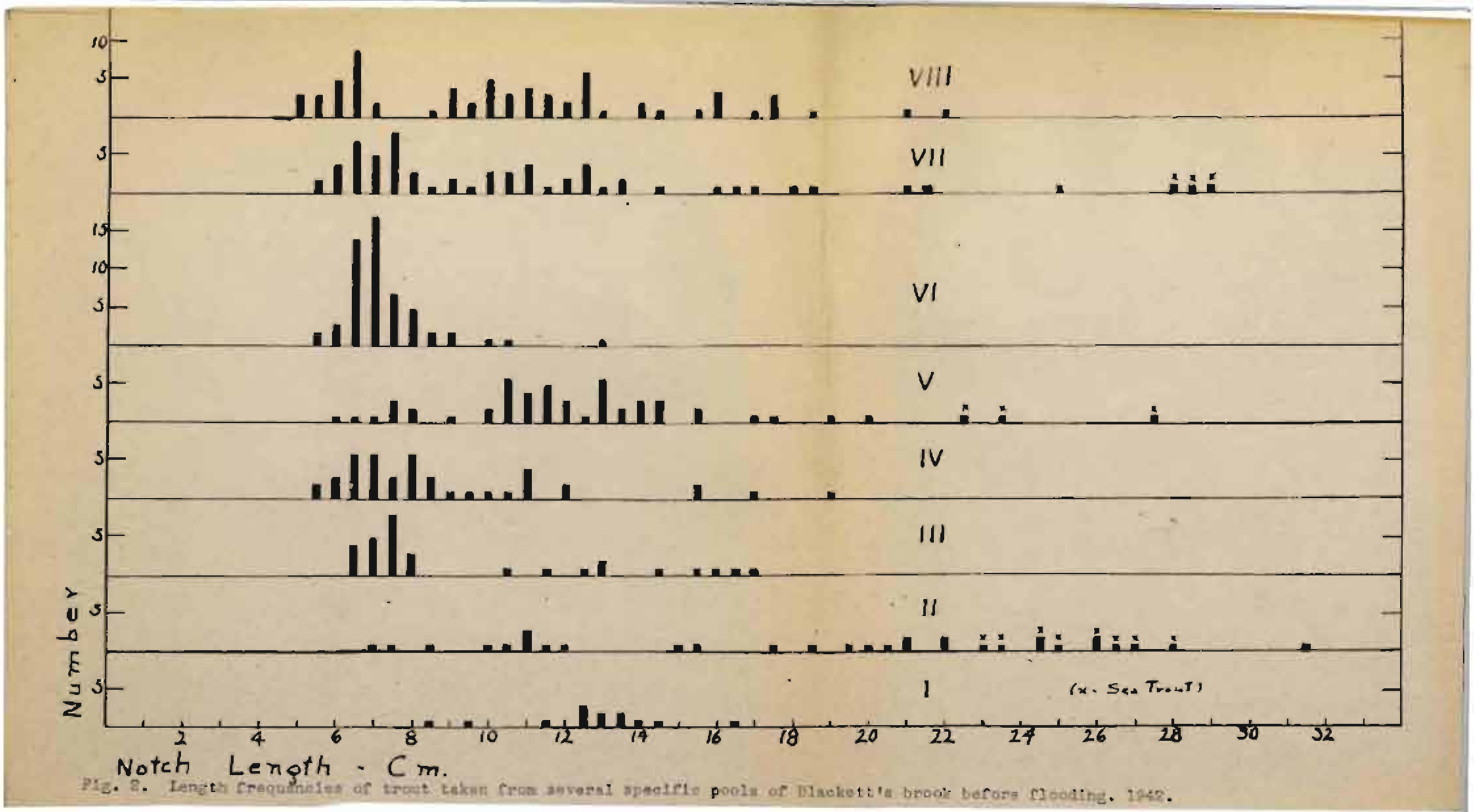
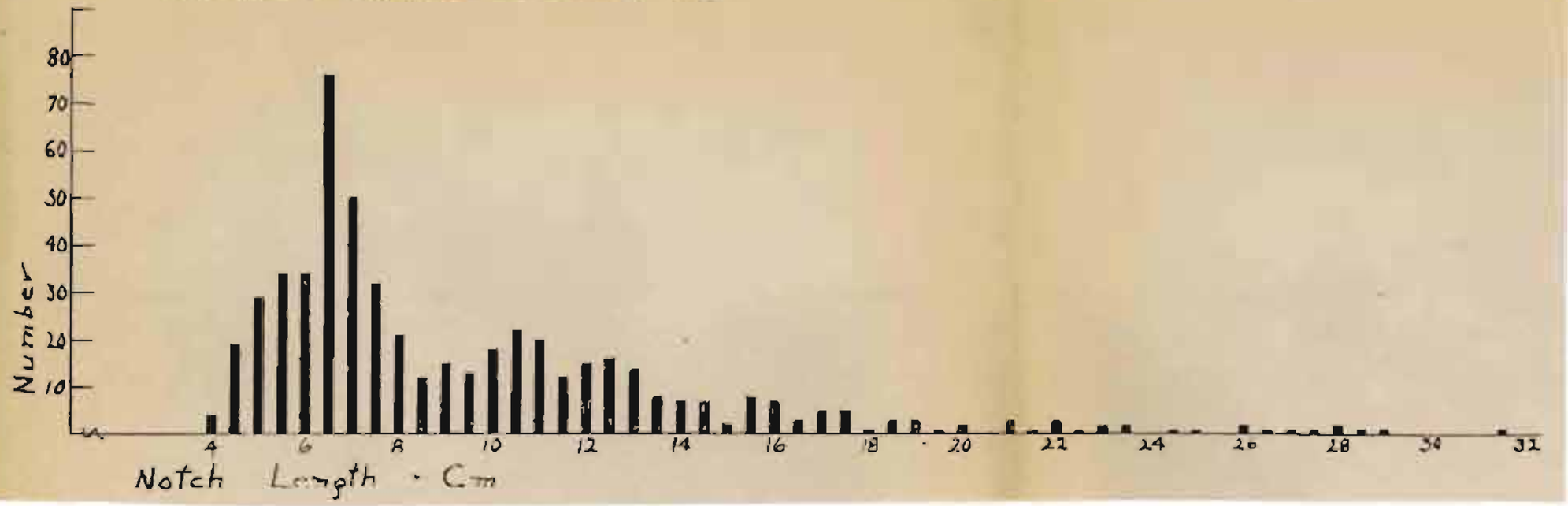


Fig. 8. Length frequencies of trout taken from several specific pools of Blackett's brook before flooding. 1942.

Fig. 3. Length frequencies of trout taken from Blackett's brook before flooding. Based on a composite sample of all trout taken from the stream and measured. 1948.



salmon parr in twelve small sections of Second river varied from 0.7 to 574 lb. per acre, with an average of 112 lb. per acre, as against an average of 547 lb. per acre in Blackett's brook.

In pools II, V and VII some of the largest fish (which are included in Table I) were obviously sea trout that had recently entered Blackett's brook. In pool II, eleven were sea trout, weighing 2535 gm. or 5.6 lb., in pool V, three, weighing 581 gm. or 1.3 lb.; and in pool VII, three, weighing 896 gm. or 2.0 lb. Since these fish had attained most of their growth in the sea, they cannot properly be referred to the stream's production. However, they would be an integral part of the population which could have been angled from the stream at that time.

(d) Length of trout. Length frequencies among the trout taken in the eight pools are shown in figure 2. A composite picture of the length frequencies for the pools, together with others for trout not taken from these pools but seined elsewhere, both within and above the area to be flooded, are presented in figure 3.

The age of the trout have not been determined by scale reading. From the grouping of the length frequencies, however, two year classes can be approximately defined - fish of the year and yearlings. Arbitrarily we have considered fish below 9 cm. in length as fish of the year, and from 9 cm. to and including 13½ cm. as yearlings. On this basis the average length of fish of the year approximated 6½ cm., and yearlings, 11½ cm. This growth was attained by early September. The annual increment of growth was about 5 cm. Beyond the yearling class little can be gleaned from the length frequencies with regard to age.

Since the majority of the fish were seined from pools, the proportion of fish of the year to yearlings or older fish is not representative of the entire population in the brook since older fish have the greater tendency to congregate in pools. The proportion of yearlings to older fish is, however, more representative. From the data at hand it is shown that there was a drop from 321 fish of the year to 145 yearlings (2.2: 1 or 55%), and this was minimal. Between yearlings and older fish the drop was from 145 to 61 (not including the sea-run fish) or 2.4: 1 or 58%. Since there is no evidence that trout run to sea before they are yearlings at least, the drop in numbers in the first year was either due to mortalities occurring within the stream or to a difference in the number in eggs deposited, or both. Subsequent reduction in the stock may be attributed to mortalities within the stream, a difference in the number of eggs deposited, and in addition, to migration into salt water.

The length at which trout may be taken legally by anglers on Prince Edward Island is 6 in. (total length) or 14½ cm. (notch length). In a total of 544 trout (including the sea-run trout) seined from Blackett's brook 71 or 13% were of legal size.

The size of the fish of the year became smaller as one progressed up the stream beyond the area to be flooded. The smaller size was directly correlated with lower water temperature. Whereas the smallest fish of the year were 5½ cm. in the lower reaches of the stream, farther upstream, where the water temperature was

TABLE I.

TROUT POPULATIONS OF POOLS IN BLACKETT'S BROOK, 1942

Pool	Area sq.ft.	Area sq.m.	Weight of fish lb.	Weight of fish gm.	Number of fish	Number per acre	Number per hectare	lb. per acre	kgm. per hectare
I	430	40	0.8	364	13	1317	3253	81	91
II	269	25	8.2	3734	32	5180	12795	1328	1488
III	125	12	1.1	482	32	11149	27538	383	429
IV	194	18	1.2	553	45	6103	15074	369	401
V	308	29	4.1	1873	53	7494	18510	580	650
VI	175	16	0.7	296	55	13690	33814	174	195
VII	234	22	4.8	2159	71	13220	32663	894	1002
VIII	215	20	3.3	1518	69	13979	34528	669	759

2.47 acres per hectare; 1 lb. equals 0.4536 kgm.

moderated by springs and a greater amount of shade, trout of 4 cm. in length were not uncommon, and the average length was correspondingly shorter. These observations suggest that many of the trout move but little from the natal area during the first year.

(e) Salmon parr. During the seining operations in Blackett's brook twenty-five salmon parr were captured. The notch length of these to the nearest 0.5 cm. was taken. The range in length of these fish was from 8 to 13½ cm., with an average length of 10 cm.

OBSERVATIONS UPON THE TROUT POPULATION AFTER FLOODING.

(a) Test angling in August, 1943. During 1943 the pond was closed to angling. On August 25, 1943, the pond was visited and the population was sampled by angling with fly.

Angling was done from a boat and covered a greater part of the pond. The fish were found well distributed throughout the area. From 10:00 A.M. to 12:20 P.M., during which time the sky was mostly clear and the surface of the pond rippled, 81 trout and one salmon parr were taken. This was at a rate of almost 35 trout per rod-hour.

The length frequencies among these trout are shown in figure 4A. The notch lengths were measured to the nearest 0.1 cm. after preservation in formalin and then grouped to the nearest 0.5 cm. for presentation in figure 4A. The length ranged from 12 cm. (4.7 in.) to 26.5 cm. (10.4 in.), and the average was 17.0 cm. (6¾ in.)

Of the 81 trout, 63 or 78% were of the legal size.

(b) Test angling in May, 1944. Before the pond was opened to public fishing, angling was done on May 10 and 12, 1944, to secure a number of fish for measurements and for marking by fin-clipping.

Angling was by fly, principally from a boat, but also from the shore. As indicated above, the trout appeared well scattered throughout the pond on August 25, 1943. To the contrary, on May 10 and 12, 1944, the impression was gained that the trout were moving about the pond in schools, quite near to the shore. The fish would rise readily to the fly at one stand for about ten minutes and then stop. It was found that good angling was again secured by moving a short distance up or down the pond, when contact would be made with the same or another school. Noticeably in the late afternoon of both days, the trout worked their way into the shoal water toward the head of the pond, where they were apparently absent in mid-day. The sky was mostly clear and the surface of the water rippled when the angling was done.

Two rods were fished. On May 10 the record was as follows:

11:20 A.M. to 12:05 P.M.	-	40 trout and 1 salmon parr.
1:15 P.M. to 2:45 P.M.	-	90 "
3:15 P.M. to 4:45 P.M.	-	75 "
3 3/4 hours (7½ rod-hours)	-	205 trout and 1 salmon parr.
Catch per rod-hour	-	27 (27.3) trout

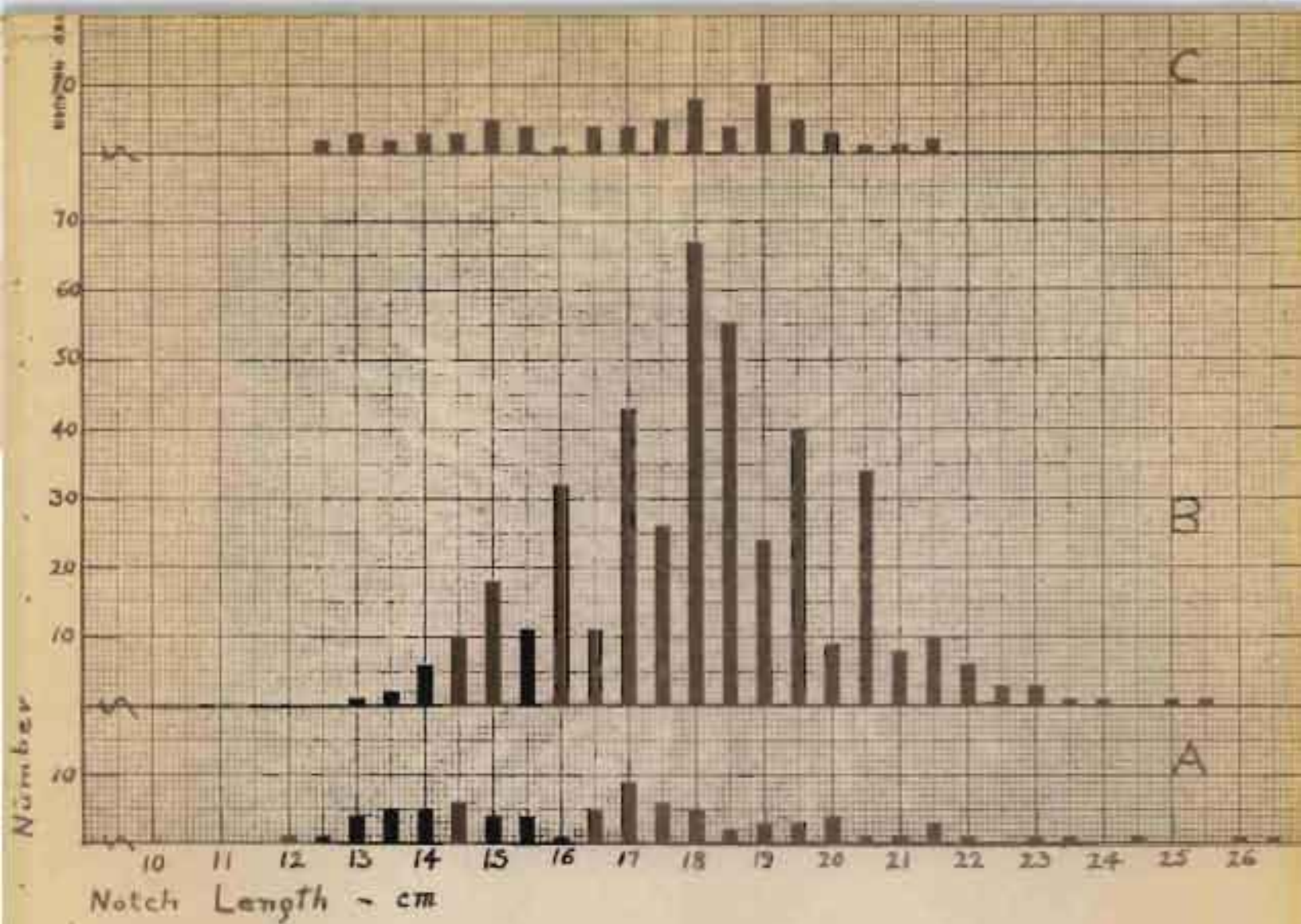


Fig. 4. Length frequencies of trout taken from Blackett's pond.

A. Angled August, 1943.

B. Angled May, 1944.

C. Angled September, 1944.

On May 12 the record for the two rods was:

12:30 P.M. to 5:30 P.M. - 230 trout
Catch per rod-hour - 23 (23.0) trout.

The total catch for May 10 and 12 was 435 trout and 1 salmon parr. This was at a rate of 25 (24.9) trout per rod-hour.

The length frequencies are shown in figure 4B. The notch lengths were determined in the field to the nearest eighth of an inch, and then grouped to the nearest 0.5 cm. The length range was from 13.0 cm. (5 1/8 in.) to 25.7 (10 1/8 in.). The average length was 18.2 cm. (7 1/8 in.).

Ninety-seven per cent of the fish were of the legal size of 6 in. (total length).

(c) Test angling in September, 1944. During the season of 1944 angling was permitted in the pond every Wednesday, commencing May 24 and continuing until the close of the season on September 15.

On September 9, test angling was carried out from a boat by fly with one rod and bait (worm) with one rod. The sky was partly cloudy and the surface of the water rippled. The catch records follow:

10:30 A.M. to 12:00 N. and 1:15 to 2:20 P.M. with fly - 47 trout
11:30 A.M. to 12:00 N. and 1:30 to 2:20 P.M. with bait - 23 trout

2:25 to 2:45 P.M. with fly (barbless hook) - 21 trout
4¼ rod-hours - 91 trout
Catch per rod-hour - 21 (21.4) trout.

The fish (21) that were taken with fly on the barbless hook were returned to the water. The remainder (70) were preserved in formalin and the notch length to the nearest 0.1 cm. determined later. The length frequencies for the trout that were preserved is shown in figure 4C, where the lengths are grouped to the nearest 0.5 cm. The length range was from 12.3 cm. (4.8 in.) to 21.7 cm. (8.5 in.), with an average of 16.9 cm. (6.7 in.).

Sixty or 86% of the trout were of legal size.

(d) Summary of test angling. A summary of the results of the test angling described in the above sections is presented in Table II.

TABLE II

SUMMARY OF TEST ANGLING FOR TROUT - BLACKETT'S POND

Date	Average length (notch) in.	cm.	% of legal trout	Number taken	Number per rod-hour
Aug. 1943	6 3/4	17.0	78	81	35
May 1944	7 1/8	18.2	97	435	25
Sept. 1944	6 3/4	16.9	86	91	21

GROWTH OF TROUT AS SHOWN BY MARKED FISH.

In September, 1942, a number of trout were marked by fin-clipping. Trout of two length groups were selected, and in all 262 fish were marked. In Group I, 179 trout, measuring in notch length from 6½ to 8 cm., had the right ventral and adipose fins removed, and in Group II, 83 trout, from 12 to 16 cm., the left ventral and adipose.

Since that time 30 of the marked trout have been re-captured and measured. The lengths of these fish were:

	Group I	Group II
Aug. 1943	15.1 cm.	
	15.4	
	16.9	
	17.1	
	(ave. 16.1)	
May 1944	15.2 cm.	18.7 cm.
	16.5	19.4
	17.5	20.0
	17.8	20.3
	18.1	20.6
	18.4	22.2
	18.7	22.9
	(ave. 17.6)	(ave. 20.6)
Sept. 1944	18.2 cm.	19.8 cm.

If the average lengths of the two groups of trout are taken as 7½ and 14 cm. when marked in September, 1942, then the fish in the younger Group I grew about 9 cm. (3.5 in.) in one year. Over another winter and at the beginning of their third year, the younger trout added another 1½ cm. in length. After a winter, a full season of growth and another winter, the trout in the older Group II gained about 6½ cm. in length, which may be compared to the 10½ cm. gained by the younger fish over the same period.

It was estimated for the trout that were seined from the brook in September, 1942, that fish of year would gain about 5 cm. in length on the average during the next year. In comparison, the marked trout of the year gained about 9 cm. in average over a comparable period of time, but grew in the pond and not the brook. Although bearing in mind the arbitrary manner of defining the age groups from inspection of length frequencies, as well as the small number of marked fish involved in the estimates, the data show that the growth rate of the smaller trout at least was increased considerably by forming the pond.

ANGLING 1944

(a) The yield by number. Beginning with May 24, the public was permitted to angle in Blackett's pond every Wednesday until the close of the season on September 15. Thus, there were 17 angling days for the season. From May 24 to July 12, inclusive, or for 8 angling days, a record was made of the number of fish captured. The record was 872 trout captured by 57 rods, with an effort of 144½ rod-hours of fishing. Accordingly, the rate of capture for this period was 6 trout per rod-hour. The greater part of the angling was done by bait from shore, rather than by fly or from a boat. The above rate of capture was decidedly less than was realized by the test angling (mostly by fly), both before and after the public angling was done.

In addition to the 872 trout recorded by the creel census, 84 trout were not returned to the pond from the test angling in May and September. Thus, there is an actual record of 956 trout being taken from Blackett's pond in 1944.

If the angling results had continued to be the same during the second half of the season as during the first, an estimate of the number of trout taken from the pond would be about 1850. It is probable, however, that this was not the case. The person who conducted the creel census estimated that 75 per cent of the total number of trout taken were secured by July 12, although the estimate is unsubstantiated by actual records. On this basis an estimate of the total catch for the season would be 1163 trout.

On another pond in the same region of Prince Edward Island a creel census was maintained throughout the entire season of 1944. From the records of this census it was shown that the ratio of trout taken to July 12 to the number captured after that date was 3.82 : 1, principally as a result of fewer anglers and a poorer catch per rod-hour in late July and August. If this information is considered also applicable to Blackett's pond, and estimate of 1100 trout for the season is obtained.

It is perhaps fortuitous that the results from the two independent estimates are in such good agreement. Nevertheless, from these results more credence may be given to an estimate of 1200 as the number of trout that were taken by anglers, together with the number removed by test angling, from Blackett's pond in 1944.

(b) <u>The yield by weight.</u> From a sample of 69 trout taken on September 9, 1944, a length-weight relationship was obtained. The average length of the trout of legal size taken on that date was 18.2 cm., with an average weight of 72 gm. The average length of 409 trout of legal size caught in May, 1944, was almost the same at 18.3 cm. In estimating the yield by weight we have accordingly considered that the average length of the trout taken by the anglers was 18.2 cm. and the average weight 72 gm.

The area of the pond during the 1944 season was determined as 5.3 acres, although, if fully flowed, it would be approximately 8 acres. The recorded number of trout taken from the pond by

anglers up to July 12 and by test angling was 956. As explained above, it was estimated that 1200 trout were removed from the pond during the entire season. In Table III the yield by weight is presented, on the basis of an area of 5.3 acres, and as calculated either on the recorded or the estimated number of trout. It is to be recalled that the public was permitted to angle only 17 days during the 1944 season.

TABLE III

YIELD BY WEIGHT OF TROUT FROM BLACKETT'S POND, 1944

	Pounds per acre	Kilograms per hectare
Recorded number of trout - 956	29	33
Estimated number of trout - 1200	36	40

(c) Effect upon the stock. When the results of the test angling in May, 1944, are compared with those for September, 1944, it is seen that trout were taken almost as readily after the pond had been fished by the public as before (Table II). There was no doubt that a good population of trout still remained in the pond in September. Apparently, the public angling, i.e. the removal of about 1200 trout, did not seriously deplete the stock. With regard to the future management of the pond, at least in 1945, a recommendation that angling be permitted throughout the open season for trout appears justified, rather than restricting it to certain days as in 1944. Curtailment of angling might well result in over-population, with subsequent poor growth of trout. The limited data at hand suggest that this may have been the case during the summer of 1944.

The average length of the trout of legal size (14.5 cm. and over, notch length) before public angling was permitted in May was 18.3 cm., and in September, near the close of the season, 18.2 cm. However, the percentage of trout of legal size fell from 97 to 86, and the average length of the trout, including both legal and sub-legal fish, declined from 18.2 to 16.9 cm. Certain explanations of these results may be advanced.

(1) that there was an influx into the pond of small trout from the stream above;

(2) that the larger trout migrated from the pond into salt water;

(3) that the catchability of the larger trout differed from that of the smaller sizes;

(4) that the removal of trout of legal size increased the percentage of sub-legal sizes;

(5) that there was an over-crowding, with subsequent poor growth.

No one explanation is probably adequate, and certain of them have greater plausibility than others. If the gorwth of the trout in the pond was poor during the summer (over-crowding was a possibility), then the size of the fish in the pond would not materially change during that period, and if the anglers abided by the law and returned sub-legal trout to the water, there would be an increase in the number of these smaller fish in relation to the number of trout of legal size. Also, the number of trout in the pond was perhaps augmented by fish from the stream, and these would tend to be of sub-legal size. With regard to the migration of trout to the sea, it is not well established at what size they migrate, nor the effect of a pond upon such migrations, since it may be postulated that a pond on a stream will act in a similar capacity to the sea and hold the trout from further downstream movements.

There was no evidence during the test angling that, within the range of sizes in the pond, the smaller trout were taken more readily than the larger, or vice versa.

RELATIONSHIP BETWEEN NOTCH AND STANDARD LENGTHS

Measurements of the length of trout to the shortest rays of the caudal fin (notch length) are more practicable in the field than of either the total (to the longest rays of the caudal fin) or standard (to the end of the vertebral column) lengths. Standard length is, however, often obtained and recorded. The relationship between the notch and standard length was determined for 186 trout from Blackett's pond, and can be expressed by the following: Standard length (cm.) - 0.88 Notch length (cm.) - 0.06. The relationship is apparently linear over the length range found in sample, namely from 3.7 to 21.7 cm. (notch length).