The Attempt to Stock Clear Lake in Riding Mountain National Park with Rainbow Trout

ABSTRACT

The plan to stock Clear Lake with rainbow trout first acted on in 1937 has to date not been given a fair trial. Progress made under the circumstances is considered satisfactory. Continued stocking until further notice is recommended.

A scheme for the stocking of Clear Lake with rainbow trout was worked out in 1935 by Dr. C.McC. Mottley and Dr. D.S. Rawson. Plans called for the planting each fall of 350,000 fingerlings of about 2 inches in length, the reasoning by which this figure was determined being as follows:

Population studies at Paul Lake, B.C., indicate that an annual planting of 200 one-inch fry per acre supports excellent fishing. Since the only predatory fish in Paul Lake are the trout themselves, some allowance should be made for the presence in Clear Lake of other predatory and competitive fish such as pike and perch. Lacking any definite information on the program, it was suggested that the rate be doubled, i.e. 400 one-inch fish per acre. In Clear Lake, 400 fry per acre would mean 2,500,000 fry for the lake, a number impossible to handle at reasonable cost. It would therefore be necessary to resort to pond culture, since a smaller number of larger fish would produce the same result.

The number of two-inch fish which would be approximately equivalent to 2,500,000 one-inch fry can be deduced from the studies of Embody on the mortality of planted trout fry. He gives survival values which indicate that 340,000 two-inch fish would be needed.

To obtain 350,000 plantable two-inch fish it would be necessary to obtain about 550,000 eggs which should yield about 500,000 to the eyed stage, and with a reasonable survival, say 70% to the two-inch stage, 350,000 fingerlings.

In 1937, the scheme for stocking Clear Lake was put into action, 150,000 eyed eggs being obtained by the Bureau for hatching at the Saskatchewan provincial hatchery at Qu'Appelle. Delivered to the hatchery in mid April, they were hatched and the one-inch fry planted in three ponds, in the second week in June. 150,000 was all that the Fort Qu'Appelle hatchery could handle that year.

In 1938, the hatchery was able to accommodate 250,000 fish, and in the succeeding two years, 1939 and 1940, this number was again acquired for the Clear Lake enterprise.

According to the original recommendation, the total number of eyed eggs ordered over a four-year period would total 2,000,000 at the rate of 500,000 per annum. Actually the number of eggs ordered was but 900,000, or 45% of the recommendation.

The number of two-inch fish recommended for planting numbered 350,000 per annum, or a total of 1,400,000 over a period of four years. Actually in this time only about 140,000 fish have been planted or about 10% of the recommended number.

Summary as follows

Year	Eggs ordered	Placed in ponds	Planted
1937	150,000	147,000 ?	50,000 ?
1938	250,000	235,000 ?	35,000 ?
1939	250,000	238,000 ?	25,000 ?
1940	250,000	125,000 ?	30,000
	900,000	745,000 ?	140,000 ?

Figures in the column representing the number of fish planted are, with the exception of the 30,000 in 1940, of little reliability. Up until this year no count was made of the number of fish taken from the rearing ponds for planting in the lake. Estimates were reached by taking the number originally on hand, subtracting the known loss, and the resulting figure being taken to represent the number planted. Such a procedure in arriving at an accurate figure is worthless, for there are too many other complicating factors to be taken into consideration.

As an example, it was estimated that out of the 150,000 eggs received at the Fort Qu'Appelle hatchery in 1937, about 147,000 survived for planting in the ponds at Clear Lake. Visible loss during the summer in the ponds was low and hence it was estimated that 145,000 fish were planted in the lake in the fall. If an accurate count had been made, the number planted would have been found to have been probably about one-third of this number. It was considered by Mr. Fowler, in charge of the ponds, that the number planted that year (1937) was about half as large again as the number planted this fall (1940), and hence the estimation of 50,000 has been reached. This was the largest number ever taken from the ponds according to Mr. Fowler. 1939 was considerably less than 1940, and 1938 about the same or perhaps slightly more.

The total number planted then, estimated to be about 140,000, is about 10% of the recommended number, and over the four-year period, considerably less than half that recommended for a single year's planting, 140,000 as compared with 350,000.

From a consideration of these figures it is at once apparent that there is a very great difference in the number of fish planted in the ponds in the spring, and the number taken out in the fall. In the first place,

if an accurate count were made of the number of fish planted in the ponds from the hatchery, the figures would probably be found to be somewhat less than the numbers quoted, which were deduced by subtracting known losses from the original figures. There is always room for error in such a method. Loss in transit from the hatchery to the ponds must also be considered here.

Even allowing for a slightly lower figure to represent those fish planted in the ponds, there is still a very high loss of fish in the ponds during the summer if the figures finally adopted as representing the total take from the ponds are at all near the truth.

In pond culture, a certain loss is to be expected, but in raising fry to a size of two inches the loss should not exceed 30%. The loss in the Clear Lake ponds appears to be greatly in excess of this figure.

It is suggested that caution be exercised in reaching conclusions regarding the numbers of fish involved owing to the lack of confidence that can be placed in the figures available. It must also be remembered that in addition to the visible loss, there is also bound to be a certain loss from the predations of birds, mink and muskrat, etc. Cannibalism is also a potential factor.

One point is very obvious ... the number of fingerlings planted in Clear Lake is far smaller than formerly believed, and much smaller than the number recommended, (140,000 as against 1,400,000).

In an attempt to ascertain the degree of success attending the venture to stock Clear Lake, a program of gill netting and seining was carried out from October 23rd to November 4th. A gang of gill nets consisting of 100 feet of each of three sizes of mesh, 1½", 2" and 3" (a total of 300 feet) was employed; with two exceptions the net was moved to a new location each day, and all depths of water were tested. Frequently the net was lifted twice daily to take out the catch. A total of eleven different settings was made.

The total catch with the gang of nets was as follows:

Tullibee	80
Whitefish	21
Perch	37
Pike	5
Suckers	2
TROUT	0

Seining operations were almost as complete a blank as was the netting. A fifty-foot fine meshed seine of 4-foot depth was used. The entire shoreline of the lake was seined at intervals of about ½ mile, a total of some 40 hauls being made. The greater number of hauls was made before the fingerlings were planted from the ponds, in order that the planted fish might not interfere in the attempt to find fish in the lake that had been naturally

spawned, and that would be approximately the same size as the pond reared fish. The only trout captured in all these operations were two small rainbow of slightly more than two inches in length (54 and 55 mm. respectively). They were taken at the mouth of a small brook at the eastern end of the lake, a very likely spot for fingerlings to be found. It cannot be stated definitely whether these fish were naturally spawned in the lake or whether they escaped from the ponds during the summer.

From the preceding paragraphs, it is seen that the capture of trout in Clear Lake was extremely meagre. Such is not to be altogether wondered at, and it is believed that the trout situation in Clear Lake is much better than netting results would seem to indicate. We must first remember that the investigation was carried on at a very bad time. During the autumn trout appear to leave shallow water. Seining operations after the distribution of some 30,000 fingerlings were equally negative, although close scrutiny revealed that a few fish remained in the vicinity of piers and jetties. The system adopted in planting this year is believed to be more systematic than previous methods. Instead of dumping a whole can of fish at a time, the entire lake shore with the exception of the west end (where the gull and cormorant rookeries are located) was covered by motor boat, and a dozen or so fish were thrown out every few yards. In this way it is estimated that one fish was planted for every 2½ feet. In the entire operation of distributing the fingerlings, the total loss was no more than three dozen fish. Half of these were taken by birds. In spite of the uniform distribution, no fish were taken subsequently by seining, indicating that they were not to be found in shallow water in the fall of the year. The same seems to be true of the suckers and perch. Only two suckers were taken in the entire investigation, one a 10-inch fish, and the other 8 inches. Both were captured in the gill net. Not a single sucker of any size was taken in the seine. A few perch from 2 to 3 inches were seined and some three dozen were taken in the gill nets, but the numbers of both suckers and perch were very much smaller than the number that would be expected to be taken during summer operations. These fish are said to be very numerous in Clear Lake.

These observations, namely, the small number of perch, and the total absence of young suckers from shallow water, indicate that perch and suckers, and likewise probably the trout, have moved into deeper water with the onset of autumn, and hence their absence from seine hauls is not significant as far as the presence of trout in the lake is concerned.

Neither can too much be assumed from the failure to take trout in the gill nets, when the small catch of suckers and perch is considered, two species of fish that must be considerably more numerous than trout could be expected to be.

On the credit side of the ledger we know that several three-year fish were caught by angling this summer. In May of this year when the pools were being cleaned in preparation for receiving the fry from the

hatchery, the dam at the by-pass was taken out and a rush of water entered the lake. Several one, two and three-year old fish rushed up this artificial freshet, and when the water had receded, a pailful was picked up and placed in the stream above the upper dam. These fish were liberated this fall when the rest of the fingerlings were planted. (Artificial freshets have been used in Scotland and on the Moser river in Nova Scotia to induce salmon to enter rivers during the angling season.)

Mr. Wilfred Brown of the park staff reports finding a small trout in the water tower when it was emptied this fall. It apparently entered through the intake pipe in water that was pumped up into the tower.

Although factual knowledge is somewhat meagre, from what data we have it would seem that the attempt to plant rainbow trout in Clear Lake is meeting with some measure of success, but the extent to which this is so cannot be stated at present.

It is recommended that 250,000 eggs be again requisitioned (a sufficiently large number for the pond space available) for 1941, and that more accurate and detailed records be kept of the numbers of fish handled. I also suggest that a week's netting operations be carried out about the first of next June, or preferably at about the time the fry arrive from the Fort Qu'Appelle hatchery. At that time we might expect to obtain information of a more definite nature on the progress of the attempt to stock Clear Lake.

The ponds at Clear Lake will be reported on separately.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Seventeen days (October 19th to November 5th) were spent at Clear Lake, Riding Mountain National Park, in an effort to ascertain the degree of success attending the attempt to stock the lake with rainbow trout.

A program of gill-netting and shore seining was carried out, but as far as trout were concerned was almost a total blank. Such is not to be wondered at when the time of year is considered. Many species of fish leave shallow water during the fall months. Not only trout, but suckers and perch were extremely scarce.

Circumstantial evidence would lead me to believe that trout are making some progress in the lake. When it is considered that only about 10% of the recommended number have been planted, it is a wonder that any progress is being made at all. Several trout of the first year's hatch were caught this summer, however, and two dozen two and three-year old trout which had summered in the ponds were placed in the lake this fall.

I recommend that 250,000 eggs (sufficient for the pond space available) be requisitioned immediately, and that operations in future be carried out under closer supervision in an effort to account for the losses of fry in the ponds. A count of the number of fry received at the ponds should be made. No count of this kind has previously been taken. I also suggest that if at all feasible, I be present at Clear Lake when the fry are delivered from the hatchery at Fort Qu'Appelle, and that at that time a week's netting and seining operations be carried on to give a better idea of the trout situation at Clear Lake.

Several suggestions I have regarding the ponds will be made in a separate report on the Clear Lake rearing ponds.

Rogers, H. M.
The attempt to stock Clear Lake in Riding Mountain National...

DATE	ISSUED TO