

# **BIOLOGICAL BOARD OF CANADA**

MANUSCRIPT REPORTS OF THE BIOLOGICAL STATIONS

No. 189E

Title

REPORT ON INVESTIGATIONS OF AREAS PROPOSED FOR REARING  
PONDS NEAR KENTVILLE, N. S.

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REPORT ON INVESTIGATIONS OF AREAS PROPOSED FOR  
REARING PONDS NEAR KEETVILLE, N. S.

1. Bishop's brook, New Minas.

About two-thirds of the area to be flooded consists of a short-grass pasture, the remaining one-third being covered with sedges (Carex, Juncus, Sparganium, etc.), alders (Alnus), juniper (Juniperus) and small spruce. On the whole there is not a great deal of vegetation to be killed by flooding, and thus not much decomposable organic material. The rather sharp-sloping sides of the brook valley are principally covered with pine and spruce.

The brook is spring fed, and has a run at the present time of about 1800 feet before reaching the proposed dam site. (The area was evidently flooded years ago). The flow of water is good. There are a number of small springs and seepage areas along the brook at various points, but the principal flow of water comes from a fairly extensive spring area at what now is the head of the brook. A series of temperatures were taken, along with determinations of the pH value and dissolved oxygen content (See table I).

A number of small trout (up to about 6 inches in length) were observed in the brook. Sels were also noted. Caddis fly larvae were very numerous. Mayfly and snails were present in less abundance.

This area appears to be quite favourable for creating a rearing pond. The dam can be easily constructed as the brook discharges from the area involved through a narrow gap in an old dike. Considering the flowage of water, the temper-

TABLE I. Temperatures, pH value and oxygen content in Bishop's brook, New Minnis, Kentville, N.S.  
 July 20, 1935. Air temperature (10:25 A.M.) 21.1 Sky clear.

Time	Place	Temp. °C.	pH value	Oxygen content	
				c.c. per litre	% sat.
10:25 A.M.	At dam site	14.0	7.2	6.55	92.5
10:25	Spring seepage, 50 yards upstream	14.9	7.1		
10:35	Main stream, 5 yards below seepage	14.0	7.2		
10:37	Main stream, 5 yards above seepage	14.2	7.3		
10:45	Small stillwater, 100 yards upstream	14.2			
10:45	Riffles below stillwater (Seepage from both sides)	14.05			
10:50	Main stream, 200 yards upstream	15.55			
10:55	Main stream, 350 yards upstream	10.9			
10:58	Main stream 50 yards below source springs	9.5	6.8	7.25	89.5
11:01	Spring inlet near head of brook	8.2			
11:11	Spring feeding this inlet (bottom)	6.9			
11:05	10 yards above spring inlet	7.9			
11:08	Seepage at apparent head of stream	11.2			

ature of the water and the small amount of decomposable organic matter that will be submerged, it is anticipated that neither the dissolved oxygen content nor the pH value of the water will be much reduced. The temperature should be moderate. The water in the brook at or near the point where it will flow into the new pond had a temperature of 9.5 °C., a pH value of 6.8 and a dissolved oxygen content of 7.25 c.c. per litre (89.5 per cent saturated.).

The area to be flooded has been surveyed by Mr. Lynch, and the flowage of water is to be determined.

The project is being sponsored by the Kentville branch of the Nova Scotia Fish and Game Protective Association. It is understood that brook trout are to be reared.

## 2. Cold Brook, Kentville.

In this case the area that will be flooded is covered for the most part by an alder thicket, undergrown with sedges, grasses and weeds of various sorts. In other words there will be considerable organic matter to be submerged and decay. There is already present a washed-out dam of lumber and rocks. This dam, however, forms a shallow pond immediately above it.

The brook is spring fed and has a run of a mile, or more. The entire length was not examined, but only the half-mile above the proposed dam site. There is a good flow of water, more than in Bishop's brook. Apparently the stream is not subject to very high flood waters. A series of temperatures were taken, and the pH value and dissolved oxygen content at the lower end (See table II).

TABLE II. Temperatures, pH value and dissolved oxygen content.

Cold Brook, Kentville, N. S. July 20, 1935.

Air temperature 24.1°C. (2:25 P.M.) Sky clear.

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Time	Place	Temp.°C.	pH value	Oxygen content	
				c.c. per litre	% sat.
2:25 P.M.	At old dam (below pond)	18.5	7.5	6.99	103.6
2:38	Brook above pond	16.8			
2:44	150 yards above last point	16.5			
2:49	100 yards up	16.0			
2:54	200 yards up	14.3			
3:04	At old road, about $\frac{1}{2}$ mile up	13.6			

There was an abundant bottom fauna in the form of caddis fly and mayfly larvae and snails. Observations revealed that there were large numbers of small brook trout in the stream. In the pond specimens up to about 10 inches were seen.

The area to be flooded has been surveyed by Mr. Lynch, and the flowage of water is to be determined.

Owing to the fairly large flow of water and the moderate temperatures, the proposed pond should provide good conditions for rearing brook trout. Although the amount of vegetation that will be covered by water and will decay is considerably greater than at Bishop's brook, for instance, nevertheless, the greater flow of water should prevent the dissolved oxygen content from being seriously reduced. The temperature of the waters should remain suitable. It was observed that the temperature of the water in the stream before it entered the pond was 16.8°C. and that it rose to only 18.5° above the old dam after it had flowed through this pond, a rise of 1.7°.

It is understood that the Kentville Branch of the Nova Scotia Fish and Game Protective Association is petitioning the Nova Scotia government to provide funds for building the dam at this site.

If the pond is to be created steps should be taken to remove the trout that already exist in the pond and stream. This applies particularly to the larger individuals.

3. Observations at Sutton's pond (Kentville) N.S. July 19, 1935.

This is a small pond formed by damming a small spring brook. The dam was built in September, 1930. At the time of

examination there was only a very small flow of water into and out of the pond. The maximum depth sounded was 5.5 feet. At the dam in 4 feet of water the following hydrographic conditions were found:

	<u>Temperature C.</u>	<u>Dissolved oxygen content</u> <u>c.c. per litre</u>	<u><math>\frac{1}{2}</math> sat.</u>	<u>pH</u> <u>Value</u>
Surface	25.3	7.01	116.6	8.2
Bottom (4 feet)	23.9	5.40	87.8	7.2

(10:45 A.M.; air temperature, 27.5 C.; sky cloudy; water transparency low)

At a depth of 5 feet out in the pond the bottom temperature was found to be 23.8 C. The little water that was flowing in the inlet brook had a temperature of 21.8 C. (at screen placed in stream to stop any upward movement of fish).

About one-third of the pond area, particularly at the upper end, was filled with rooted emergent aquatic vegetation. The phytoplankton was only fair in abundance. The zooplankton was dominated by a species of rotifer; entomostracans were poorly represented, both in numbers of individuals and species. There appeared to be an abundant aquatic insectfauna.

Brook trout fry were planted in the pond in the spring (1935).

A survey of the pond was made by Mr. E. Lynch.

It was noted that gas bubbled up from the bottom whenever it was disturbed, indicating that considerable decomposition was taking place. This was also indicated by the lower oxygen and pH values for the bottom water. However, aquatic vegetation was present in an amount ample to keep the oxygen content at a fairly high level.

