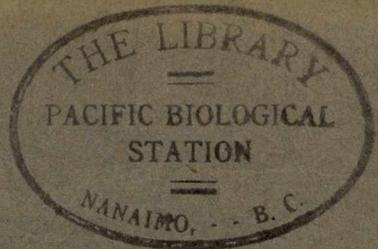


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MANUSCRIPT REPORTS OF THE BIOLOGICAL STATIONS

No. 62

Proposed shad experiments on the Annapolis  
river in 1925.

By

A. H. Leim

# BIOLOGICAL BOARD OF CANADA

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Report of the Biological Station at Annapolis River  
Title Proposed Shad Experiments on the Annapolis River in 1925.

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The most important phase of the work would seem to be a repetition on a larger scale of the experiments dealing with the effect of brackish water in an effort to determine whether a satisfactory rearing procedure can be worked out. It is planned to hatch a fair number of fry under the most suitable temperature conditions but at two salinities -both 0 and ca. 7‰. If five hundred fry hatched in each of these salinities were available for rearing the results should be dependable. If these are hatched in still water some 300 four ounce bottles would be required to contain the eggs during the hatching process. This number would be about the limit that could be handled as changing would be required daily. If it seemed desirable to rear larger numbers some form of hatchery procedure would be required, that is, running water. Such a system might be set up in insulated boxes with five gallon jars supplying the water slowly to the eggs but it will greatly increase the complexity of the experiment and probably not materially reduce the labour. Quantity production is not essential.

When the fry were hatched an attempt would be made to rear them either in the hatching bottles or in larger containers such as lobster jars. In order to supply them with plankton food still water would be essential. The plankton of the fresh water portion of the Annapolis river is poor in Crustacea and it would be necessary to go down to the brackish part in order to get a sufficiently concentrated product for feeding the fry. It may possibly be necessary to move the entire "hatchery" at this time so as to be near the food supply. The train service between Lawrencetown, where the experiments would probably be set up, and points farther down the river is not such as would permit of rapid plankton collecting trips.

Such an experiment as this should demonstrate the relative merits of the two environments as successful spawning grounds for the shad.

Other work at which it is desirable to do something is: 1-Effect of brackish water on impregnation. A determination of the range of salinities to which the eggs and milt may be exposed without harmful results. We cannot say that a given body of water is suitable for shad reproduction until this is known.

2- Effect of muddy water of eggs. In most estuaries where salinity conditions are suitable for the development of the shad eggs the water is very muddy. Will this have any deleterious effect?

3- It would be desirable to carry on some experiments on a small scale to obtain further information as to the effect of brackish water. At present we believe 0 ‰ to be unfavourable and 7.5 ‰

to be favourable. Intermediate salinities should be tested out.

4- Observations on the adequacy of the fishway at Lawrencetown, N. S. should be made.

This plan is less ambitious than that suggested by Dr. Knight whereby shad eggs would be planted or deposited in two streams, one brackish and the other fresh, and the resultant fry counted. Apart from the difficulty of getting such streams close together with temperature and salinity conditions right it would seem worth while to spend one season testing the brackish water idea on a small and controllable scale before plunging too deeply.

#### Time required.

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About 25 to 30 days would be required for the actual progress of the experiment. In order to give a little time for getting the apparatus in order five weeks should be allowed if possible. Three weeks of this time would have to be spent in the field. It might be arranged to move everything to St. Andrews at the end of that time but such procedure is scarcely desirable if it can be avoided. It is planned to reach the Annapolis river about May 20 to 24th. As this spring promises to be early eggs should be available shortly after that date, probably as soon as the apparatus would be ready for them. The experiment should be completed between June 20 and 25th.

Probable cost.

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Transportation from St. Andrews to Lawrencetown and return	\$13.00
Other travelling expenses	8.00
5 weeks board	40.00
Freight charges on apparatus	5.00
" " " boat from Shubenacadia	8.00
Cost of insulated box	15.00
Freight charges on sea water from Annapolis Royal	6.00
Probable cost of procuring sea water	5.00
" " " trips for plankton	15.00
Incidental and unforeseen	25.00
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Total	\$140.00